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Conesus Lake Watershed Management Plan 2025 Update



Prepared for Conesus Lake Watershed Council

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**Department
of State**

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ABBREVIATIONS

µg/L	microgram per liter
AEM	Agricultural Environmental Management
BMP	best management practice
CAFO	confined animal feeding operation
Chl-a	chlorophyll-a
CCE	Cornell Cooperative Extension
Cl	chloride
CLA	Conesus Lake Association
CSLAP	Citizens Statewide Lake Assessment Program
CLWC	Conesus Lake Watershed Council
CLWMP	<i>Conesus Lake Watershed Management Plan</i>
CUGIR	Cornell University Geospatial Information Repository
CWA	Clean Water Act
DO	dissolved oxygen
EBM	ecosystem-based management
ELAP	Environmental Laboratory Accreditation Program
EPF	Environmental Protection Fund
ESC	Erosion and Sediment Control
ESF	College of Environmental Science and Forestry, part of SUNY
FEMA	Federal Emergency Management Agency
FLOWPA	Finger Lakes – Lake Ontario Watershed Protection Alliance
FL-PRISM	Finger Lakes Partnership for Regional Invasive Species Management
FLI	Finger Lakes Institute
HAB	harmful algal bloom
HUC	Hydrologic Unit Code
kg/year	kilogram per year
Lake	Conesus Lake
LCDOH	Livingston County Department of Health
LCPD	Livingston County Planning Department
LCSWCD	Livingston County Soil and Water Conservation District
LCWSA	Livingston County Water and Sewer Authority
MAM	mile-a-minute (terrestrial invasive species)
mg/l	milligrams per liter
MGD	million gallons per day
N	nitrogen
Na	sodium

NLCD	National Land Cover Database
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resource Conservation Service
NYCRR	New York Codes, Rules and Regulations
NYHABS	New York Harmful Algal Bloom System
NYS	New York State
NYSAGM	New York State Department of Agriculture and Markets
NYSCDEA	New York State Conservation District Employees' Association
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOS	New York State Department of State
NYSFOLA	New York State Federation of Lake Associations
NYSOPRHP	New York State Office of Parks, Recreation, and Historic Preservation
PDR	Purchase of Development Rights
PE&O	Public Education and Outreach
PPP	Public Participation Plan
SDT	Secchi disk transparency
SPI	Standard Precipitation Index
SSW	starry stonewort (aquatic invasive species)
SUNY	State University of New York
SWAT	Soil & Water Assessment Tool
SWCD	Soil and Water Conservation District
TAC	Technical Advisory Committee (CLWC Technical Committee serves as the TAC)
THM	trihalomethanes
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
TP	total phosphorus
UFI	Upstate Freshwater Institute
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WCR	<i>State of Conesus Lake: Watershed Characterization Report</i>
WEC	Watershed Education Center
WMA	Wildlife Management Area
WQIP	Water Quality Improvement Project

Executive Summary

The Conesus Lake watershed encompasses 70 square miles and includes all or part of seven municipalities within Livingston County. The Towns of Conesus, Geneseo, Groveland, Livonia, Springwater, and Sparta and the Village of Livonia are all or partially located within the watershed. The watershed is home to approximately 10,000 people, and the Conesus Lake (Lake) supplies water for 20,000+ Livingston County residents. More than 18 streams flow through the Conesus Lake watershed, although three of them—North and South McMillan Creeks and Conesus Inlet—contribute up to 70% of the flow into the Lake. The watershed is part of the 2,500-square-mile Genesee River Basin that flows into Lake Ontario.

This update to the initial *Conesus Lake Watershed Management Plan* (CLWMP) examines current conditions of the Lake and watershed, tracks changes in water quality and habitat conditions, and highlights challenges and opportunities associated with meeting community goals for the future of the resource. Watershed management has been a focus of the Livingston County Planning Department (LCPD) for decades; the initial CLWMP was adopted in 2003. Funding and technical support for the Conesus Lake watershed planning initiatives has been provided by the New York State (NYS) Department of State, Division of Coastal Resources.

While much has changed over the past two decades, the community's commitment to Lake and watershed management has not. The Conesus Lake Watershed Council (CLWC) was formed in 2003 and continues to serve as an effective hub for stakeholder communication and coordination. The LCPD staffs the CLWC and oversees preparation of an annual report card to track Lake water quality and habitat conditions, partnerships, and implementation status of recommendations of the 2003 CLWMP. Annual CLWC work plans embrace an adaptive management approach; priority actions reflect new data and information, opportunities for funding and partnerships, and emerging issues such as invasive species and cyanobacterial blooms. The Conesus Lake Association (CLA) continues to be an effective partner in both monitoring and community engagement. The CLA participates in the Citizen Statewide Lake Assessment Program (CSLAP), runs a harmful algal blooms (HABs) monitoring program, and supports the Watercraft Steward Program, among many other efforts to protect the Lake.

In addition to the robust annual monitoring programs of the Lake and its tributary streams, many significant analyses have been completed since 2003. With U.S. Department of Agriculture (USDA) funding, partners at State University of New York (SUNY) at Brockport undertook a multi-year analysis of the effectiveness of agricultural best management practices (BMPs) within the Conesus Lake watershed. A 10-year update of the *Watershed Characterization* was completed in 2013. In 2018, the New York State Department of Environmental Conservation (NYSDEC) included the Lake among the group of 12 NYS lakes for which HAB action plans were prepared. The U.S. Environmental

Protection Agency (USEPA) approved the Lake's phosphorus Total Maximum Daily Load (TMDL) allocation in 2019. In 2021, Livingston County completed an updated Safe Yield Assessment to examine water level management and water supply under a range of meteorological conditions.

The past decades have also seen an increased understanding of the major impact of changing climate conditions on land and water resources and a strong commitment to investing in tools to help communities prepare for change. Warmer air temperatures, notably in spring and fall, and shifting precipitation patterns affect the Lake and watershed in ways that can degrade water quality and habitat. This updated CLWMP highlights opportunities for communities to increase hydrologic resilience of both the built environment and the working landscape. Hydrologic resilience results in slowing runoff and enhancing infiltration, thus reducing the risk of flooding and soil erosion. The project team has reviewed local laws of watershed municipalities to analyze vulnerabilities and gaps and identify opportunities for improvement such as green infrastructural measures. Expanded support to the agricultural community is recommended to enable increased adoption of BMPs such as winter cover crops. These recommendations are timely, as New York State is investing in programs to incentivize and support communities with preparing for a changing climate.

The project team applied the watershed planning approach jointly developed by the New York State Department of State (NYS DOS) and NYS DEC described in the 2009 guidebook *Watershed Plans: Protecting and Restoring Water Quality*. The approach takes the watershed stakeholder community through a four-step inquiry process to address these questions:

1. **Where are we now?** What is the current environmental, social, and political environment within the watershed? What are the assets and challenges within the watershed?
2. **Where are we going?** What are the current trends and emerging issues, including climate, water quality, population, land cover, BMPs, and invasive species? How are these things predicted to impact the watershed?
3. **Where do we want to be?** What is the community's vision for the future of the watershed? What are the goals that will help the community achieve the vision?
4. **How do we get there?** What are specific actions, programs, projects, partnerships, and practices that will enable the community to achieve the vision and goals? What resources are needed, and how can those resources be acquired?

As a "home-rule" state, New York delegates most land use decisions to local government. The Conesus Lake watershed encompasses multiple municipalities; consequently, there is a patchwork of local laws related to standards, such as impervious cover, riparian setbacks, wastewater inspections within the non-sewered areas, etc. This fact illustrates the importance of the CLWC and the productive intermunicipal collaborations that have developed over the years.

Public education and outreach are essential for a watershed management plan to succeed. The project team employed a range of techniques to engage the watershed community during the update process. Input on watershed vision and goals was gathered using a “postcards from the future” approach; people were asked to imagine that the updated CLWMP is successful and describe the Lake and watershed years from now. Community surveys were also conducted. A public information session/open house was held on September 30, 2024, to answer questions and gather additional input. Based on a review of community comments, the project team adopted updated statements of the vision and goals for the watershed.

Vision

Our vision is to advocate for and achieve a resilient Conesus Lake watershed able to withstand current and future challenges to the health and integrity of the natural ecosystem from a changing climate as well as challenges to the continued provision of services that support human well-being. Ecosystem services provided by Conesus Lake and its watershed include clean water, agricultural and forest products, flood protection, recreational opportunities, climate moderation, habitat for a diverse assemblage of native species, and the unique sense of place embedded in the watershed’s rural history and natural landscape.

Goals

- **Goal 1.** Manage the Conesus Lake watershed in ways that control inputs of sediment and minimize entry of phosphorus, sodium and chloride, and other potential pollutants into the Lake.
- **Goal 2.** Maintain Conesus Lake as a dependable source of high-quality water that meets water supply needs and meets or exceeds public health standards for potable water and recreational uses.
- **Goal 3.** Continue efforts to detect, prevent, and mitigate cyanobacterial blooms (harmful algal blooms or HABs) and their associated beneficial use impairments (e.g., beach closures, restrictions on drinking water).
- **Goal 4.** Improve and enhance recreational access to and use of Conesus Lake while managing for and maintaining a balance between multiple uses, without overcrowding the Lake.
- **Goal 5.** Continue and expand efforts focused on prevention, early detection, and rapid response to terrestrial and aquatic invasive species to protect the health of the Lake. Support management efforts to conserve and/or restore habitats for a diverse and resilient assemblage of native species.
- **Goal 6.** Maintain and strengthen the effective intermunicipal partnerships fostered through the Conesus Lake Watershed Council and continue to take actions that will increase resilience to changes in climate, population, and land use.

- **Goal 7.** Continue to work with the federal, state, regional, county, and local resources to make management decisions that reflect the best available information regarding Conesus Lake and watershed.
- **Goal 8.** Employ multiple approaches to outreach and education that enhance community awareness of how human activities affect water resources, opportunities for nature-based solutions, and the effectiveness of local actions.

The project team worked with watershed stakeholders to identify a series of recommendations to continue to advance toward realization of the community’s vision for the future of the Lake and watershed. The recommendations update and expand the recommendations of the 2003 CLWMP based on new information, new partnerships, and effectiveness of accomplishments over the past decades. Overall, actions may be categorized as follows:

- Maintain and enhance institutional partnerships and collaborations
 - LCPD, CLWC, Watershed Inspector and Watershed Manager
 - Watershed Towns and Village
 - Research and educational community, such as SUNY Geneseo and SUNY Brockport
 - NYSDEC
 - State and county agricultural management, public health, and planning agencies
 - State and regional alliances for invasive species management
 - Local organizations, such as the CLA
- Improve hydrologic resilience
 - Promote adoption of green infrastructure measures for the built environment
 - Develop tools for municipal planning boards
 - Identify/protect/restore key areas to promote infiltration and enhance habitat
- Support measures to minimize sediment, nutrient, and other pollutant loss from the landscape
 - Expand agricultural BMPs, including funding support
 - Support agricultural producers as they adapt to changing climate
 - Support efforts to increase efficiency of winter road salt use
 - Increase education and outreach to the community on actions they can take to reduce their impact on water quality
 - Implement septic system inspection process
- Adaptive management
 - Continue monitoring and surveillance of the Lake and watershed
 - Continue programs of early detection and rapid response to invasive species
 - Evaluate potential effectiveness of alternatives to manage legacy phosphorus
 - Evaluate measures to reduce frequency, intensity, and duration of harmful cyanobacterial blooms

- Public outreach
 - Continue engagement with the public using multiple techniques and venues, including the Watershed Education Center
 - Communicate risk related to cyanobacterial blooms and how to live safely with HABs
- Water supply
 - Implement recommendations of the 2021 Safe Yield Assessment
 - Prepare for future demands on water supply
 - Continue to monitor drinking water quality
- Recreational access and use
 - Encourage boating etiquette and educate on the importance of “no wake” zones and speed limits
 - Evaluate the need for boating management
 - Investigate potential public swimming areas

It is important to note that these recommendations reflect priorities in 2025. They will continue to evolve as additional data and information become available, funding sources change, or as a result of regulatory changes. Not all recommendations can be implemented at once; while some could be addressed in the short term, others will need to be developed over the course of years.

Implementation strategies were then identified to create a roadmap for making progress toward achieving the vision for the watershed.

Successful implementation of this CLWMP Update will require collaboration among a diverse range of agencies, institutions, and stakeholders working together as partners, pursuing funding, and contributing resources to support initiatives that will protect and restore the quality of the watershed. The implementation section of the document assesses each watershed recommendation, providing critical information, including task leaders and partners, potential funding sources, approximate cost, and proposed timeframe.

The 2025 update to the CLWMP reflects data and information collected over decades of Lake and watershed monitoring by many organizations and individuals. Continued monitoring and assessment will enable community stakeholders to fully implement the principles of adaptive management. The Annual Report Card has been extremely effective in tracking and reporting progress toward meeting the goals of CLWMP; continued preparation of an annual report to the Watershed Council is a key recommendation.

1 Introduction

1.1 Purpose and Audience

The Conesus Lake Watershed Council (CLWC) is updating the 2003 *Conesus Lake Watershed Management Plan* (CLWMP), with support from the Livingston County Planning Department (LCPD) and watershed partners. Across the Finger Lakes, communities are experiencing shifts in climate, demographics, farming practices, development patterns, and more. The Conesus Lake (Lake) watershed region of Livingston County is experiencing those changes and challenges as well. This update to the CLWMP, including a review of local green infrastructure regulations, is timely.

The original CLWMP was adopted in 2003 and has served as a template for community leaders, resource management professionals, and the public to identify actions designed to protect local waterways and surrounding lands. This update will serve as a roadmap for protecting the vital natural resources the watershed provides. The plan will guide the watershed's communities as they continue their efforts to take action to protect and restore the quality of the watershed and enhance the quality of life for its residents while maintaining the integrity of the natural ecosystem.

This update to the *Conesus Lake Watershed Management Plan* was prepared for the New York State Department of State (NYS DOS) with funds provided under Title 11 of the Environmental Protection Fund.

1.2 Environmental and Cultural Setting

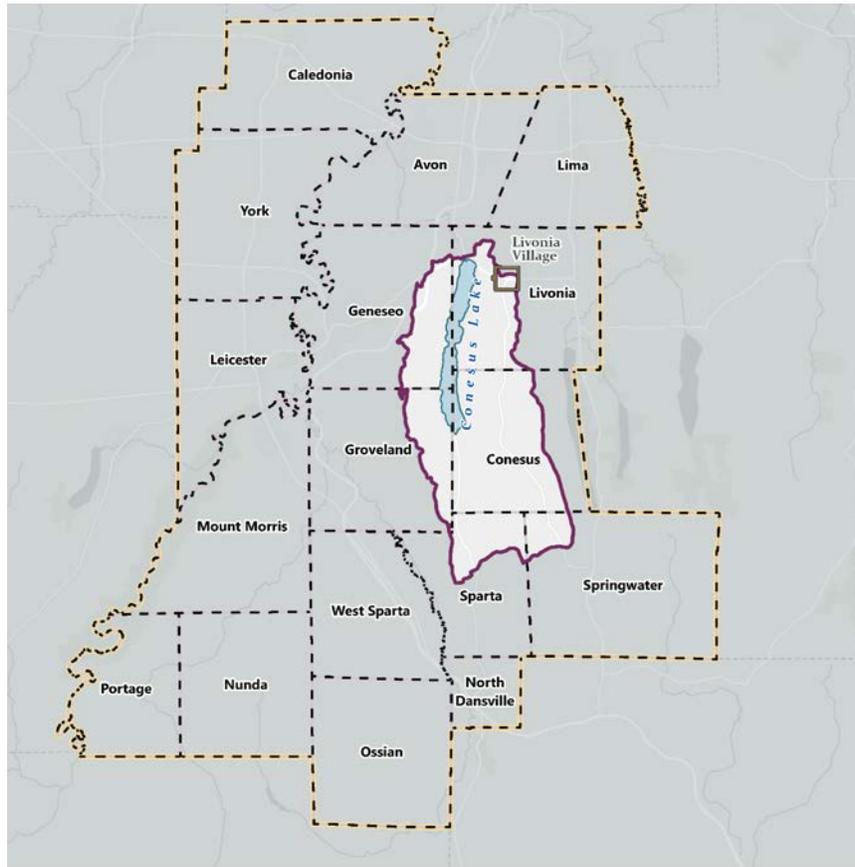
The Lake watershed encompasses 70 square miles within Livingston County, including portions of six towns (Conesus, Geneseo, Groveland, Livonia, Sparta, and Springwater) and the Village of Livonia, which are shown in Figure 1-1. The watershed, which is home to approximately 10,000 people, forms part of the 2,500-square-mile Genesee River Basin that drains north to Lake Ontario.

The Conesus Lake watershed is comprised of eighteen subwatersheds that drain into the Lake. Three major subwatersheds (North McMillan, South McMillan, and the Conesus Inlet) flow into the southern end of the Lake and collectively contribute as much as 70% of the total inflow (Ecologic and LCPD 2002). Due to the topography of the watershed, there are also many streams that are small and may only have water flow during parts of the year.

The Lake is the westernmost of the New York Finger Lakes and, with a surface area of approximately 5.3 square miles, among the smallest (NYSDEC 2024a). The Lake is relatively shallow; the maximum water depth is 66 feet (NYSDEC 2024a). Four towns (Geneseo, Livonia, Conesus, and Groveland) border the Lake. The Village of Livonia, located 3 km east of the Lake, is the largest urban concentration within the watershed boundaries. The Lake is used as a water supply for approximately 20,000+ people in Livingston County. It is a popular recreational destination, supporting summer and

winter angling, boating, and swimming. Residences ring the shoreline, including year-round and seasonal homes. Agriculture is a prominent land use across the watershed.

**Figure 1-1
Conesus Lake Watershed**



LEGEND:
 Watershed Boundary
 Lake Boundary
 County Boundary
 Town Boundary
 Village Boundary

SOURCES:
 1. Basemap: Esri (2024)
 2. Watershed/Lake: Livingston County (2024)
 3. County Boundary: New York State (2024)
 4. Town/Village Boundary: New York State (2024)

SCALE:
 0 5.5
 Miles

Currently, the Lake is classified as mesotrophic, meaning that it supports moderate to high levels of primary productivity. The primary producers in the Lake include macrophytes and water column phytoplankton, which include algae and cyanobacteria. Although the Lake is considered mesotrophic, periodic phytoplankton blooms, including harmful algal blooms (HABs) and abundant macrophyte growth are common. These conditions can negatively impact water quality for recreation and water supply.

1.3 History of Watershed Management Actions for Conesus Lake (2003–2023)

1.3.1 *Ecosystem-Based Management as a Guiding Principle*

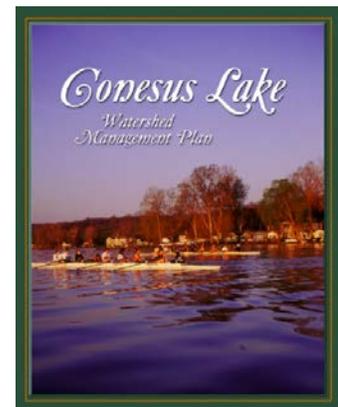
Ecosystem-based management (EBM) is an adaptive, integrated approach to managing resources for a sustainable future. This framework was embraced by New York State (NYS) in 2006 with adoption of the Ocean and Great Lakes Conservation Act. The goal of EBM is to manage the entire ecosystem, including humans, in a way that will ensure healthy, productive, and resilient environments. The approach has six key components to ensure that plans, such as the CLWMP, are tailored to reflect local conditions and trends. These components are listed in Table 1-1.

Table 1-1
Six Key Components of Ecosystem-Based Management

1. Place-based focus, consider local conditions while still considering regional drivers of change
2. Scientific foundation for decision making
3. Measurable objectives
4. Adaptive management, continue to monitor and respond to emerging science
5. Recognition of interactions within and among ecosystems, including social and economic factors in addition to local ecology
6. Stakeholder involvement

1.3.2 *Watershed Characterization Report (2002) and Conesus Lake Watershed Management Plan (2003)*

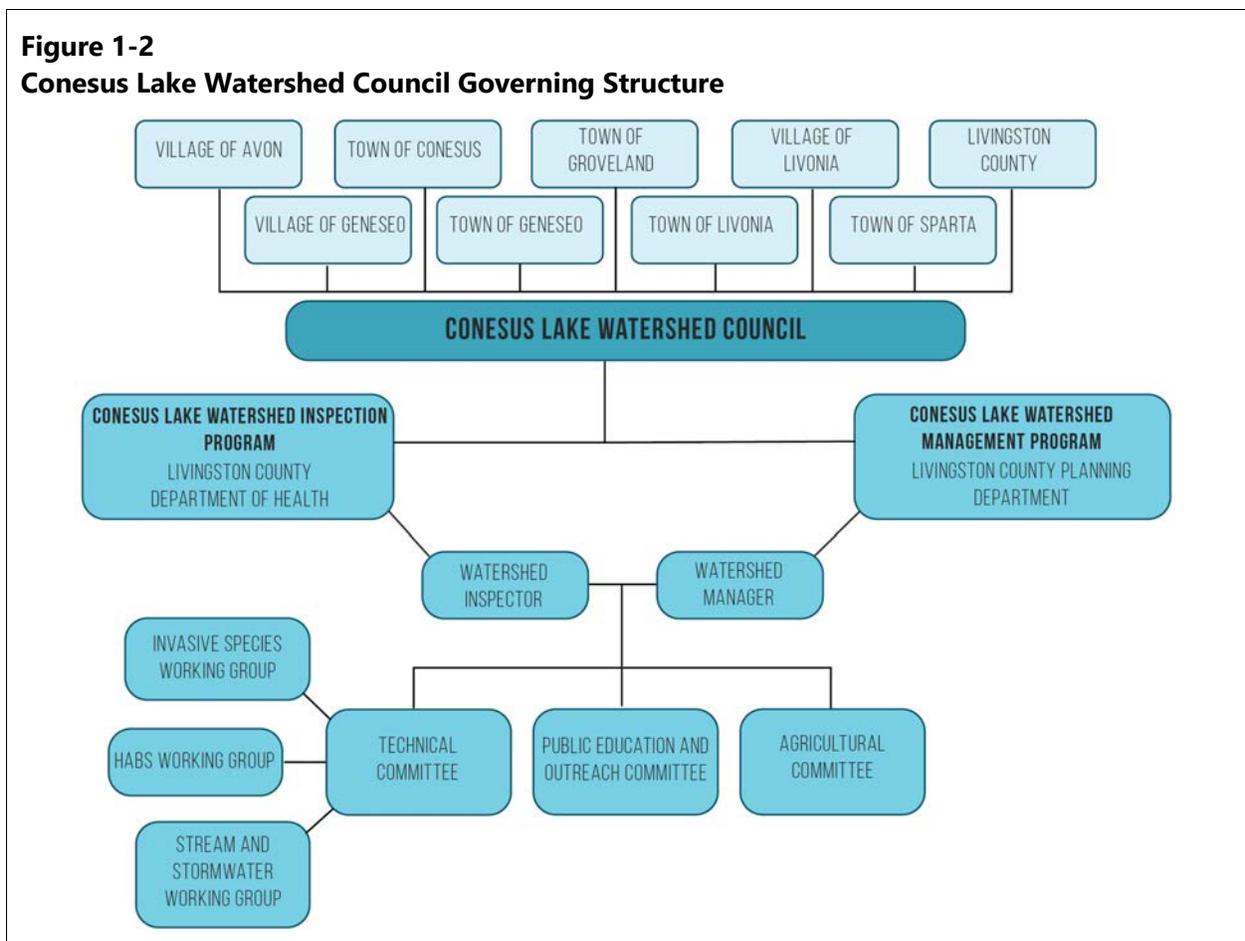
In 2003, the local watershed stakeholders developed a CLWMP that is the guiding document for ongoing planning, assessment, prioritization, and corrective actions (Ecologic and LCPD 2003). The *State of Conesus Lake: Watershed Characterization Report* (WCR; Ecologic and LCPD 2002) provided the technical foundation that underlies the 2003 CLWMP. The 2003 CLWMP has been used as the basis to direct millions of federal, state, and local funding resources toward efforts to restore and protect the Lake and its watershed, monitor the effectiveness of these efforts, and communicate the findings to the public.



1.3.3 Formation of the Conesus Lake Watershed Council (2003)

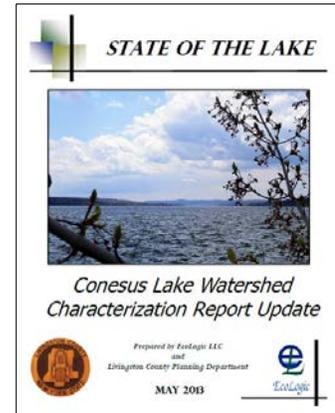
The CLWC is an inter-municipal organization established in 2003 to oversee the implementation of the CLWMP. The creation of the CLWC was a recommendation of the 2003 CLWMP. The CLWC is comprised of the Towns and Village located within the watershed boundaries and water purveyors who use the Lake as a public water supply. The governing structure for the CLWC is shown in Figure 1-2. Using this governing structure, the CLWC oversees the Conesus Lake Watershed Management Program and the Conesus Lake Watershed Inspection Program. The council also manages three standing committees: Agricultural, Public Education and Outreach (PE&O), and a Technical Committee (TAC). Currently, the PE&O functions primarily by participating with the Watershed Education Center (WEC) Committee and through WEC educational programming and outreach. Working groups are formed as needed and report to the Technical Committee—current working groups are focused on invasive species prevention, HABs, and stream and stormwater management. The CLWC issues annual report cards and tracks progress through work plans on the implementation of recommended actions in the CLWMP.

Figure 1-2
Conesus Lake Watershed Council Governing Structure



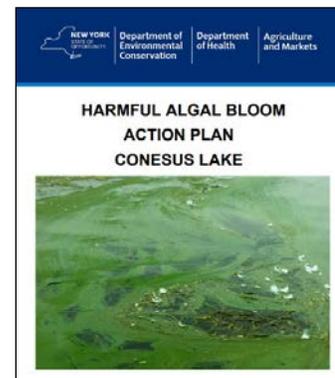
1.3.4 Updated Watershed Characterization Report (2013, Updated 2002)

The 2002 *State of Conesus Lake: Watershed Characterization Report*, drafted by the firm Ecologic and LCPD, was updated in 2013. The 2013 WCR provided a decadal update to the assessment of the state of the Lake (Ecologic and LCPD 2013). The 2013 WCR evaluated changes in population, land use, and water quality over the previous decade and gauged the impact of actions taken to implement the management action recommendations in the 2003 CLWMP (Ecologic and LCPD 2003). The 2013 WCR assessed the effectiveness of projects and activities that had been implemented since the adoption of the CLWMP in 2003 to mitigate the movement of pollutants, such as nutrients and sediment, from the landscape to the Lake (Ecologic and LCPD 2013).



1.3.5 NYS HABs Action Plan (2018)

In 2018, Governor Cuomo's Water Quality Rapid Response Team focused strategic planning efforts on 12 priority lakes across New York that have experienced or are vulnerable to HABs, including the Lake. The NYS Rapid Response Team, national stakeholders, and local steering committees worked together collaboratively to develop science-driven action plans to address HABs in the priority lakes, including Conesus Lake. The main focus of the *HABs Action Plan for Conesus Lake* (NYSDEC, NYSDOH, and NYSAGM 2018) was on the reduction of sediment loading into the Lake through the implementation of water quality improvement best management practices (BMPs). A number of recommendations for watershed BMPs to reduce stormwater runoff and transport of nutrients and soils from the landscape to the waterways were included. The HABs action plan also recommended in-lake measures to mitigate internal cycling of legacy phosphorus that had entered the Lake over previous decades. Recommended in-lake measures included hypolimnetic (deep water) aeration and oxygenation, nutrient inactivants (application of chemicals to prevent mobilization of phosphorus from the lake bottom sediments to the overlying water), and hydrodynamic modeling to evaluate the potential effectiveness of water circulation units. The need for studies, assessments, and monitoring were also identified for the projects.



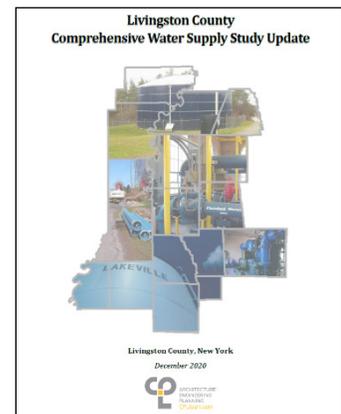
1.3.6 Phosphorus Total Maximum Daily Load (2019)

Section 303(d) of the Clean Water Act (CWA) requires states to identify waters within their boundaries that do not meet state ambient water quality standards or guidance values intended to protect the waterbody's designated best use. Development of a Total Maximum Daily Load (TMDL) allocation is required for any pollutant that is causing or contributing to the exceedance of an applicable water quality standard or guidance value. A TMDL defines the maximum amount of the pollutant that a waterbody can receive while continuing to meet water quality standards and guidance values. The maximum load is then allocated among point and nonpoint sources of the pollutant. The Lake was among several Finger Lakes required to develop a TMDL allocation for phosphorus. The *Conesus Lake Phosphorus TMDL* was completed and approved in 2019 (USEPA and NYSDEC 2019).



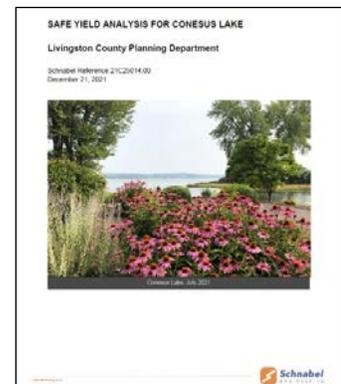
1.3.7 Comprehensive Water Supply Study Update (2020)

Livingston County developed a comprehensive water supply study in 1991 that led to several significant water improvement projects throughout the county, including treatment and distribution systems. In December 2020, the *Livingston County Comprehensive Water Supply Study Update* was completed (LCPD and CPL 2020). This document reviewed the successes of the 1991 study, analyzed the current state of water and sewer systems within the county, and provided recommendations and implementation strategies to meet predicted future water and sewer needs.



1.3.8 Safe Yield Analysis (2021)

A *Safe Yield Analysis for Conesus Lake* was completed in 2021 by Schnabel Engineering to support future water supply management decisions to ensure adequate water supplies to meet the needs of the community. The safe yield for a water supply is the volume of water that can be continuously withdrawn from the Lake during an extreme drought while still meeting regulatory and operational constraints. The engineering team developed a hydrologic model to project the volume of water available for public water supply from the Lake under future extreme drought scenarios. They concluded that maintaining the winter target water elevation of 816.5 feet for the Lake would not



be achievable during an extreme drought if both village water purveyors continually withdrew water at their maximum permitted rate.

1.3.9 *Other Local Initiatives*

Livingston County recently issued a [20-Year Report](#)¹ to summarize the major accomplishments and progress in Lake and watershed management over the previous two decades (LCPD 2024a). Some of the major accomplishments include the following:

- **Watershed Education Center**

In 2018, the Town of Livonia completed a new Watershed Education Center (WEC) in Vitale Park at the Lake, which is a facility dedicated to Lake and watershed management education and unique to this region. The building includes a meeting/presentation room, office space for Town Park Staff and the Conesus Lake Association (CLA), and a Livingston County Sheriff's substation. The Towns of Geneseo, Conesus, and Groveland also contributed significantly to the construction of the WEC. Each year, the WEC hosts multiple opportunities for sharing information on the state of the Lake and its watershed. WEC programming is organized and supported by the WEC Committee, a partnership including the Town of Livonia, CLA, Cornell Cooperative Extension (CCE) of Livingston County, Chip Holt Nature Center, LCPD, Livingston County Department of Health (LCDOH), and the CLWC. The WEC has become a community gathering point and resource for public education and outreach.

- **Continuing Partnership with State University of New York**

State University of New York (SUNY) partnerships have been instrumental in the long-term data collection and research studies that have been performed on the Lake and in the watershed. SUNY colleges at Geneseo and Brockport conduct annual monitoring programs of the Lake and its watershed to help inform the CLWC adaptive management approach. Their annual reports are archived on the Livingston County website under [Reports, Publications & Educational Resources](#).² In addition, the College of Environmental Sciences and Forestry (SUNY ESF) is a resource to the Watercraft Steward Program.

- **Continuing Partnership with the Conesus Lake Association**

The [CLA](#)³ has been a key partner in Lake monitoring; it recruits and assists in training volunteers for the Citizen Statewide Lake Assessment Program (CSLAP) and CLA HABs Monitoring Program, in addition to installing and maintaining meteorological instrumentation. The CLA has helped fund and support a Watercraft Steward Program at the State Boat Launch and the successful installation of a boat decontamination station to

¹ This document can be found at this link: https://www.livingstoncountyny.gov/DocumentCenter/View/20565/20-Year-Report-Final-for-WEB_2024-Sept

² Documents are accessible from <https://www.livingstoncountyny.gov/780/Reports-Publications-Educational-Resourc>

³ The CLA website is located here: <https://conesuslake.org/>

support the Watercraft Stewards in their efforts to prevent the introduction of invasive species.

- **Stormwater Management, Streambank Remediation, and Agricultural BMP Projects**

Projects to capture stormwater and stabilize streambanks continue to be implemented across the watershed. Key planning documents include a *Streambank Remediation Study* (Stantec 2007) and the *Wilkins Creek Subwatershed Stormwater Study* (B&L 2018a). In 2019, Barton & Loguidice collaborated with the CLWC and the LCPD to develop a [Stormwater Toolkit](#)² tailored to the Conesus Lake watershed (B&L 2019). Section 2.6 describes many of the projects implemented throughout the watershed, including streambank restoration, road ditch remediation, green stormwater infrastructure projects, and many stormwater BMPs on agricultural lands. Multiple Towns and Livingston County Soil and Water Conservation District (LCSWCD) were key partners in many of these successful projects. These documents are available on the Livingston County website under [Reports, Publications & Educational Resources](#).⁴

- **Guide to Lake Friendly Landscaping**

The CLWC and Planning Department collaborated with CC Environment & Planning, with funding from the Finger Lakes – Lake Ontario Watershed Protection Alliance (FLOWPA), to develop *Lake Friendly Landscaping*,⁴ a guide to residential living along the Lake or in the watershed. The guide includes recommendations on strategies for healthy lawns, naturalized plantings, living shorelines, and green infrastructure (i.e., rain barrels, rain gardens).

- **Conesus Lake Harmful Algal Blooms Early Detection and Rapid Response Plan (HABs Response Plan)**

The CLWC established the HABs Working Group, a subcommittee under the CLWC Technical Committee, in 2011. In addition to working on the development of the *HABs Response Plan*, the HABs Working Group continues to support implementation of the Response Plan and public education on HABs. The *HABs Response Plan*, published in 2011, and amended in 2013 and 2015, is currently being updated (CLWC 2011a, 2013a, 2015).

- **Invasive Species Prevention and Response Plan**

The CLWC established the Invasive Species Subcommittee, a subcommittee under the CLWC Technical Committee, in 2012. This subcommittee prepares comprehensive and cooperative invasive species programming, such as the *Conesus Lake Invasive Species Management Plan* and the *Conesus Lake Boat Launch Invasive Species Prevention and Feasibility Study*, which were completed in 2013. The *CLWC Invasive Species Prevention and Response Plan* (CLWC 2013b), first published in 2013, is currently being updated.

⁴ Documents are accessible from <https://www.livingstoncountyny.gov/780/Reports-Publications-Educational-Resourc>

1.4 Planning Process

The CLWMP Update process was a collaborative effort among the CLWC, Livingston County, watershed partners, and the community to identify actions that can be taken at the local level to protect the Lake for future generations.

1.4.1 Approach to Watershed Planning

The CLWMP Update was guided by the following four-step inquiry process:

1. **Where are we now?** What is the current environmental, social, and political environment within the watershed? What are the assets and challenges within the watershed?
2. **Where are we going?** What are the current trends and emerging issues, including climate, water quality, population, land cover, BMPs, and invasive species? How are these things predicted to impact the watershed?
3. **Where do we want to be?** What is the community's vision for the future of the watershed? What are the goals that will help the community achieve the vision?
4. **How do we get there?** What are specific actions, programs, projects, partnerships, and practices that will enable to community to achieve the vision and goals? What resources are needed and how can those resources be acquired?

1.4.2 Public Outreach and Participation

A Public Participation Plan (PPP) was developed and was approved by NYS DOS. The PPP provided a structure to ensure there was consistent and transparent communication between the project team, the CLWC, representative stakeholders, and the public.

The project team was committed to keeping the community engaged and informed throughout the CLWMP Update development. Engagement to solicit input included an actively updated website, a postcard mailing, yard signs, attendance at local community events, multiple public meetings, notices in local media, two online public opinion surveys, and advertisements on social media and in traditional media outlets.

1.5 Community Vision and Goals

An early step in developing the CLWMP Update was to solicit community input on their vision and goals for the future of the Lake and its watershed. The project team solicited feedback through online and paper surveys, interactive discussions at public meetings and public venues, and a postcard seeking their response to the prompt: "Imagine it's 2050 and the CLWMP Update has been successfully implemented. Tell us what you love about this special place." Community members

shared their desires, concerns, and thoughts on opportunities within the watershed. Feedback from the stakeholder community provided a foundation for the following vision statement:

Our vision is to advocate for and achieve a resilient Conesus Lake watershed able to withstand current and future challenges to the health and integrity of the natural ecosystem from a changing climate as well as challenges to the continued provision of services that support human well-being. Ecosystem services provided by Conesus Lake and its watershed include clean water, agricultural and forest products, flood protection, recreational opportunities, climate moderation, habitat for a diverse assemblage of native species, and the unique sense of place embedded in the watershed's rural history and natural landscape.

The project team, in collaboration with local stakeholders, then developed a series of goals crafted to help the community achieve their vision for the future. Those eight goals are as follows:

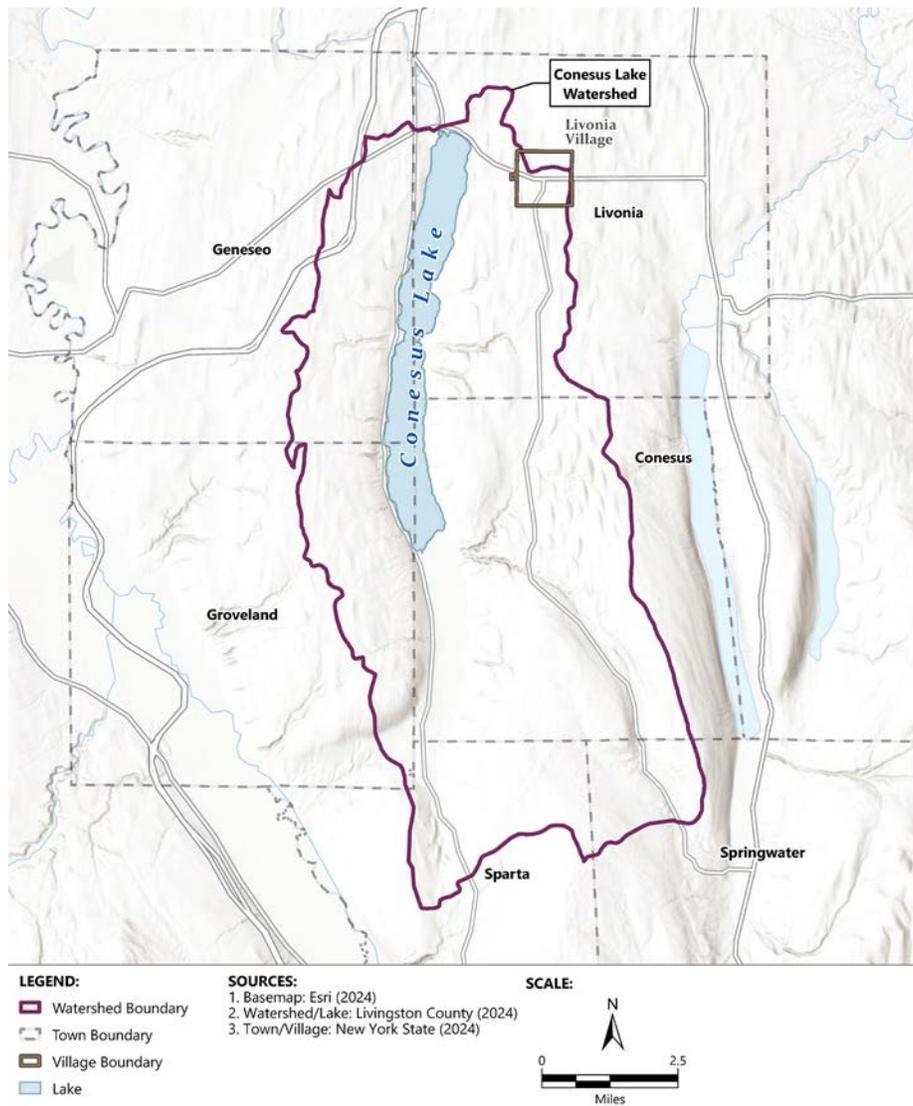
- **Goal 1.** Manage the Conesus Lake watershed in ways that control inputs of sediment and minimize entry of phosphorus, sodium and chloride, and other potential pollutants into the Lake.
- **Goal 2.** Maintain Conesus Lake as a dependable source of high-quality water that meets water supply needs and meets or exceeds public health standards for potable water and recreational uses.
- **Goal 3.** Continue efforts to detect, prevent, and mitigate cyanobacterial blooms (harmful algal blooms or HABs) and their associated beneficial use impairments (e.g., beach closures, restrictions on drinking water).
- **Goal 4.** Improve and enhance recreational access to and use of Conesus Lake while managing for and maintaining a balance between multiple uses, without overcrowding the Lake.
- **Goal 5.** Continue and expand efforts focused on prevention, early detection, and rapid response to terrestrial and aquatic invasive species to protect the health of the Lake. Support management efforts to conserve and/or restore habitats for a diverse and resilient assemblage of native species.
- **Goal 6.** Maintain and strengthen the effective intermunicipal partnerships fostered through the Conesus Lake Watershed Council and continue to take actions that will increase resilience to changes in climate, population, and land use.
- **Goal 7.** Continue to work with the federal, state, regional, county, and local resources to make management decisions that reflect the best available information regarding Conesus Lake and watershed.
- **Goal 8.** Employ multiple approaches to outreach and education that enhance community awareness of how human activities affect water resources, opportunities for nature-based solutions, and the effectiveness of local actions.

This document is intended to serve as a roadmap for protecting the Lake and its watershed to achieve these goals. The next section (Section 2) provides an updated watershed inventory and assessment of existing conditions and trends. Section 3 identifies priority management strategies and recommendations to protect and restore the resources of the Lake and its watershed. Section 4 provides additional details, including strategies, partners, and timelines to implement recommendations. In Section 5, methods for evaluating progress are outlined, with metrics to evaluate their effectiveness. The recommendations are intended to guide watershed communities as they continue their efforts to protect and restore the quality of the Lake and watershed and enhance the quality of life for their residents.

2 Watershed Characterization

A watershed is defined as the land area that drains into a common body of water, such as a wetland, river, lake, or ocean. The Conesus Lake watershed, as shown in Figure 2-1, encompasses the land area that drains into the Lake. The Conesus Lake watershed boundary is delineated by high points of elevation that divide water flowing toward the Lake versus water that flows toward another waterbody outside of the watershed.

Figure 2-1
Map of the Conesus Lake Watershed



Both natural features and human factors influence the condition of a watershed. Key natural features include geography, topography, hydrology, climate, soils, and biota. These natural features influence and are influenced by human activities. The mosaic of land use activities and land cover directly and indirectly influence the volume and quality of water as it moves from the landscape to the receiving waters. Characterization of environmental conditions and human activities throughout the watershed provides a basis for recommending long-term strategies for water quality protection.

The initial WCR (Ecologic and LCPD 2002) and the 2013 update (Ecologic and LCPD 2013) contain detailed descriptions of conditions and trends in the Lake and watershed. Both natural and cultural conditions are included to describe the Lake and its watershed and build an understanding of how human activities affect the landscape and waterways. This section of the report summarizes that information, incorporates recent data, assesses trends, and identifies emerging issues.

This update to the WCR reflects the input of many local partners in addition to the members of the CLWC. For decades, faculty and students from SUNY Geneseo and SUNY Brockport have undertaken extensive annual monitoring programs. Their efforts focus on both the Lake ecosystem and the condition of watershed streams. Volunteers from CLA and partners monitor meteorological conditions using emerging technologies, survey for and respond to invasive species, and host educational events. Data and information from these and other sources are reflected in this section of the CLWMP Update; references and links to key documents are provided. Note the [Livingston County Planning Department website](#)⁵ includes an archive of the Lake and watershed information dating back to 1968.

2.1 Physical and Natural Features

The Conesus Lake watershed encompasses 70 square miles within Livingston County, as shown in Figure 2-1. This section describes the natural and physical features present in the watershed, including the subwatersheds, hydrology, geologic setting, and climate.

2.1.1 Subwatersheds

Resource managers delineate watersheds at various spatial scales, with smaller subwatersheds nested within larger watersheds. The 70 square mile watershed of the Lake is a subwatershed of the Genesee River (EcoLogic and LCPD 2002, 2003). The Genesee River watershed encompasses 2,500 square miles and is a subwatershed of the Lake Ontario Drainage Basin, which covers 24,720 square miles (FLLWPA 2000).

The subwatershed is a commonly used scale for watershed management planning. This is a valuable spatial scale because it balances the need for localized detail with broader watershed-wide goals and

⁵ Documents are accessible from <https://www.livingstoncountyny.gov/780/Reports-Publications-Educational-Resourc>

objectives. A stream's concentration and loading of chemicals, sediment, and bacteria reflect the land use, geology, and hydrology of its drainage area. Managing at the subwatershed scale enables more precise identification of pollution sources and land use impacts, leading to mitigation strategies tailored to local conditions.

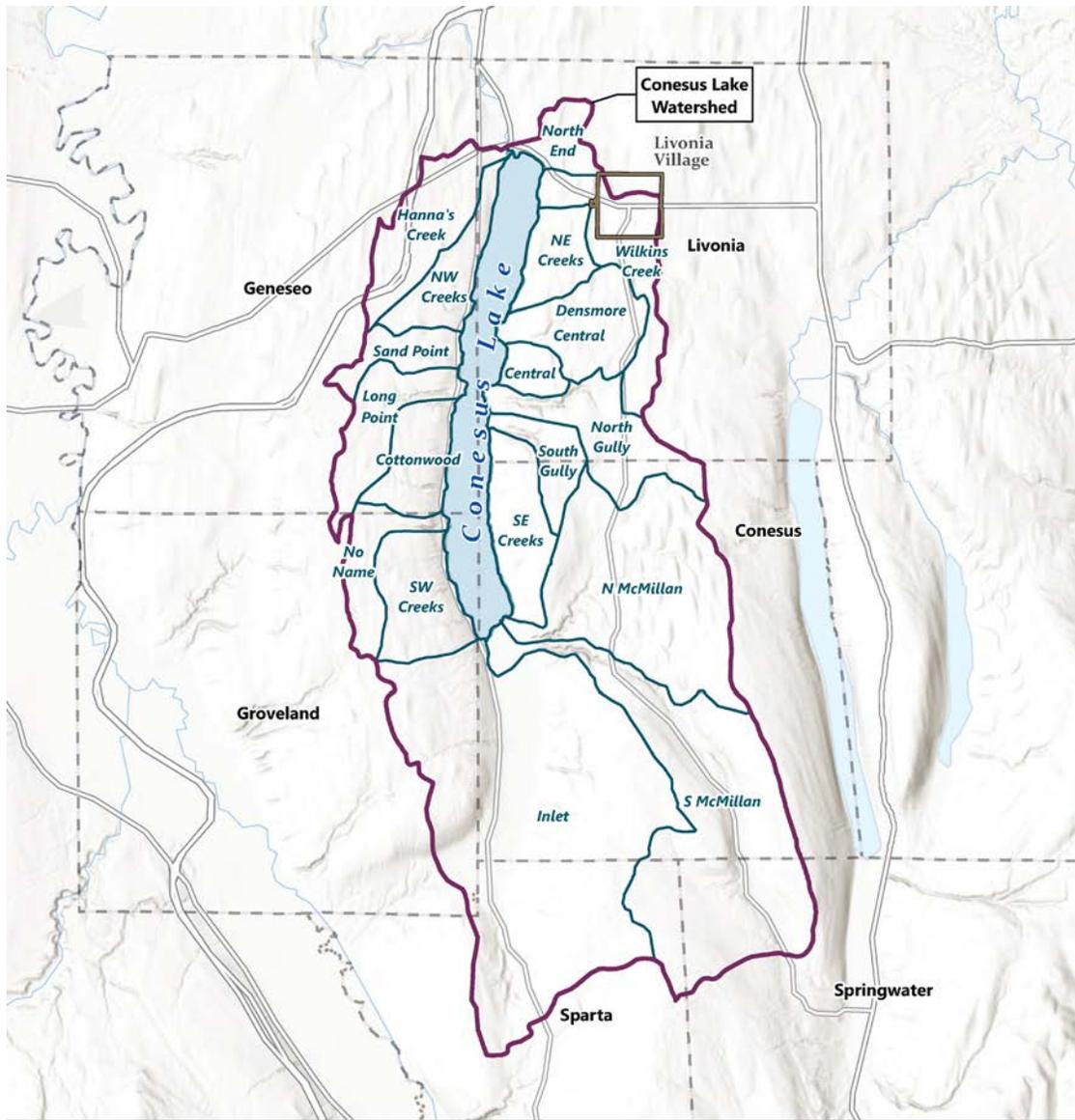
The U.S. Geological Survey (USGS) classifies watersheds across the United States using a hydrologic unit code (HUC) that defines how water flows across the landscape to the major drainage basins. The hydrologic units are classified into successively smaller drainage areas (subwatersheds) and identified by a unique HUC code consisting of two to eight digits. The USGS has defined 21 regions as the first two digits of the code. The Conesus Lake watershed is located in Region 04, signifying drainage to the Great Lakes. Additional digits indicate that the streams entering the Lake flow into the Genesee River, which ultimately reaches Lake Ontario. For example, the HUC 12 for the Conesus Inlet subwatershed is 041300030101. The HUC codes provide consistency for multiple resource agencies tasked with measuring and reporting data on streamflow, land cover, land use, and water quality conditions.

For the Lake, previous watershed assessments delineated 18 subwatersheds of varying sizes, as shown in Figure 2-2 (EcoLogic and LCPD 2002, 2003, 2013). Eleven of the 18 delineated subwatersheds are the drainage areas of the larger tributaries to the Lake: Conesus Inlet, South McMillan Creek, North McMillan Creek, No Name Creek, Long Point Creek, Sand Point Gully, Hanna's Creek, Wilkins Creek, North Gully, South Gully, Densmore Creek, and Southwest Creeks. The other seven subwatersheds (Central, Cottonwood, NE Creeks, North End, NW Creeks, SE Creeks, and SW Creeks) do not drain major streams but instead delineate small or intermittent streams or areas of direct drainage into the Lake.

Analyzing environmental conditions (e.g., soils and slope) and land use or land cover at the subwatershed scale enables the community to evaluate the relative contribution of sediment and nutrients and identify priority areas for management actions. Resources can then be targeted to areas where they will provide the greatest overall benefit to Conesus Lake.

A stream's concentration and loading of chemicals, sediment, and bacteria reflect the land use, geology, and hydrology of its subwatershed area. The subwatersheds of the Lake vary in drainage area or land area, as shown in Figure 2-3, which affects their relative significance to the total annual loading to the Lake. Conesus Inlet is the largest subwatershed by land area in acreage (26% of the watershed area), followed by South McMillan (15% of the watershed area) and North McMillan (12% of the watershed area). The subwatersheds become generally smaller and narrower towards the outlet at the northern end of the Lake.

**Figure 2-2
Subwatersheds Within the Conesus Lake Watershed**



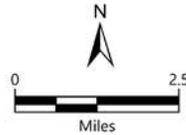
LEGEND:

-  Watershed Boundary
-  Subwatershed Boundary
-  Town Boundary
-  Village Boundary
-  Lake

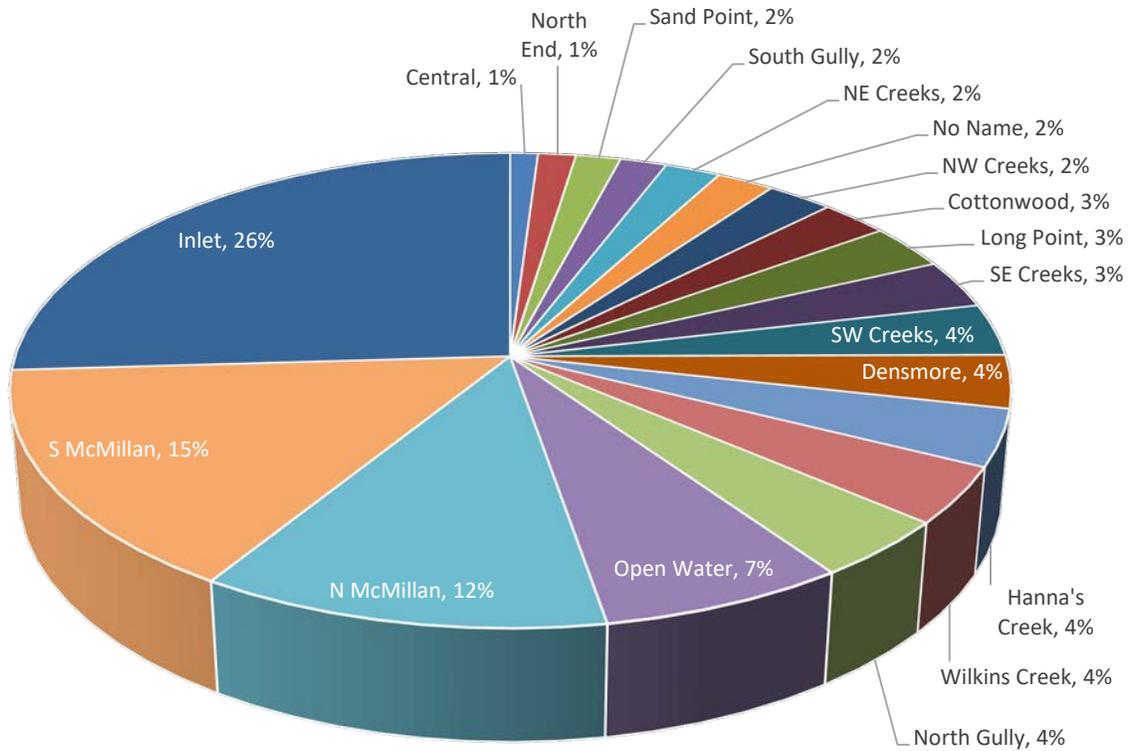
SOURCES:

1. Basemap: Esri (2024)
2. Watershed/Lake: Livingston County (2024)
3. Town/Village: New York State (2024)

SCALE:



**Figure 2-3
Percent of Land Area Within Each Subwatershed of the Conesus Lake Watershed**



Source: Livingston County GIS data (2024)

2.1.2 Conesus Lake Hydrology

The Lake is the dominant surface water feature and is the only lake within the watershed. Physical features such as the size and shape of the Lake basin, residence time of water in the Lake, and light penetration can influence the water quality and biological communities in the Lake. These physical features of the Lake are described in Table 2-1. The Lake is long and narrow, extending 8 miles north to south and 1 mile east to west at the widest point. The Lake narrows in the center, where stream deltas formed at the mouths of Long Point and McPherson's Point, creating a northern and southern basin of the Lake (USEPA and NYSDEC 2019). The Lake is one of the shallower Finger Lakes, with a maximum depth of approximately 66 feet (NYSDEC 2024a). There are extensive areas of shallow

water where light penetrates to the sediment surface; less than 6% of the Lake’s volume is deeper than 45 feet (EcoLogic and LCPD 2002).

**Table 2-1
Physical Features of Conesus Lake and the Conesus Lake Watershed**

Feature	Value
Lake Elevation	818 feet ¹
Lake Length	8 miles ¹
Maximum Lake Width	1.0 mile ¹
Maximum Lake Depth	66 feet ¹
Lake Thermocline	Approximately 30 feet ¹
Lake Volume	38,630 million gallons ²
Lake Surface Area	5.3 square miles ¹
Watershed Area	70 square miles ³
Shoreline Length	18.4 miles ⁴
Average Hydrologic Retention Time	3.3 years ⁵

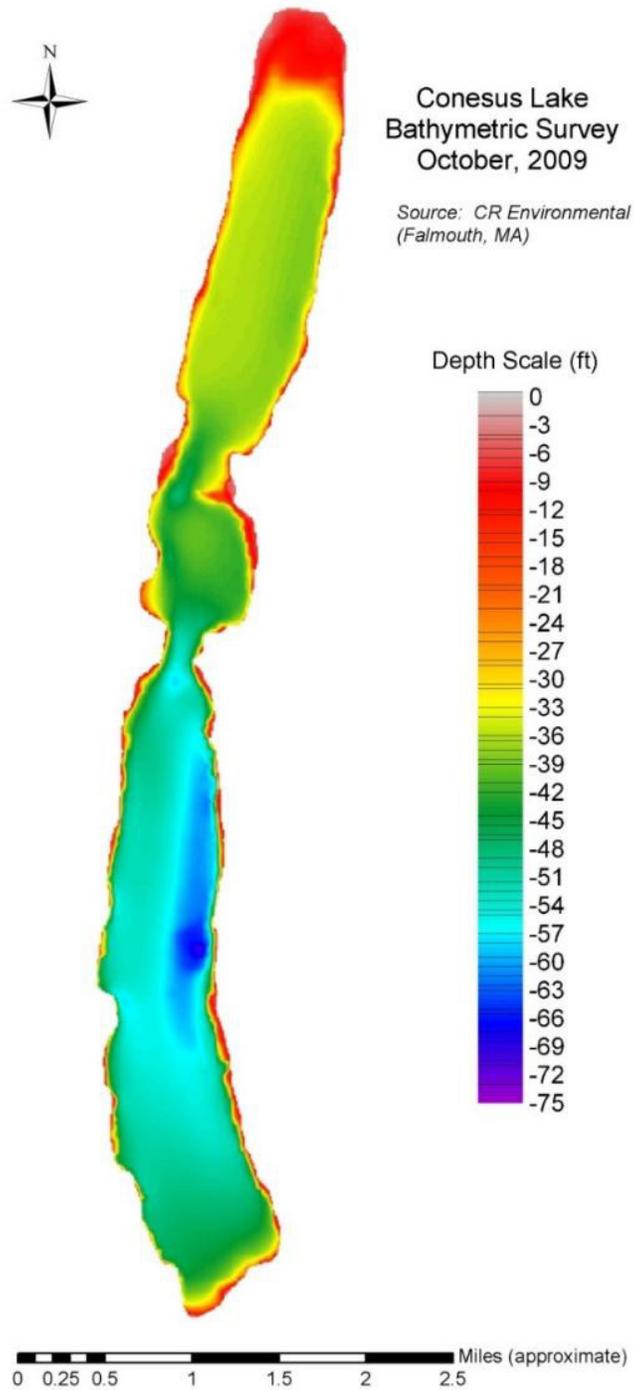
Notes:

1. NYSDEC 2024a
2. Schnabel Engineering 2021; calculated using lake elevation of 817.71 feet
3. NYSFOLA and NYSDEC 2019
4. EcoLogic and LCPD 2003
5. NYSFOLA and NYSDEC 2022

In 2009, CR Environmental of Falmouth, Massachusetts, completed a bathymetric survey of the Lake; the result is a map of the Lake bottom depths, called a bathymetric map. The bathymetric map of the Lake is shown in Figure 2-4; water depths are shown as the depth, in feet, below the water surface. The northern basin is relatively shallow compared to the southern basin, and there is a large extent of littoral habitat (i.e., shallow areas less than 20 feet deep) where light can penetrate to the bottom sediments and support plant growth.

The volume of the Lake is estimated at 38,630 million gallons (Schnabel Engineering 2021). The water residence time, or the average time that water remains in the Lake, is estimated at 3.3 years (NYSFOLA and NYSDEC 2022). This is one of the shortest residence times of the Finger Lakes, which is a consequence of the large watershed catchment area relative to Lake volume. Water residence time affects how quickly a lake will respond to changes in external load. Lakes with shorter water residence times will exhibit water quality changes more rapidly in response to changes in point and nonpoint source inputs.

Figure 2-4
Conesus Lake Bathymetric Survey (October 2009)



Source: Ecologic and LCPD 2013

Two primary factors determine water motion and currents in Conesus Lake: tributary inflows and wind. Overall water movement is from the south, where the major tributaries enter the Lake, toward the Lake's outlet to Conesus Creek at the northern end of the Lake. Water in Conesus Lake moves primarily in response to winds. The north-south orientation of the Lake and its elongated basin, combined with the steep-sided valley, tend to channel prevailing winds to the north along the Lake surface. These winds cause circulation and mixing of the water both on the surface and deeper in the water column.

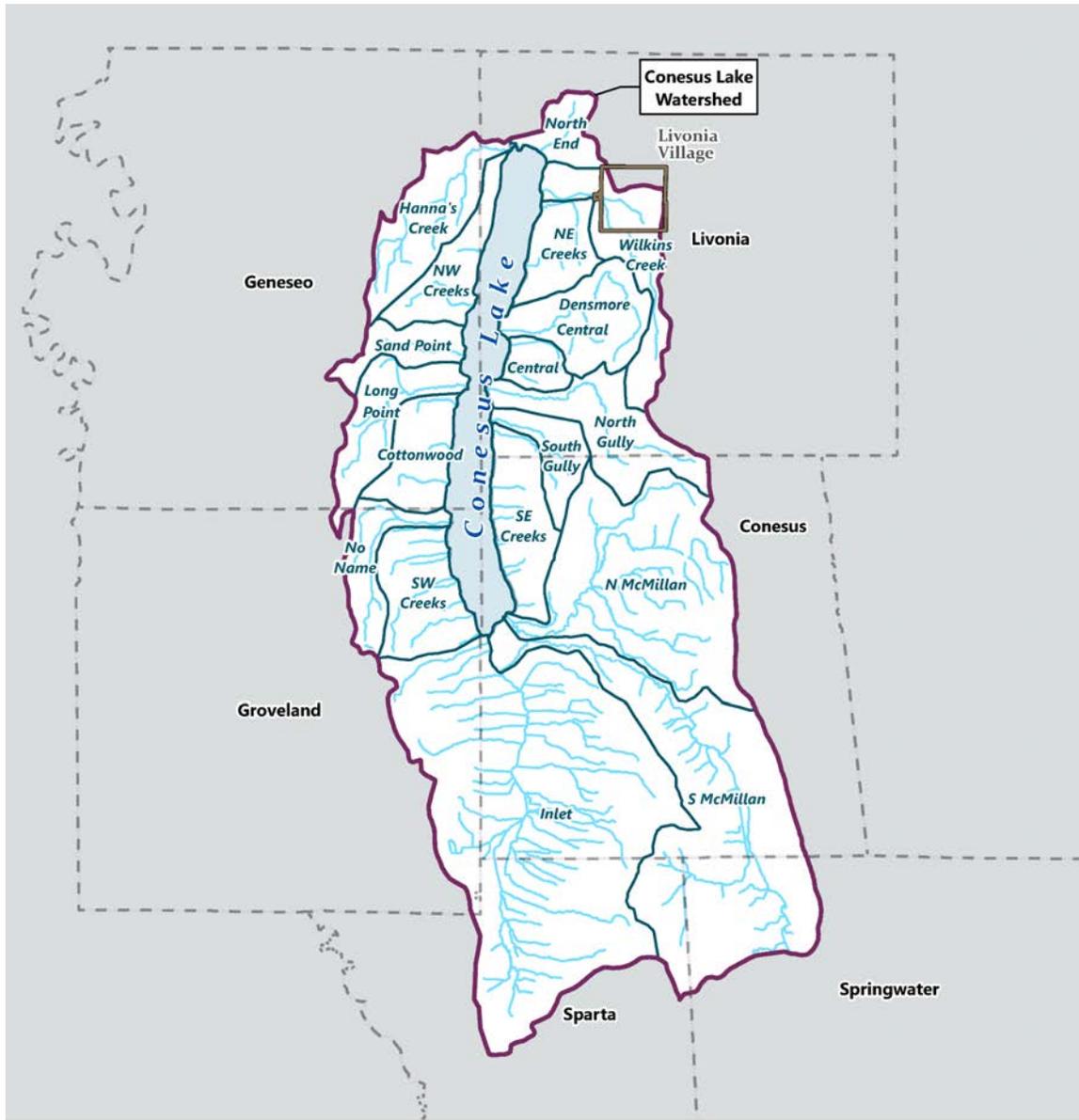
These basin features, coupled with the nutrient and sediment inputs from the watershed, affect habitat available for submerged, floating, and emergent macrophytes, algae and cyanobacteria, and the fish community.

2.1.3 Surface Waters

A surface drainage network directs runoff from rainfall and snowmelt into the Lake. This surface drainage network ranges in size from the large tributary streams draining the southern portion of the watershed to ephemeral rivulets carrying runoff only from intense rainfall events. The Conesus Lake watershed has approximately 157 stream miles flowing across the landscape and into the Lake basin. The streams in each subwatershed are shown in Figure 2-5.

As is characteristic of the New York Finger Lakes, most streamflow into the Lake enters from the south, water flows north to the outlet and continues to join the Genesee River and ultimately reach Lake Ontario. The miles of streams within each subwatershed are provided in Table 2-2. The three largest tributaries to Conesus Lake (North McMillan Creek, South McMillan Creek, and the Conesus Inlet) flow into the Lake along its southern shoreline. These three streams drain the largest land area (Figure 2-5), contain the most stream miles of the 18 subwatersheds (Table 2-2), and, according to the most recent data available, contribute as much as 70% of the total annual inflow to the Lake (NYSDEC, NYSDOH, and NYSAGM 2018). The narrow western and eastern portions of the Conesus Lake watershed are drained by smaller streams; some of these tributaries are classified as intermittent. Several of the subwatersheds (i.e., Central, North End, and Sand Point) are drained by very short stream segments.

**Figure 2-5
Subwatersheds and Major Streams Within the Conesus Lake Watershed**



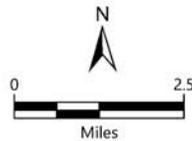
LEGEND:

- Watershed Boundary
- Subwatershed Boundary (12-Digit HUC)
- Town Boundary
- Village Boundary
- Lake
- Stream

SOURCES:

1. Basemap: Esri (2024)
2. Watershed/Lake: Livingston County (2024)
3. Stream: New York State (2024)
4. Town/Village: New York State (2024)

SCALE:



**Table 2-2
Stream Miles Within Each Conesus Lake Subwatershed**

Subwatershed	Stream Miles
Central	1.7
Cottonwood	2.3
Densmore	5.4
Hanna’s Creek	6.8
Inlet	53.3
Long Point	5.2
No Name	5.2
NE Creeks	2.4
North End	1.2
North Gully	5.2
North McMillan	24.0
NW Creeks	2.0
Sand Point	1.4
SE Creeks	4.1
South Gully	2.4
South McMillan	21.7
SW Creeks	7.3
Wilkins Creek	5.1
Watershed Total	157

Source: NYS GIS Clearinghouse 2024 (<https://data.gis.ny.gov/>)

2.1.4 Wetlands

Wetlands are among the most productive and diverse ecosystems on Earth. Wetlands provide many environmental and human benefits. Wetlands play a critical role in water purification by filtering pollutants and excess nutrients. They act as natural sponges, absorbing floodwaters and releasing them slowly, which helps to mitigate flooding and stabilize shorelines. Wetlands also store vast amounts of carbon and provide essential habitats for a diverse range of species, supporting rich biodiversity, including migratory birds, fish, amphibians, and many threatened or endangered species. The loss or degradation of wetlands can have profound impacts on water movement across the landscape and the water quality of downstream waterbodies.

The U.S. Fish and Wildlife Service (USFWS) provides information on the extent and status of the nation’s wetland and deepwater habitats, as well as changes to these habitats over time. This assessment of habitats is referred to as the National Wetlands Inventory (NWI). Acreages of wetland and deepwater habitats are provided in Table 2-3, along with a description of those habitat types.

**Table 2-3
NWI Mapped Wetland and Deepwater Habitats Within the Conesus Lake Watershed**

Habitat Type	Description	Acres
Freshwater Emergent	Herbaceous marsh, fen, swale, and wet meadow	496
Freshwater Forested/Shrub	Forested swamp or wetland, shrub bog or wetland	811
Freshwater Pond	Pond, unconsolidated bottom and aquatic bed	98
Lake	Lacustrine wetland and deepwater of a lake	3,203
Riverine	Riverine wetland and deepwater of a stream or channel	471
Total (excluding Lake)		1,778

Note:

Lake, pond, and riverine acreage includes wetland and deepwater habitats.

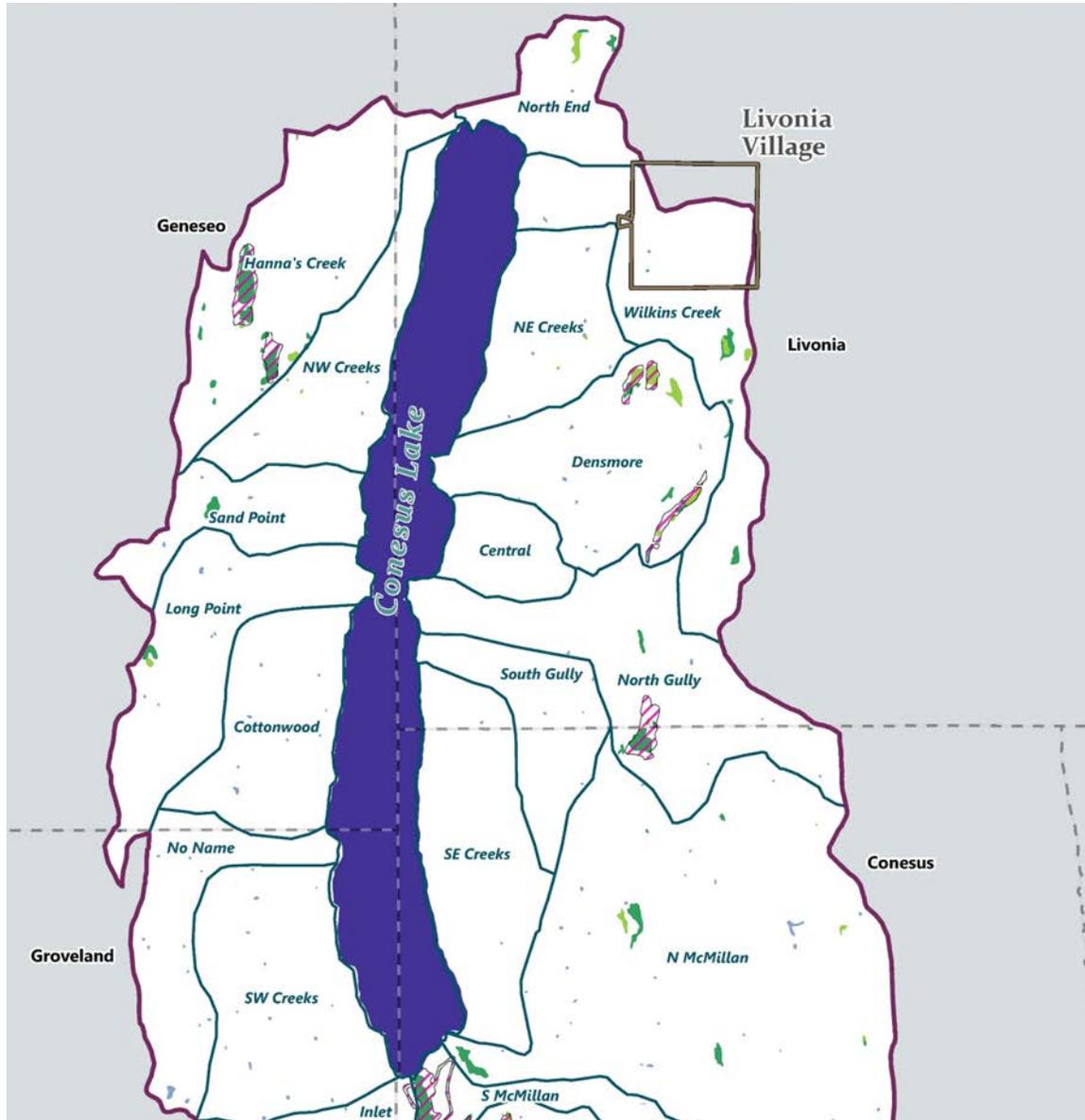
Source: USFWS National Wetlands Inventory 2024

The New York State Department of Environmental Conservation (NYSDEC) regulates wetlands throughout the state under the Freshwater Wetlands Act (Environmental Conservation Law Article 24), which was recently amended. Starting on January 1, 2025, NYSDEC began regulating wetlands of “unusual importance,” regardless of their size, if they meet 1 of 11 newly established criteria listed in the updated law. Also effective on January 1, 2025, NYSDEC regulatory jurisdiction is no longer limited to wetlands depicted on NYS Freshwater Wetlands Maps. Those maps are now called Previously Mapped Freshwater Wetlands and are considered to be informational. Any wetland previously mapped by NYSDEC (before January 1, 2025) is automatically classified as a “wetland of unusual importance” and remains under state protection.

The NYSDEC now maintains newer, non-regulatory maps that show a broader range of areas that may now be subject to the NYSDEC wetland regulations, called Informational Freshwater Wetland Maps. Any wetlands that meet the applicable definition and criteria will be regulated by NYSDEC and subject to permitting, regardless of whether they appear on the informational maps. Property owners must now request a jurisdictional determination from the NYSDEC to find out if their land meets the criteria and contains a state-regulated wetland. Beginning January 1, 2028, the default size threshold of regulated wetlands will decrease from 12.4 to 7.4 acres.

Figures 2-6a and 2-6b show the location of USFWS NWI wetlands, as well as NYSDEC’s informational wetlands, within the Conesus Lake watershed. The Inlet and South McMillan subwatersheds contain the largest amount of the designated wetland area in the watershed. The Hanna’s Creek, Densmore, and North Gully subwatersheds also contain a few relatively large wetlands.

Figure 2-6a
Wetlands Within the Northern Part of Conesus Lake Watershed (NWI and NYSDEC
Informational Freshwater Wetlands as of 2024)



LEGEND:

- Watershed Boundary
- Subwatershed Boundary (12-Digit HUC)
- Town Boundary
- Village Boundary
- NWI Wetland**
- Freshwater Emergent Wetland
- Freshwater Forested/ Shrub Wetland
- Freshwater Pond
- Lake
- NYSDEC Informational Freshwater Wetlands

SOURCES:

1. Basemap: Esri (2024)
2. Watershed/Lake: Livingston County (2024)
3. NWI Wetland: United States Fish and Wildlife Service (2024)
4. DEC Wetland: New York Department of Environmental Conservation (2024)
5. Town/Village: New York State (2024)

SCALE:

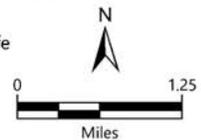
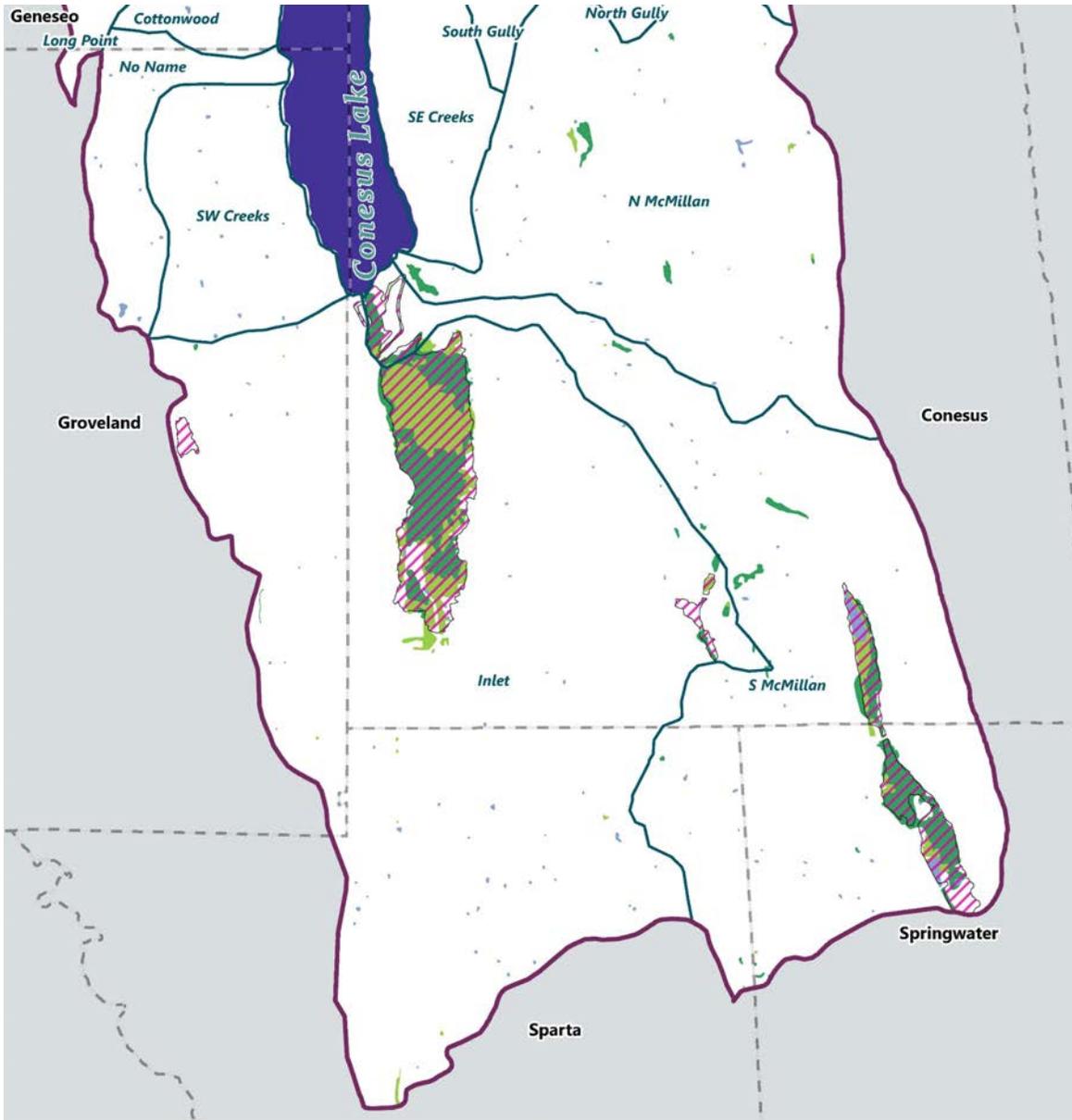


Figure 2-6b
Wetlands Within the Southern Part of Conesus Lake Watershed (NWI and NYSDEC
Informational Freshwater Wetlands as of 2024)



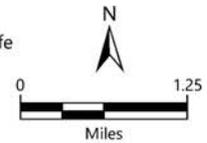
LEGEND:

- Watershed Boundary
- Subwatershed Boundary (12-Digit HUC)
- Town Boundary
- Village Boundary
- NWI Wetland**
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- NYSDEC Informational Freshwater Wetlands

SOURCES:

1. Basemap: Esri (2024)
2. Watershed/Lake: Livingston County (2024)
3. NWI Wetland: United States Fish and Wildlife Service (2024)
4. DEC Wetland: New York Department of Environmental Conservation (2024)
5. Town/Village: New York State (2024)

SCALE:



2.1.5 Groundwater

Groundwater is commonly defined as water that infiltrates the soil from the land surface and fills spaces in porous materials, such as gravel, sand, silt, or clay, and/or fractures in bedrock. An aquifer is typically described as a regionally or locally connected zone of porous deposits and/or bedrock fractures that easily allow the passage of water to springs or wells. Wells are the most common access to groundwater supplied within a watershed. Wells can be privately owned or run by municipalities.

The 2002 WCR (EcoLogic and LCPD 2002) detailed the groundwater resources in the watershed, and that information is summarized in this section. There are no municipal water suppliers in the Conesus Lake watershed utilizing groundwater wells (EcoLogic and LCPD 2002; NYSDEC2025a). The 2002 WCR noted several private commercial, recreational, and residential facilities using groundwater wells, including the Conesus Lake Campground, the Whispering Hills Golf Course, and the Cole Road Mobile Home Park in the Town of Conesus, and Parkey's Lounge in the Town of Sparta (Ecologic and LCPD 2002). All except the Cole Road Mobile Home Park are now hooked up to municipal water. An April 2025 data query of groundwater wells within the watershed identified approximately 105 domestic wells ranging in depth from about 40 feet to more than 400 feet (NYSDEC 2025a).

In the Conesus Lake watershed, water quality within aquifers varies by the aquifer source material, the amount of time the water has been in the aquifer, and depth of the aquifer (EcoLogic and LCPD 2002). Shallow or unconfined aquifers, where the groundwater reservoir has the water table as its upper boundary, are less isolated from surface activities and are more vulnerable to contamination by surface activities. Confined aquifers, which are capped by an impermeable layer, are deeper and typically more isolated from surface activities; they tend to have hard water and may contain natural gas and mineral salts. There are two unconfined high-yield aquifers, one unconfined mid-yield aquifer, and two confined aquifers with no overlying surficial aquifer located within the watershed (NYSDEC 2025b).

Historically, there have been several documented cases of groundwater quality problems in the watershed, including a petroleum leak in the Town of Sparta and coliform and *E. coli* contamination that required the establishment of a public water supply system in the Hamlets of Conesus and Scottsburg.

According to the New York State Museum Map of Surficial Geology⁶ (Cadwell et al. 1986), much of the watershed is geologically composed of bedrock and glacial till, which typically do not provide abundant groundwater and have low well-yield capacities. Smaller areas composed of fine-grained lacustrine deposits and surficial coarse deposits, which have a higher yield, are sparsely scattered through the watershed, mostly in the eastern portion. The watershed has some limited areas

⁶ Map is accessible from https://www.nysm.nysed.gov/sites/default/files/surf_fingerlakes.jpg

exhibiting sand and gravel aquifers beneath lacustrine deposits (Cadwell et al. 1986). These areas are centered along the southern lakeshore to the southeastern corner of the Town of Groveland, the Hamlet of Lakeville in the Town of Livonia, and the southeastern part of the Town of Conesus. Aquifers in these areas provide higher yield compared with the rest of the watershed.

2.1.6 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.

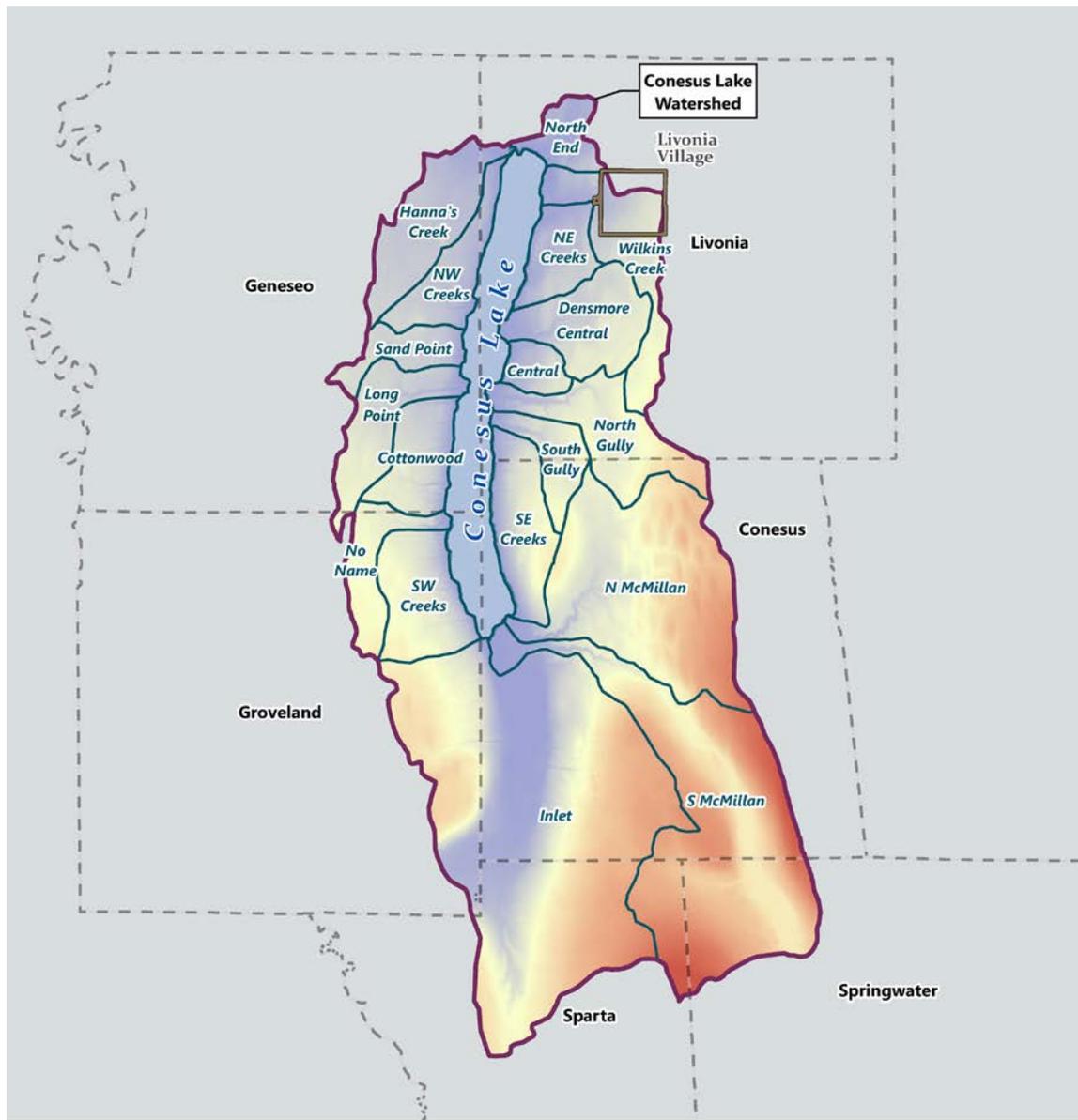
The Conesus Lake watershed topography, which is shown in Figure 2-7, illustrates the impacts of glacial carving over the past 2 million years. The Lake is surrounded by steeply sloped valleys to the south and along the east and west shorelines. In the north, the slope of the landscape around the Lake gradually declines. The topography of the watershed to the south of the Lake is characterized by steep slopes except for the Inlet region, which is flat terrain. The steep slopes in this area can exceed 45% and be several hundred feet in height. Elevation ranges from 816 feet above mean sea level at the lakeside to 2,045 feet above mean sea level at the highest point in the watershed (in the South McMillan Creek subwatershed). Streams and eroded channels cut through the hillslopes around the Lake. Watershed topography has not changed appreciably since the completion of the 2003 CLWMP (EcoLogic and LCPD 2003).

The Conesus Lake watershed contains many different soil types. The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) classifies soils into four hydrologic soil groups: A, B, C, and D (NRCS 2009). The hydrologic group is a group of soils having similar runoff potential under similar environmental conditions. Some soils are placed in dual hydrologic groups, A/D, B/D, and C/D, if they can be adequately drained when wet (the first letter applies to the drained condition, the second to the undrained).

Runoff potential is influenced by soil properties that impact the rate of water infiltration into the soil and the rate at which water moves through the soil (i.e., percolation) (NRCS 2009). These soil properties include: soil texture, structure, and compaction; organic matter content; soil depth; and depth to water table (NRCS 2009). Table 2-4 provides a summary of the general characteristics of the hydrologic soil groups.

The hydrologic soil groups of the watershed are shown in Figure 2-8. The southern end of the watershed contains predominantly poorly drained, deep soils (e.g., Group D, C/D), while the northern portion contains mostly well-drained, deep soils (e.g., Group B, B/D). The middle section of the watershed contains a variety of soils, varying from well to poorly drained, deep soils.

**Figure 2-7
Topography of the Conesus Lake Watershed**



LEGEND:

- Watershed Boundary
- Subwatershed Boundary (12-Digit HUC)
- Town Boundary
- Village Boundary
- Lake

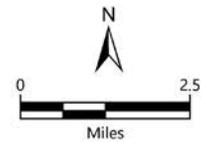
LiDAR Derived DEM



SOURCES:

1. Basemap: Esri (2024)
2. Watershed/Lake: Livingston County (2024)
3. LiDAR: New York State (2019)
4. Town/Village: New York State (2024)

SCALE:



**Table 2-4
General Characteristics of Hydrologic Soil Groups**

Hydrologic Soil Group	Infiltration Rate	Soil Drainage	Soil Texture	Runoff Potential
A	High	Excessively drained	Sand and gravel	Low
B	Moderate	Moderately well drained to well drained	Moderately fine to moderately coarse	Moderately low
C	Slow	Slow	Moderately fine to fine	Moderately high
D	Very slow	Very slow	clay	High

Source: NRCS 2009

Soils in much of the watershed are coarse and easily erodible. The combination of soil characteristics and topographic conditions determine the natural susceptibility of the landscape to runoff, erosion, and nonpoint source pollution. Steeper topography increases water energy as it flows across the topographic gradient and can increase erosion potential. Other factors, such as soil texture, soil structure, vegetative cover, and land use activities, also influence the potential for erosion.

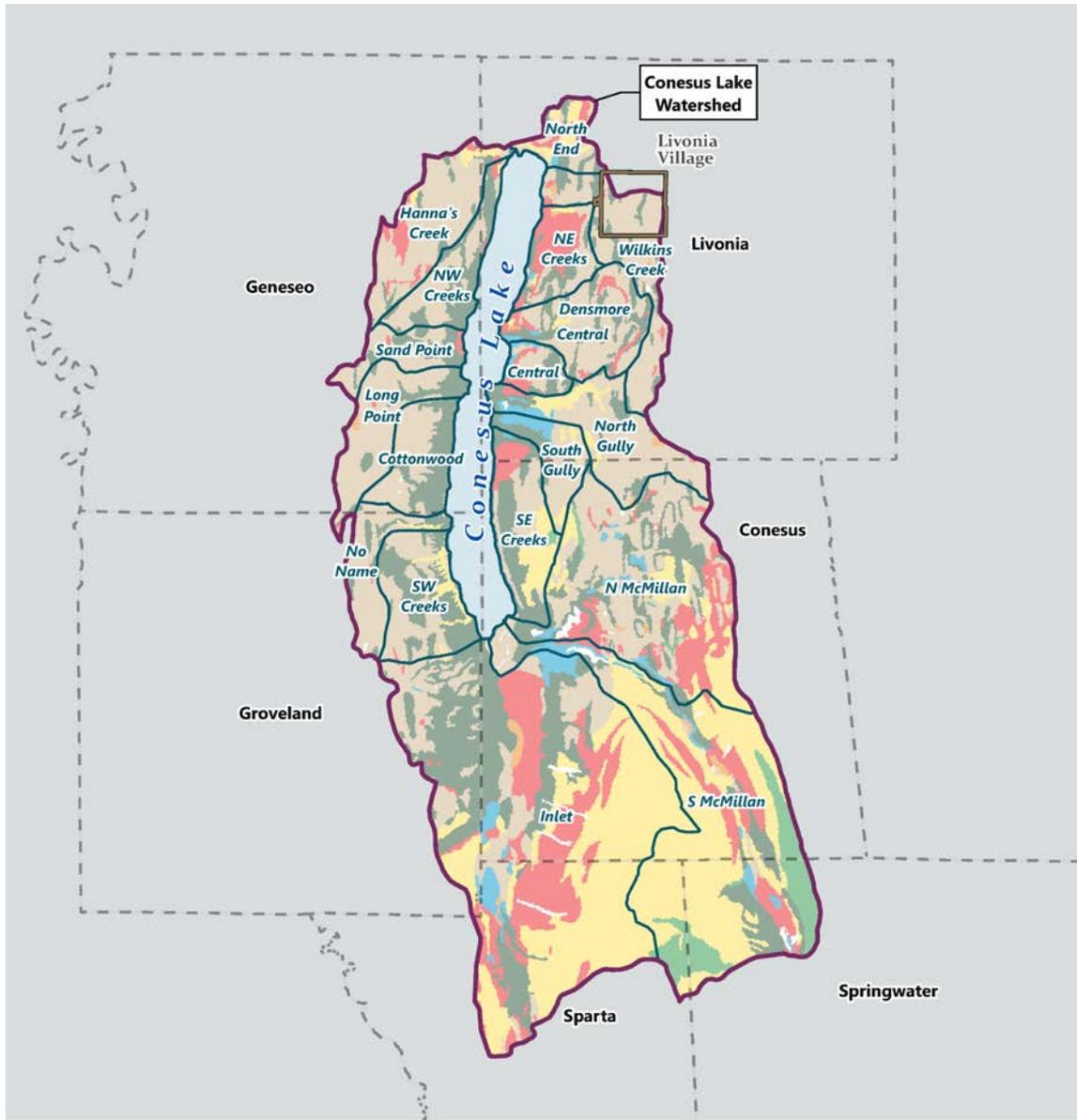
In the Conesus Lake watershed, steep slopes combine with erodible soils to create situations where precipitation moves through short but steep gradients before discharging into the Lake. The force of the water erodes the soil, making waterways deeper and steeper. Over time this process has created natural gullies along the eastern and western areas of the watershed.

Human activities in the watershed can accelerate the rate of erosion by changes in land use that disturb vegetation or increase runoff. For example, impervious surfaces from buildings, roads, and parking lots reduce water infiltration in soil and increase runoff. Vegetation acts to slow water movement and increase infiltration rates, so vegetation removal tends to increase water runoff, especially tree removal. Increased runoff combined with steep terrain results in higher erosion rates and can lead to gully formation. The runoff also transports sediment and associated pollutants into streams and, ultimately, the Lake. Streambank erosion is a natural process driven by water flow volume and stream gradient. Streambank erosion is often accelerated by human activities that increase runoff and/or remove vegetated stream buffers. Streambank erosion leads to increased sediments in waterways and sediment deposition in the Lake.

Figure 2-9 displays the relative susceptibility of each subwatershed to erosion and nonpoint source pollution. This susceptibility index is defined considering both slope and soil drainage characteristics using data from the USDA NRCS as archived in the Cornell University Geospatial Information Repository (CUGIR) [Livingston County Soils](https://cugir.library.cornell.edu/catalog/cugir-007908).⁷

⁷ Data is available from <https://cugir.library.cornell.edu/catalog/cugir-007908>.

**Figure 2-8
Hydrologic Soil Groups Within the Conesus Lake Watershed**



LEGEND:

- Watershed Boundary
- Subwatershed Boundary (12-Digit HUC)
- Town Boundary
- Village Boundary
- Lake

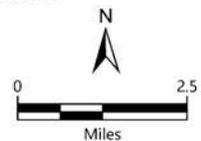
Soil Hydrologic Group

- Group A
- Group B
- Group C
- Group D
- Group A/D
- Group B/D
- Group C/D

SOURCES:

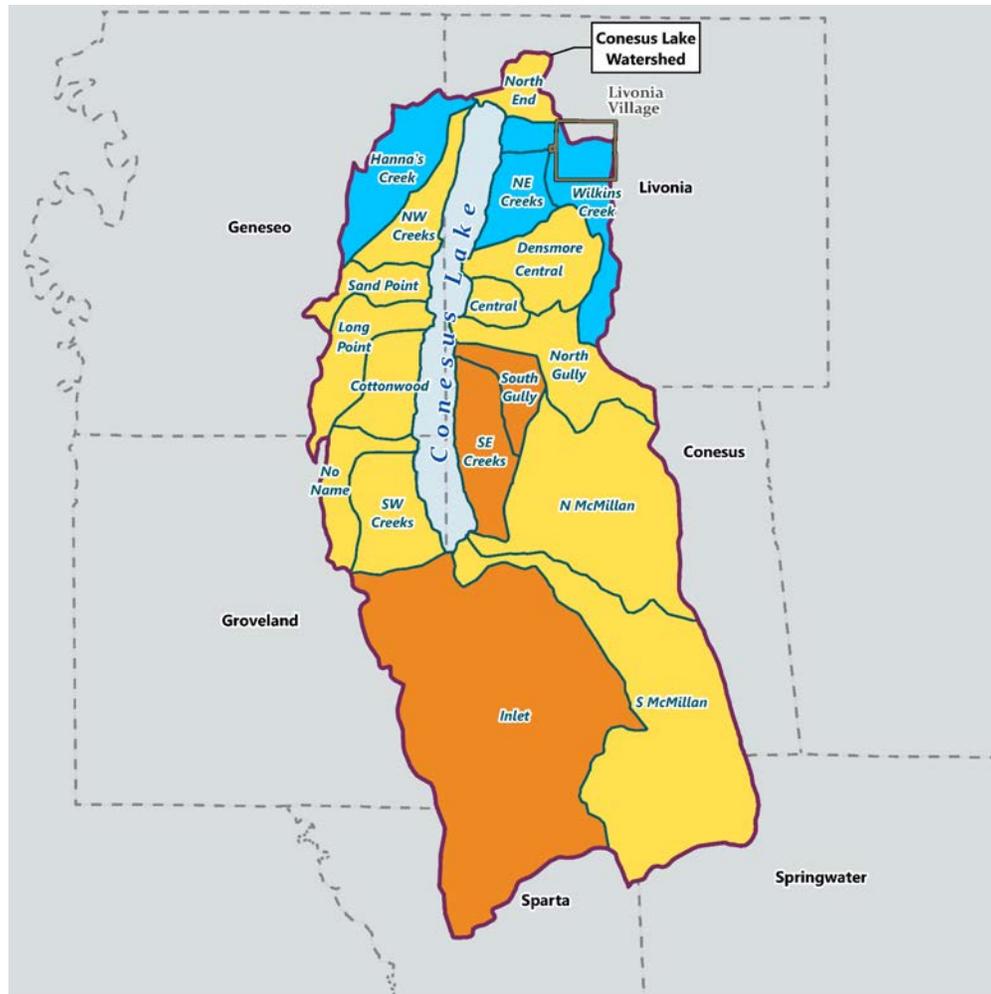
1. Basemap: Esri (2024)
2. Watershed/Lake: Livingston County (2024)
3. Soil: United States Department of Agriculture (2024)

SCALE:



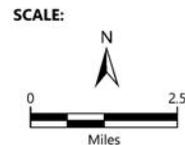
As shown in Figure 2-9, areas of the watershed with some of the steepest slopes (i.e., SE Creeks, and South Gully) and poorest drainage (i.e., Inlet) are rated as most susceptible. Areas with well-drained soils and less relief, such as those in Hanna’s Creek, NE Creeks, and Wilkins Creek, are more resilient to stormwater runoff and soil erosion. Land use activities in subwatersheds with higher susceptibility could pose a greater risk for contributing sediment and pollutants to adjacent streams and the Lake.

Figure 2-9
Conesus Lake Natural Susceptibility to Erosion and Nonpoint Source Pollution



- LEGEND:**
- Watershed Boundary
 - Subwatershed Boundary (12-Digit HUC)
 - Town Boundary
 - Village Boundary
 - Lake
- Soil Susceptibility**
- High
 - Moderate
 - Low

- SOURCES:**
1. Basemap: Esri (2024)
 2. Watershed/Lake: Livingston County (2024)
 3. Soil: Livingston County (2024)



Note: Susceptibility is defined by the slope and drainage characteristics of the soils in each subwatershed.

2.1.7 Climate

The climate of the Finger Lakes region is characterized by warm, dry summers and cold, snowy winters. The mean annual daily temperature for the Conesus Lake watershed, using daily climate normal data from a nearby weather station in Hemlock, New York, is 48°F (NRCC 2024). On average, the coldest days occur in January, with an average maximum daily temperature of 32°F; the warmest days occur in July, with an average maximum daily temperature of 81°F (NRCC 2024). The annual frost-free period has historically averaged between 150 and 180 days. The frost-free period has increased, and the growing season has extended in both spring and fall (NOAA 2024a). The average annual water equivalent precipitation is 37.3 inches, and summers generally receive more precipitation than winters (NRCC 2024). Until recent years, the Lake routinely developed persistent ice cover in the winter.

2.2 Biological Resources

2.2.1 Aquatic Habitats and Species

The Lake provides a range of aquatic habitats. The variability in water depth is a primary factor affecting water quality, habitat, and ultimately species composition. Lake water quality is discussed in detail in Section 2.4. In this section, the focus is on the Lake's habitats and species.

As shown in the bathymetric map in Figure 2-4, the northern basin is relatively shallow compared to the southern basin, and there is a large extent of littoral habitat (i.e., shallow areas less than 20 feet deep) where light can penetrate to the bottom sediments and support plant growth (EcoLogic and LCPD 2002).

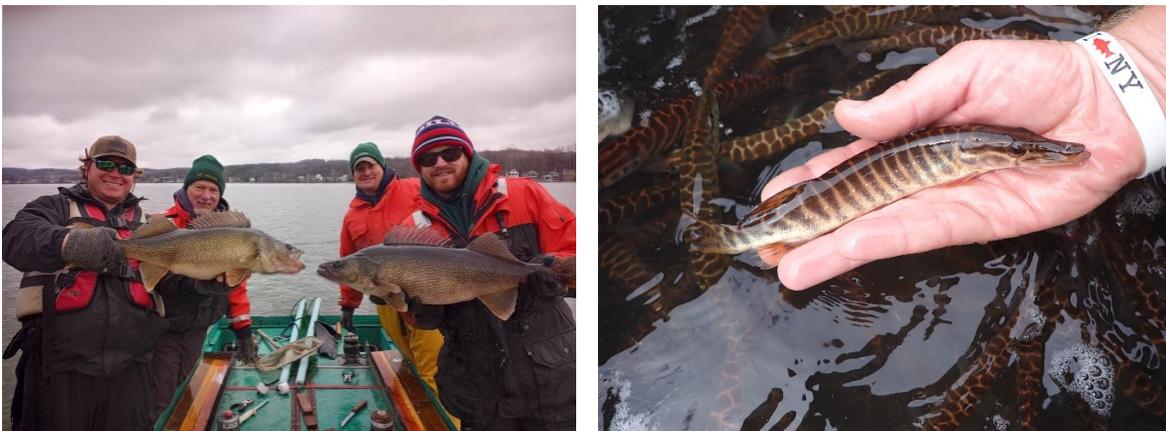
According to NYSDEC, the Lake has traditionally been a productive area for warmwater sportfishing and panfishing. The Lake supports a variety of warmwater fish species. More than 39 species have been reported in the Lake and Conesus Inlet (EcoLogic and LCPD 2002; NYSDEC et al. 2018), including several of the following recreationally important species and fish that may be consumed:

- Brown bullhead (*Ameiurus nebulosus*)
- Largemouth bass (*Micropterus salmoides*)
- Northern pike (*Esox lucius*)
- Panfish, including bluegill (*Lepomis macrochirus*), pumpkinseed (*L. gibbosus*), rock bass (*Ambloplites rupestris*), and black crappie (*Pomoxis nigromaculatus*)
- Smallmouth bass (*Micropterus dolomieu*)
- Tiger muskellunge (*Esox masquinongy* x *E. lucius*)
- Walleye (*Sander vitreus*)
- Yellow perch (*Perca flavescens*)

The species assemblage has changed over time, and the outstanding walleye fishery of the 1960s diminished through the 1970s (CLWC 2013b). The Lake's yellow perch fishery declined during the 1980s, which was attributed to the accidental introduction of alewife (*Alosa pseudoharengus*), which competes with yellow perch for food, including the large zooplankton species *Daphnia pulex* (CLWC 2013b). The alewife population exploded after the fish became established in the Lake, altering species composition and food web dynamics (CLWC 2013b). Eurasian rudd (*Scardinius erythrophthalmus*) was first found in the Lake in 2013. This species competes with native species for habitat and food, including algae and small invertebrates. Adult rudd consume aquatic plants along the shoreline, which can degrade spawning and nursery habitat for native fish, such as northern pike, muskellunge, and yellow perch. This can also affect plant communities and nutrient cycling in these nearshore habitats. Scientists from SUNY Geneseo and SUNY Brockport are researching the potential influence of Eurasian rudd on nutrient cycling and transport dynamics in nearshore and offshore environments.

Management efforts have focused on both the walleye and yellow perch fisheries to reduce the alewife population. Figure 2-10 shows NYSDEC conducting fish sampling on the Lake and preparing to release tiger muskellunge fingerlings into the Lake. NYSDEC and the CLA have historically stocked the Lake with fish each year; the annual stocking numbers since 2000 are shown in Table 2-5. The CLA discontinued stocking in 2021. As a result of the stocking efforts over time, the walleye population has been maintained at good levels, and the yellow perch population is exhibiting signs of recovery (NYSDEC 2024a). In 1991, NYSDEC began stocking the Lake with tiger muskellunge, a fast growing, sterile hybrid between northern pike and muskellunge. The CLA stocked walleye fingerlings from the early 2000s until 2021.

Figure 2-10
NYSDEC Conducting Fish Sampling on Conesus Lake (Left) and Preparing to Release Tiger Muskellunge Fingerlings into Conesus Lake (Right)



Photographs credit: NYSDEC

**Table 2-5
Number of Individual Fish Stocked in Conesus Lake by NYSDEC and the CLA Since 2000**

Year	NYSDEC		CLA*
	Walleye	Tiger Muskellunge	Walleye
2000	9,100	19,000	
2001	36,340	9,500	
2002	98,000	9,500	
2003	9,100	0	
2004	65,000	0	25,000
2005	0	9,500	6,000
2006	0	0	1,500
2007	20,000	9,500	2,000
2008	0	9,899	2,250
2009	0	9,500	1,700
2010	0	10,374	1,500
2011	0	9,700	200
2012	62,900	12,000	1,078
2013	1,825	9,500	325
2014	65,000	9,500	1,300
2015	65,000	9,500	1,200
2016	32,500	9,500	2,400
2017	22,750	9,500	0
2018	65,000	0	1,000
2019	65,000	10,500	1,200
2020	65,000	9,500	1,200
2021	33,140	9,500	1,200
2022	65,000	9,500	
2023	65,000	3,100	
2024	65,000	9,500	
2025	228,600	9,500	

Notes:

* CLA stocking program began in 2004 and was discontinued after 2021.

Source: NYSDEC, DATA.NY.GOV, CLA, CLWC 2012-2024

The primary producers in the Lake include macrophytes and water column phytoplankton, which include algae and cyanobacteria. Macrophytes are aquatic plants characterized by the presence of roots, stems, flowers, and seeds. Certain species of large algae, called macroalgae or filamentous algae, are often included in analysis of the macrophyte community. Filamentous algae may form masses of long, hair-like strands, creating greenish floating mats. Both macrophytes and filamentous

algae provide numerous important functions to the Lake ecosystem, such as sediment stabilization by plant roots and wind and wave energy dissipation by plant stems and leaves. Beds of macrophytes and filamentous algae also trap particulate material, store carbon, remove nutrients from the water, and serve as a base to the aquatic and terrestrial food web. The presence of macrophytes in the littoral zone is correlated with higher diversity and abundance of invertebrates, which are an essential food source for lake biota. Macrophytes also provide habitat, especially nursery habitat, for fish (NYSFOLA 2009).

The Lake contains a diverse assemblage of macrophytes, including both native and invasive species. Invasive species are non-native plants, animals, or microorganisms introduced, either accidentally or intentionally, into a new ecosystem where they do not naturally occur. As of 2024, there have been 10 aquatic invasive species confirmed present in the Lake; these species are discussed in Section 2.7.2.

Cyanobacteria, also known as blue-green algae, are naturally present in low concentrations in most lakes and streams. The dominant cyanobacterial species in the Lake are in the genera *Dolichospermum*, *Lyngbya*, *Oscillatoria* and *Woronichinia*; species in the genus *Microcystis* are observed less frequently (Bosch et al. 2021).

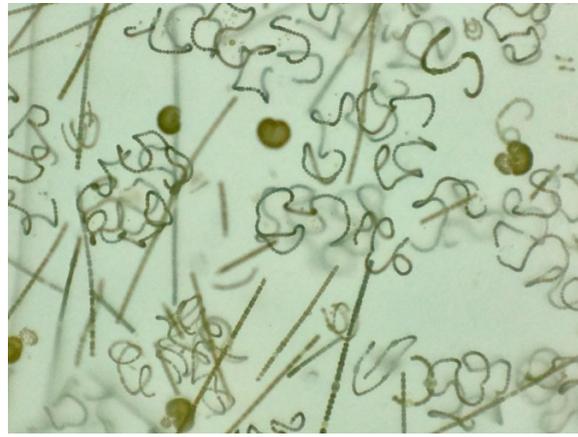
In most lakes, the phytoplankton community exhibits a predictable seasonal pattern, with lower abundance in spring and fall and higher abundance in late summer, when water temperatures are warmest. However, algal abundance can respond to environmental conditions and change very quickly. Periodic phytoplankton blooms, including HABs and abundant macrophyte growth are common. HABs and excessive macrophyte growth are discussed further in Section 2.7.1.

A 2022 study of the phytoplankton community in the Lake provides a detailed history of phytoplankton monitoring (Bosch et al. 2023). The study concluded that there are strong seasonal shifts in taxonomic composition. Diatoms, particularly *Fragillaria crotonensis* and other types of microalgae (i.e., not cyanobacteria), dominated during the spring and early summer; by mid-summer, these species were largely replaced by cyanobacteria until fall, when cooling waters supported the resurgence of diatoms. When the study team compared the 2022 data with prior detailed investigations of the Lake phytoplankton community, they found that cyanobacteria have been proportionately abundant in the phytoplankton community of the Lake since at least 1985. They found that the dominant cyanobacteria historically have been species of the nitrogen-fixing *Dolichospermum* genus and that *Microcystis* species typically have been rare in the Lake (Bosch et al. 2023). Figure 2-11 shows a common diatom and cyanobacteria found in the Lake.

Figure 2-11
Microscopic Image of Chains of the Diatom Species *Fragillaria Crotonensis* (Left) and
Filamentous Cyanobacteria from an October 2023 Bloom (Right)



Photograph credit: www.fytoplankton.cz



Photograph credit: SUNY Geneseo

NYSDEC catalogs rare or state-listed animals and plants, significant natural communities, and other significant habitats through its Natural Heritage Program. A database search conducted in October 2024 resulted one aquatic listing for the Conesus Lake watershed—one fish species. Specific information regarding the identity and location of rare or protected species is considered sensitive and cannot be released, distributed, or reported in a public document.

2.2.2 Wetlands

NWI wetlands are described in Section 2.1.4. One of the largest wetlands in the watershed is located in and around the Conesus Inlet Wildlife Management Area (WMA) at the southern end of the Lake in a flat valley plain. WMAs are areas of land owned by NYS and administered and managed by NYSDEC's Bureau of Fish and Wildlife. These areas are designated as a place for wildlife-based activities, such as hunting, trapping, fishing, or wildlife watching. The Conesus Inlet WMA is approximately 1,142 acres of habitat located at the southern end of the Lake, and approximately 873 acres of that area is wetland habitat (NYSDEC 2018). The wetland habitat includes 320 acres of forested wetlands, 115 acres of natural emergent and scrub/shrub wetlands, and 438 acres of impounded wetlands (NYSDEC 2018). According to the NYSDEC (2018), the emergent vegetation consists primarily of typical marsh species, such as cattail (*Typha* species), sedge (*Carex* species), and bulrush (*Scirpus* species), surrounded by a peripheral border of shrubs. The forested wetland area includes tree species, such as ash (*Fraxinus* species), maple (*Acer* species), cottonwood (*Populus deltoides*), willow (*Salix* species), and Eastern hemlock (*Tsuga canadensis*) (NYSDEC 2018).

The Conesus Inlet contains the major, and perhaps only, northern pike (*Esox lucius*) spawning grounds on the Lake. The WMA objectives are to maintain pike and walleye (*Sander vitreus*) spawning and rearing habitat in the Inlet and adjacent wetlands, promote waterfowl utilization in the marsh, and upland habitat along the edges (NYSDEC 2018). It is managed as waterfowl nesting and rearing habitat (LCPD 2007). NYSDEC has managed several wetland improvement projects, including the creation of small ponds and potholes for wildlife and the creation of a major impoundment marsh area. The Habitat Management Plan for the Conesus Inlet includes lists of wildlife species likely to occur at the site (NYSDEC 2018).

There are no species or habitats of special concern identified for wetlands within the Conesus Lake watershed.

2.2.3 *Terrestrial Habitats and Species*

The Conesus Lake watershed encompasses the transition between two major ecoregions: 1) the Northern Glaciated Alleghany Plateau Section; and 2) the Lake Erie and Lake Ontario Plain Section. Ecoregions are large-scale assemblages of plant and animal communities that share a common environment. Characteristics, such as landform, elevation, geology and soils, climate, and vegetation, are used to define ecoregions. Distinct boundaries between ecoregions are rare; more often the mosaic of vegetative cover gradually shifts between dominant assemblages. Letchworth Gorge is considered the boundary between the two major ecoregions in the Genesee River basin. There are no national forests in Livingston County.

The vegetative community in the Conesus Lake watershed has been influenced by the legacy of past human activities, as well as its own evolution and natural history. Humans have affected the landscape, which altered contiguous forests, as well as the species composition and age structure of that community. These human impacts may occur directly, through land use and management decisions, and indirectly, through the introduction of non-native insects, diseases, and plants.

Prior to European settlement, the Finger Lakes region was heavily forested (Ecologic and LCPD 2002; NYSDEC 2020b). Settlers used forests for fuel, construction, and export. By the end of the 19th century, nearly all the arable land was cleared for agriculture. Forest acreage began to rebound in the 1930s because soil conservation and reforestation efforts were put in place (EcoLogic and LCPD 2002). Secondary succession of cleared areas towards forest woodlands continues in the Conesus Lake watershed and is reflected in an increasing proportion of the landscape covered by forest habitat within the watershed. As shown in Table 2-6, the area of the watershed classified as forested habitat has increased during the last 70 years from approximately 28% forested in 1954 to 44% forested in 2021. Most of the forested area is located in the southern portion of the watershed.

Table 2-6
Percent of the Conesus Lake Watershed Covered in Forest Habitat, 1954 to 2021

Year	Forest Cover (%)
1954	27.9
1969	28.4
1997	34.0
2021	44.0

Sources: Data from 1954 and 1969 are from Forest et al. 1978, data from 1997 are from Livingston County 2007, and data from 2021 are from USGS 2021.

NYSDEC catalogs rare or state-listed animals and plants, significant natural communities, and other significant habitats through its Natural Heritage Program. A database search conducted in October 2024 resulted in one terrestrial listing for the Conesus Lake watershed: one plant species. Specific information regarding the identity or location of the species is unavailable to the public. There is one significant natural community identified by the New York Natural Heritage Program located within the Conesus Inlet WMA: a silver maple-ash swamp, which is described as a large, mature swamp with minimal disturbance, few exotics, and only a single road fragmenting one end.

There are a variety of invasive plants and animals present in terrestrial habitats within the watershed, including several major forest pests, such as the emerald ash borer (*Agrilus planipennis*), commonly known as EAB, and hemlock woolly adelgid (*Adelges tsugae*), commonly known as HWA. These species are discussed in Section 2.7.2.

2.3 Cultural Resources

2.3.1 Population

The Conesus Lake watershed encompasses 70 square miles within Livingston County, including portions of six Towns (Conesus, Geneseo, Groveland, Livonia, Sparta, and Springwater) and the Village of Livonia. The U.S. Census population estimates for the county, watershed, towns, and village in 2000, 2010, and 2020 are shown in Table 2-7. Overall, the County’s population has remained relatively stable within the watershed since 2000; the population change in Livingston County as a whole (64,328 in 2000; 65,393 in 2010; 61,834 in 2020) represents an approximate 3.9% decrease over the past two decades (U.S. Census Bureau 2000 to 2020).

As the data in Table 2-7 shows, most town and village populations have remained fairly stable during the last 20 years, with minor fluctuations since 2000. There are two notable exceptions: 1) the population of the Town of Geneseo, outside of the village, has increased 28.2% since 2000; and 2) the population of the Town of Groveland has declined by 39.9%. The population within the Conesus Lake watershed was estimated, using Census Block Group data, to have increased by 2.4%

from 2000 to 2020. However, it is important to note the Census Block Group boundaries were adjusted between the 2010 and 2020 censuses; therefore, the population change for the Conesus Lake watershed should be viewed as an estimate.

**Table 2-7
Population Change 2000 to 2020 (U.S. Census Data)**

Geographic Area	Total Population 2000	Total Population 2010	% Change (2000 to 2010)	Total Population 2020	% Change (2010 to 2020)	% Change 2000 to 2020
Livingston County	64,328	65,393	↑ 1.7	61,834	↓ 5.4	↓ 3.9
Conesus Lake watershed	9,731	9,605	↓ 1.3	9,966	↑ 3.8	↑ 2.4
Town of Conesus	2,353	2,473	↑ 5.1	2,320	↓ 6.2	↓ 1.4
Town of Geneseo, outside village	2,075	2,452	↑ 18.2	2,660	↑ 8.5	↑ 28.2
Town of Groveland	3,853	3,249	↓ 15.7	2,316	↓ 28.7	↓ 39.9
Town of Livonia, outside village	5,913	6,400	↑ 8.2	6,025	↓ 5.9	↑ 1.9
Village of Livonia	1,373	1,409	↑ 2.6	1,472	↑ 4.5	↑ 7.2
Town of Sparta	1,627	1,624	↓ 0.2	1,583	↓ 2.5	↓ 2.7
Town of Springwater	2,322	2,439	↑ 5.0	2,286	↓ 6.3	↓ 1.6

Notes:

Prior to 2010, inmates were included in the Census. Starting with the 2010 Census, inmates were no longer included.

Source: U.S. Census Bureau, 2000, 2010, and 2020 Census.

2.3.2 Land Use and Land Cover

Human activities can alter many aspects of the landscape that impact the volume and manner that water moves across the landscape. Land cover describes the physical characteristics of the land itself, such as forest, wetland, cropland, urban, or waterbody. Land use refers to how humans use a piece of land (i.e., agriculture, residential housing, commercial uses, or recreation). Changes to land use and cover can impact water quality through changes in runoff, pollution, sedimentation, and altered water movement. For example, the conversion of forested to cultivated land removes permanent vegetative cover and increases the potential for soil erosion. Fertilizer use associated with agriculture and urban development can lead to increased nutrient loading of streams and lakes. Urban development increases impervious surfaces that do not allow water to penetrate, which increases surface water runoff movement across the landscape and can lead to erosion and increased loading of pollutants from those urban areas.

2.3.2.1 Impervious Cover

Impervious cover was estimated using the USGS National Land Cover Database (NLCD) Fractional Impervious Surface dataset (USGS 2024). These data are on a 30-meter by 30-meter grid scale, where each grid cell has a value ranging from 0 to 100 representing percentage of impervious surface within that grid area. Table 2-8 shows the impervious cover for the watershed; over 90% of watershed has low (less than 10%) impervious cover and less than 4% of the watershed has moderate to high (greater than 25%) impervious cover. Table 2-8 also shows the impervious cover within 90 meters (295 feet) of the Lake; impervious cover along the lakeshore is much higher than for the watershed. The concentration of homes, driveways, outbuildings, and other impervious surfaces along the lakeshore contributes to this higher number. Higher impervious cover along the lakeshore means a higher proportion of stormwater runoff will reach the Lake, including soil and other pollutants.

**Table 2-8
Impervious Cover in the Conesus Lake Watershed and Within 90 Meters of Conesus Lake**

Impervious Cover	Watershed Wide	Within 90 Meters (295 feet) of Conesus Lake
Low (0% to 9%)	91%	33%
Low to Moderate (10% to 25%)	5%	24%
Moderate to High (26% to 60%)	3%	40%
High (>60%)	0.3%	2%

Source: USGS Annual NLCD (USGS 2024)

Impervious cover data were also examined separately for each subwatershed, as shown in Table 2-9. Consistent with their dominant land uses, several subwatersheds have very low amounts of impervious cover, such as Cottonwood, Inlet, Long Point, North McMillan, South McMillan, South Gully, Sand Point, and SW Creeks. Other subwatersheds, such as North End and Wilkins Creek, have approximately 15% of their land area classified as moderate to high impervious cover. The Wilkins Creek subwatershed includes portions of the Town and Village of Livonia and has been the focus of a stormwater study (B&L 2018a) to help reduce streambank erosion and other stormwater impacts.

**Table 2-9
Impervious Cover in the Conesus Lake Subwatersheds**

Subwatershed	Low (0% to 9%) Impervious Cover	Low-Moderate (15% to 25%) Impervious Cover	Moderate-High (26% to 60%) Impervious Cover	High (>60%) Impervious Cover
Central	89%	5%	6%	0%
Cottonwood	92%	4%	4%	0%
Densmore	88%	8%	4%	0%

Subwatershed	Low (0% to 9%) Impervious Cover	Low-Moderate (15% to 25%) Impervious Cover	Moderate-High (26% to 60%) Impervious Cover	High (>60%) Impervious Cover
Hanna's Creek	86%	5%	8%	1%
Inlet	95%	4%	1%	0%
Long Point	91%	5%	4%	0%
No Name	87%	7%	5%	1%
NE Creeks	87%	8%	5%	0%
North End	76%	8%	12%	3%
North Gully	90%	6%	3%	0%
North McMillan	93%	5%	2%	0%
NW Creeks	84%	8%	7%	0%
Sand Point	92%	5%	3%	0%
SE Creeks	90%	5%	5%	0%
South Gully	90%	8%	1%	0%
South McMillan	95%	4%	1%	0%
SW Creeks	90%	7%	3%	0%
Wilkins Creek	75%	10%	12%	3%

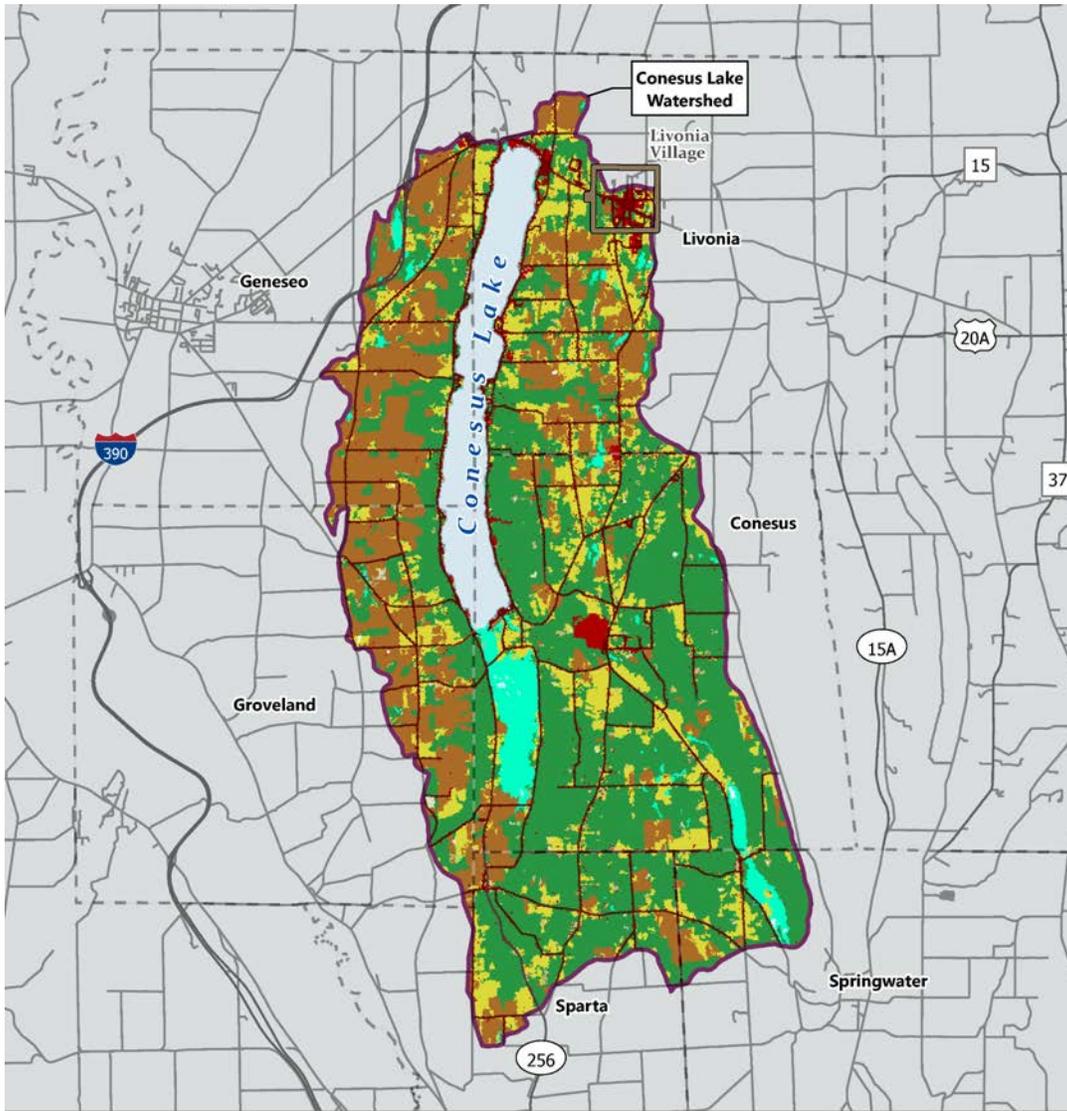
Source: USGS Annual NLCD (USGS 2024)

2.3.2.2 Land Cover

Land cover data from the USGS NLCD for 2021 (USGS 2021) are shown in Figure 2-12. Cultivated crops and hay or pasture are the predominant land uses in the northern half of the watershed. Urban cover is concentrated around the perimeter of the Lake, the Village of Livonia, and in the Town of Conesus near the golf club. Forests and wetlands dominate the land cover in the southern portion of the watershed.

Land cover in 2021 (USGS 2021) was compared to data from 2011 (USEPA and NYSDEC 2019) to assess trends in land cover change. These data are provided in Table 2-10; forest cover increased by approximately 10% over the past decade, which is likely due to natural forest succession, as shrubland decreased by 7%, and no large-scale reforestation efforts of agricultural lands were documented over the decade. Land use classified as pasture or hay decreased by approximately 12%, while cropland cover increased by approximately 7%; it is possible these changes are due to the conversion of pasture or hay to crop production. It is also important to note that comparisons of changes in land use and land cover classifications are imprecise due to improved parcel mapping technologies since 2000.

Figure 2-12
USGS National Land Cover in the Conesus Lake Watershed (2021)



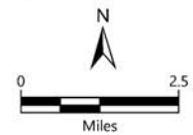
LEGEND:

- | | | |
|-------------------------------------|-------------|------------------|
| Watershed Boundary | Barren Land | Cultivated Crops |
| Town Boundary | Forest | Wetlands |
| Village Boundary | Shrubland | |
| National Land Cover Database | | |
| Urban | Grassland | Hay/Pasture |

SOURCES:

1. Basemap: Esri (2024)
2. Watershed/Lake: Livingston County (2024)
3. National Land Cover Database: United States Geological Survey (2021)

SCALE:



**Table 2-10
Land Cover in the Conesus Lake Watershed**

Land Use	Acres in 2021	Percent of Watershed in 2011	Percent of Watershed in 2021	Percent Change 2011 to 2021
Forest	19,551	34%	44%	10%
Pasture or hay	6,706	27%	15%	-12%
Cropland	9,037	13%	20%	7%
Shrubland	353	8%	1%	-7%
Open water	3,311	7%	7%	0%
Urban	3,766	6%	8%	2%
Wetland	1,639	4%	4%	0%
Grassland	100	1%	<1%	0%

Note:
Based on the USGS National Land Cover Database 2011 and 2021 land cover dataset.

2.3.2.3 Land Use

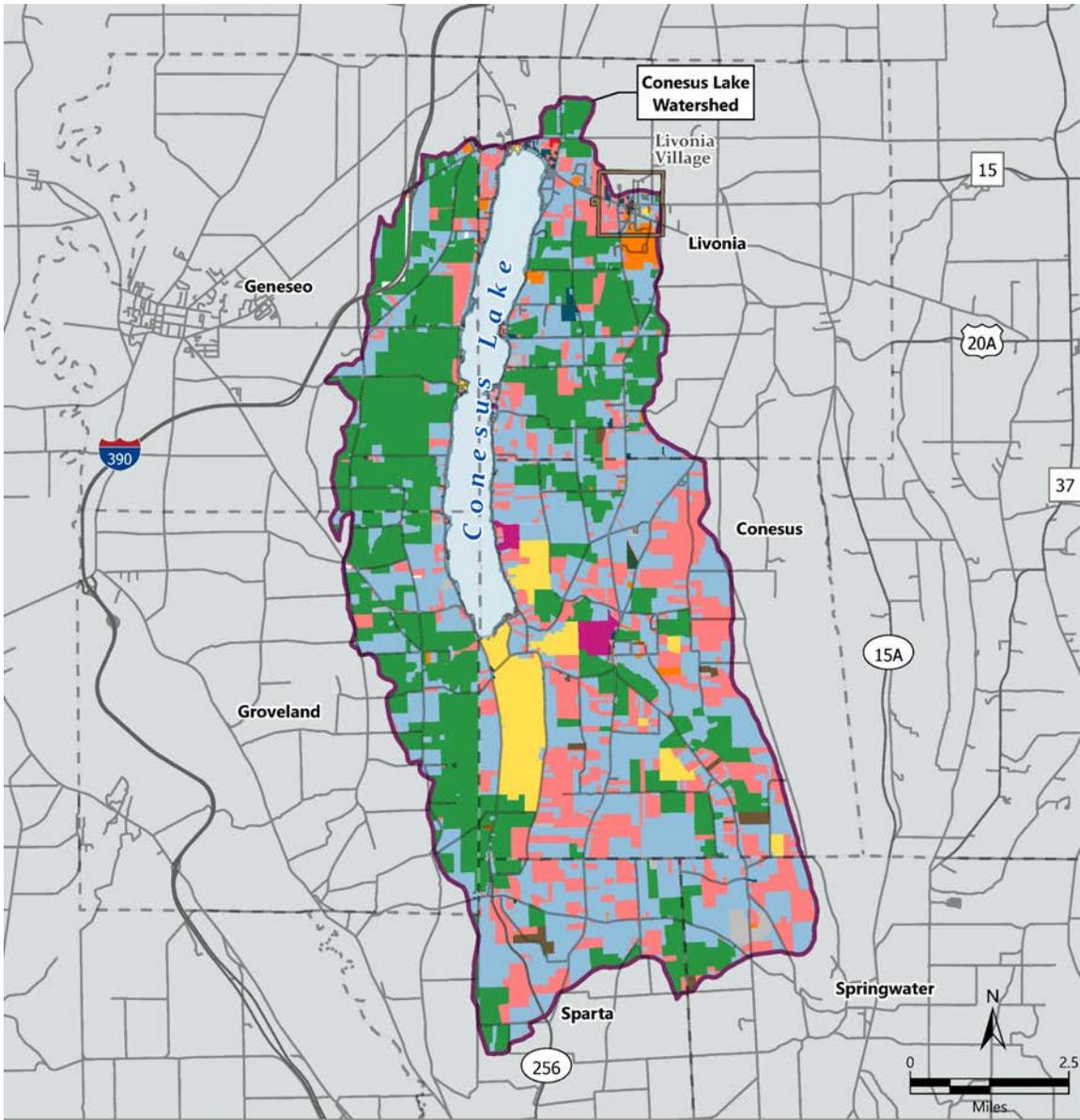
Land use data for the watershed, taken from the Livingston County Real Property Tax Parcel database (LCPD 2024b), are shown in Figure 2-13. Agricultural land uses are concentrated in the northern portion of the watershed and cover greater than 33% of the land area in the watershed; 40% of the land area of the watershed is classified single family residential.

To assess trends in land use over time, the 2024 land use data were compared to the 1998 data in the WCR (EcoLogic and LCPD 2002) and the 2012 data in the WCR Update (EcoLogic and LCPD 2013). The data are presented in Table 2-11; listed percentages represent the percentage of land area within the watershed classified for each land use. There was an initial drop in agricultural land use between 1998 and 2012 and an increase in both single family residential and vacant land⁸ uses. This could be an indication that agricultural lands were being converted into single family residences. These changes could also have been a result of improved mapping capabilities (EcoLogic and LCPD 2013). Since 2012, there have been only relatively small changes in percentage of land use in each category.

One relatively new land use is utility-scale solar. Currently, there are 65 acres of utility-scale solar in the watershed, all are in the Town of Geneseo (Ferrero 2025).

⁸ Vacant land use is defined as lands not currently in use for agriculture, forestry, or other human-related activities.

Figure 2-13
Land Use Within the Conesus Lake Watershed in 2024



LEGEND:

- | | | |
|--------------------|---------------------------|--|
| Watershed Boundary | Single Family Residential | Community Services |
| Town Boundary | Multi-Family Residential | Public Services |
| Village Boundary | Seasonal Residence | Wild, Forest, Conservation, Parkland Areas |
| Lake | Commercial | Vacant |
| Land Use | | |
| Agriculture | Industrial | Recreation |

SOURCES:

1. Basemap: Esri (2024)
2. Watershed/Lake: Livingston County (2024)
3. Land Use Land Cover Livingston County (2024)

**Table 2-11
Percentage of Land Use in the Conesus Lake Watershed (1998 to 2024)**

Land Use Category	1998	2012	2024
Agriculture	42	33	34
Single Family Residential	36	40	40
Multi-Family Residential	1	1	<1
Seasonal Residences	1	1	1
Commercial	1	1	<1
Industrial	<1	<1	<1
Recreation	1	1	1
Vacant	13	20	18
Community Services	1	1	1
Public Services	<1	<1	<1
Wild, Forest, Conservation, Parkland Areas	4	3	5

Sources: 1998 data from Ecologic and LCPD 2002; 2012 data from Ecologic and LCPD 2013; 2024 data from Livingston County 2024 Real Property Tax Parcel data. Property tax classes for single and multifamily residential are described in EcoLogic and LCPD 2013.

Land use was also examined at the subwatershed scale. There is a great deal of variation in land use among subwatersheds. Table 2-12 shows the percentage of each land use category for each of the 18 subwatersheds. Seven subwatersheds have more than half of their land area in agriculture: Central, Cottonwood, Hanna’s Creek, Long Point, No Name, North End, and Sand Point. Single family residential is the dominant land use in Inlet, North Gully, North McMillan, SE Creeks, South McMillan, SW Creeks, and Wilkins. SE Creeks is the only subwatershed with more than 10% classified as wild, forest, conservation, and parkland.⁹

When compared to land use data from 2012 (EcoLogic and LCPD 2013), a few notable trends arise, including a 20% increase in agricultural land use in the NE Creeks subwatershed; some of this may have been from the conversion of vacant land, which decreased by greater than 15%, into active agriculture. The area classified as wild, forest, conservation, and parkland use increased in SE Creeks subwatershed. SE Creeks subwatershed contains approximately 19% of this land use type. Per Livingston County Real Property Tax Service, a privately owned property in the SE Creek subwatershed with approximately 255 acres has been included in the 480A program since 2017. Based on aerial imagery and real property tax code, historically the land was predominately agricultural land (as far back as 1938) and over time has transitioned to its current use of predominantly forested land.

⁹ This land use category is defined by NYS ORPS to include state and county reforested lands, private hunting and fishing clubs, other private wild or forest lands not classified as any other property type, public parks, other wild or conservation lands (NYS ORPS 2006).

**Table 2-12
Percentage of Land Use Within the Conesus Lake Subwatersheds**

Subwatershed	Agriculture	Single Family Residential	Multifamily Residential	Seasonal Residences	Commercial	Industrial	Recreation	Vacant	Community Services	Public Services	Wild, Forest, Conservation, and Parkland
Central	60%	20%	4%	0%	0%	0%	0%	15%	0%	0%	0%
Cottonwood	78%	18%	0%	0%	0%	0%	0%	3%	0%	0%	0%
Densmore	47%	38%	0%	0%	4%	0%	0%	11%	0%	0%	0%
Hanna's Creek	67%	25%	1%	0%	0%	0%	0%	6%	1%	0%	0%
Inlet	27%	41%	0%	1%	0%	0%	0%	21%	0%	0%	9%
Long Point	85%	11%	0%	0%	0%	0%	0%	3%	0%	0%	1%
No Name	61%	29%	2%	0%	0%	0%	0%	6%	0%	0%	0%
NE Creeks	44%	37%	1%	0%	0%	0%	0%	14%	4%	0%	0%
North End	51%	23%	3%	0%	5%	2%	0%	14%	0%	0%	1%
North Gully	30%	53%	1%	1%	1%	0%	0%	14%	0.5%	0%	0%
North McMillan	12%	50%	0%	0%	0%	0%	3%	30%	1%	1%	2%
NW Creeks	44%	28%	0%	1%	0%	0%	0%	25%	2%	0%	0%
Sand Point	71%	25%	0%	0%	0%	0%	0%	4%	0%	0%	0%
SE Creeks	10%	47%	0%	0%	0%	0%	6%	17%	0%	0%	19%
South Gully	32%	59%	1%	0%	0%	0%	0%	8%	0%	0%	0%
South McMillan	24%	44%	3%	2%	0%	0%	1%	21%	0%	0%	6%
SW Creeks	42%	49%	1%	0%	0%	0%	0%	7%	0%	0%	0%
Wilkins Creek	26%	38%	2%	0%	2%	0%	0%	17%	15%	0%	1%

Source: Based on the 2024 Livingston County Real Property Tax Parcel Data (LCPD 2024b).

2.3.2.4 Agriculture

Agriculture remains a dominant land use and economic activity in Livingston County. Approximately 52% of Livingston County is included in the Agricultural Districts Program (LCPD 2025). Livingston County is divided into three agricultural districts, including over 225,000 acres of farmland (LCPD 2025). District 1 is located outside of the Conesus Lake watershed. District No. 2 includes the Towns of Conesus, Geneseo, Groveland, and Livonia. District No. 3 includes the Towns of Sparta and Springwater (LCPD 2025). Within the Conesus Lake watershed, agricultural lands are concentrated along the west side of the watershed, as shown in green on Figure 2-13.

Most subwatersheds have experienced minimal changes in percentage of agricultural land use over the last decade, as shown in Table 2-13, with a few notable exceptions. As mentioned in the previous section, agricultural land use in the NE Creeks subwatershed has increased from 25% to 44% since 2012. South Gully and Sand Point have seen a decline in agricultural land use of approximately 9% and 12%, respectively. Percent agricultural use has increased 7% in the Wilkins Creek subwatershed, while the No Name subwatershed has declined by approximately 7%.

Dairy farming is the dominant agribusiness. There is one confined animal feeding operation (CAFO) located in the watershed, in the Town of Groveland. CAFOs in NYS are primarily dairy farms with 300 or more cows that are confined for 45 days in a 12-month period to areas that do not produce vegetation. CAFOs are regulated by state and federal law as point sources of pollution under the CWA. The NYSDEC oversees CAFOs through its State Pollution Discharge Elimination System permit program, which is designed to prevent pollution and ensure compliance with BMPs.

The county has among the largest percentages of prime and productive soils found in NYS (ACDS LLC 2006). Prime agricultural soils are geographically concentrated in the northern half of the watershed (EcoLogic and LCPD 2002). Table 2-14 provides an overview of agricultural lands and activities in Livingston County as assessed by USDA in 2012, 2017, and 2022. The table includes information on the number, size, and type of farms; land use practices; major crops; and livestock. Corn, soybeans, and hay or silage continue to be the most common crops in the county (USDA 2012, 2017, 2022). Compared to 2022, the acreages in no till and reduced till have steadily increased throughout the county since 2012, while the acreage of intensive till decreased from greater than 53,500 to slightly less than 33,000 acres (USDA 2012, 2017, 2022). This movement away from intensive tilling should result in reduced erosion and loss of nutrients and soil from those farmlands. Within Livingston County, there are eight organic farms; organic farms typically do not use synthetic pesticides. The acres of irrigated land throughout the county almost tripled from 2017 to 2022, which increases water usage.

Census of Agriculture Statistics farm sizes data for Livingston County are provided in Table 2-15 for the years 2012, 2017, and 2022. Most farms in Livingston County fall between 10 and 170 acres in size, and there has been an increase in large farms (greater than 1,000 acres) from 2012 compared to both 2017 and 2022. According to the Livingston County Agricultural and Farmland Protection Plan (ACDS LLC 2006), there is a county-wide trend away from mid-sized family-owned farms toward fewer and larger farms, along with more niche farms and hobby farms, often equestrian. Census of Agriculture Statistics data for Livingston County, provided in Table 2-14, indicates that the total land area in farms has been relatively stable, but the average size of a farm has increased from 295 acres in 2012 to 321 acres in 2022 (USDA 2012, 2017, 2022). The number of farms and acreage enrolled in the Conservation Reserve, Wetlands Reserve, Farmable Wetlands, or Conservation Reserve Enhancement programs has decreased from 2012 to 2022 (USDA 2012, 2017, 2022; Table 2-14).

Table 2-13
Percentage of Agricultural Land Use in Subwatersheds (2012 to 2024)

Subwatershed	2012	2024	Change 2012 to 2024
Central	61%	60%	-1%
Cottonwood	78%	78%	0%
Densmore	44%	47%	3%
Hanna’s Creek	70%	67%	-3%
Inlet	27%	27%	0%
Long Point	89%	85%	-3%
No Name	68%	61%	-7%
NE Creeks	25%	44%	19%
North End	51%	51%	0%
North Gully	32%	30%	-2%
North McMillan	11%	12%	2%
NW Creeks	44%	44%	0%
Sand Point	83%	71%	-12%
SE Creeks	11%	10%	-1%
South Gully	41%	32%	-9%
South McMillan	21%	24%	3%
SW Creeks	38%	42%	4%
Wilkins Creek	19%	26%	7%

Source: 2012 data from EcoLogic and LCPD 2013; 2024 data from Livingston County Real Property tax parcel data (LCPD 2024b).

Agricultural exemption data are a useful metric of active agricultural activity in the watershed. To receive an agricultural use exemption, a property or farming operation must have at least 7 acres and be used in the preceding 2 years for agricultural production and have an annual average of gross agricultural product sales of \$10,000 or more for the preceding 2 years. For more details on agricultural exemptions, including qualifying agricultural enterprises less than 7 acres, rented land and exemptions to gross sales requirements, go to the [NYS Department of Taxation and Finance website](https://www.tax.ny.gov/research/property/assess/valuation/ag_overview.htm).¹⁰ According to the Livingston County Planning Department (LCPD 2024b), there are 15,083 acres in the Lake watershed that currently receive an agricultural exemption.

¹⁰ Information is available from: https://www.tax.ny.gov/research/property/assess/valuation/ag_overview.htm

**Table 2-14
Census of Agriculture Statistics for Livingston County (2012 to 2022)**

Farm Inventory	2012	2017	2022
Farms	661	661	612
Land in farms (acres)	194,945	189,488	196,542
Land in cropland (acres)	149,591	145,878	158,356
Average size of farm (acres)	295	287	321
Land Use Practices (Acres)			
No till	17,030	22,102	24,985
Reduced till	38,332	45,548	58,759
Intensive till	53,532	31,788	32,903
Cover crop	11,303	15,561	16,565
Farmed organically	5 farms	5 farms	8 farms
Irrigated land	239	208	611
Land drained by tile	43,454	44,595	49,794
Land drained by ditches	8,744	8,265	10,093
Land under conservation easement	6,025	4,232	8,751
Land enrolled in Conservation Reserve, Wetlands Reserve, Farmable Wetlands, or Conservation Reserve Enhancement Programs	2,568 acres 62 farms	1,051 acres 30 farms	641 acres 19 farms
Top Crops (Acres)			
Corn for grain	45,227	30,578	40,547
Soybeans for beans	24,092	17,147	22,549
Forage (hay/haylage)	31,773	38,487	36,142
Wheat for grain	11,046	13,528	12,275
Corn for silage/green chop	16,329	23,341	23,003
Orchards	123	39	115
Grapes (total)	59	25	48
Oats for grain	2,186	1,037	1,488
Livestock Inventory (Individuals)			
Cattle and calves	43,058	57,008	55,686
Beef cows	1,775	2,193	2,704
Dairy cows	21,776	28,803	27,387
Goats	751	588	362
Hogs and pigs	466	413	158
Horses and ponies	1,788	1,852	1,543
Sheep and lambs	5,187	10,909	10,714
Layer chickens (eggs)	1,809	2,577	2,539
Broiler chickens (meat)	2,928	212	377

Farm Inventory	2012	2017	2022
Turkeys	264	75	125

Source: 2012, 2017, and 2022 Census of Agriculture – Livingston County Data (USDA 2012, 2017, 2022)

In 2012, more than 4,500 acres of farmland in Livingston County had been placed in the state’s Purchase of Development Rights (PDR) program, ensuring continued use of agriculture. By 2023, that number had risen to over 15,000 acres (LCPD 2024c). Within the Conesus Lake watershed, there are 345 acres enrolled in the PDR program; these lands are permanently protected from nonagricultural development and will remain forever farmland.

**Table 2-15
Census of Agriculture Statistics for Farm Sizes in Livingston County (2012 to 2022)**

Farm Size (acres)	Number of Farms 2012	Number of Farms 2017	Number of Farms 2022
1 to 9	39	62	52
10 to 49	187	228	174
50 to 179	243	202	219
180 to 499	95	81	82
500 to 999	44	29	34
1,000 or more	33	59	51

Source: 2012, 2017, and 2022 Census of Agriculture – Livingston County Data (USDA 2012, 2017, 2022)

The NYS Department of Agriculture and Markets (NYSAGM) Agricultural Environmental Management (AEM) program is a voluntary, incentive-based program available to farmers through their local Soil and Water Conservation District (SWCD). AEM supports cost-effective and science-based decisions to meet farm goals while protecting and conserving natural resources. Participating farmers can document their environmental stewardship and further advance their positive contributions to protecting the environment. The AEM program continues to be supported, in part, with grants funded through the NYS Environmental Protection Fund. The AEM is a tiered program; participants progress through the following five tiers:

- Tier 1: Inventory of current activities, interests, and potential environmental concerns
- Tier 2: Documentation of current environmental stewardship and prioritize areas of concern
- Tier 3: Development of a tailored conservation plan
- Tier 4: Implementation
- Tier 5: Evaluation

The first WCR (EcoLogic and LCPD 2002) noted that many farms within the Conesus Lake watershed were engaged in developing AEM Plans. A recent data query to the NYSAGM provided a summary of the

status of AEM planning and agricultural BMPs within the Conesus Lake watershed (Knapp 2024); these data are shown in Table 2-16. Data are reported at the HUC-12 subwatershed scale, which divides the Conesus Lake watershed into two HUC-12 subwatersheds as follows and as shown in Figure 2-14:

- Upper Conesus Creek – 041300030101 (includes the Conesus Inlet, South McMillan)
- Middle Conesus Creek – 041300030102 (includes North McMillan and direct drainage tributaries)

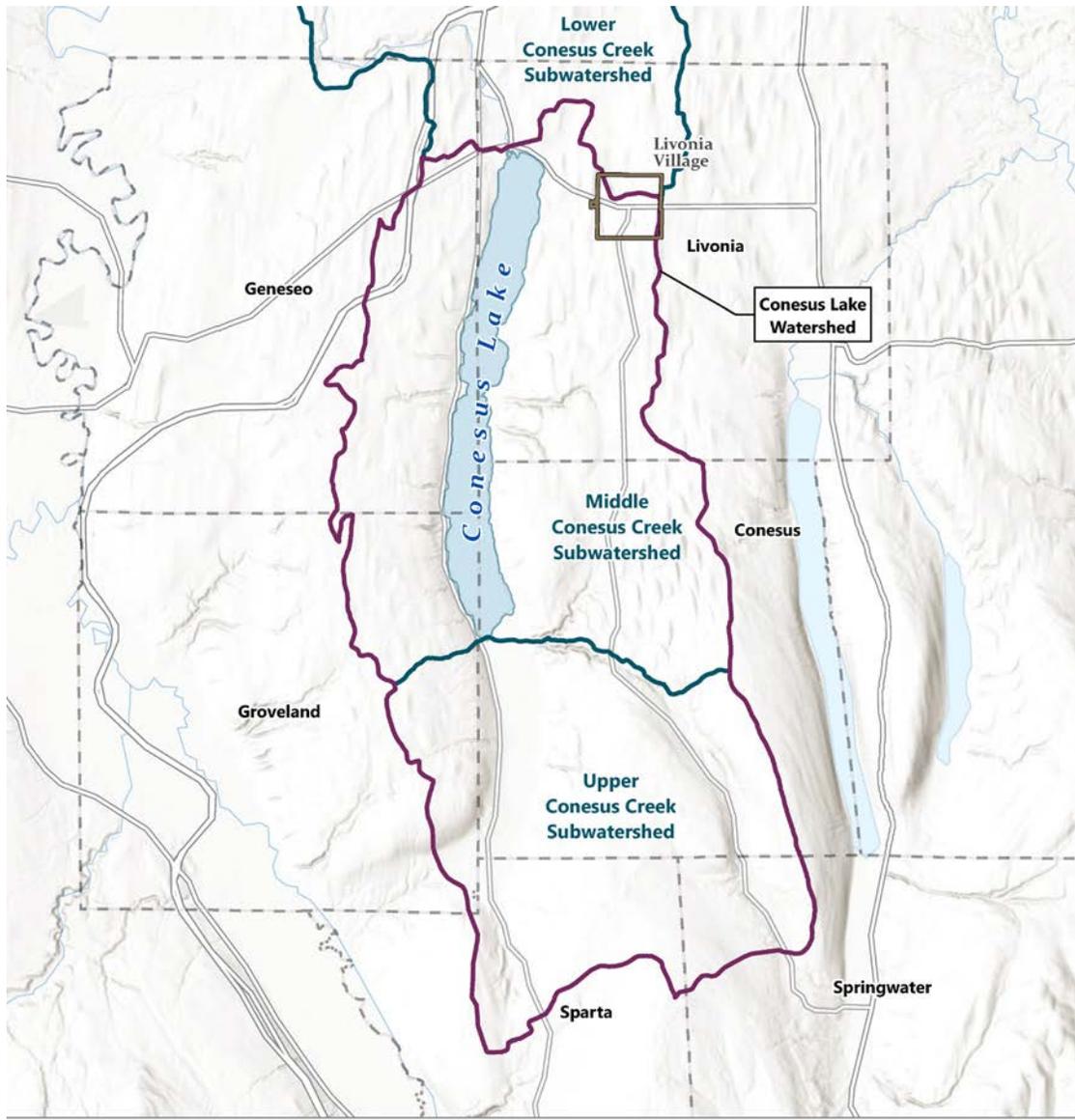
Most of the farms are within the Middle Conesus Creek HUC-12 subwatershed and are in the earlier stages of the planning process (Tiers 1, 2, and 3). Six farms are implementing their AEM Plans, and two farms are evaluating the success of their implementation efforts. Of the 35 watershed farms participating in the AEM program, 3 are classified as beef farms, 20 as grain crops, 2 as Christmas tree farms, 6 as dairy farms, 1 as a hay farm, and 3 as sheep and goat farms.

**Table 2-16
Participation in AEM Program, as of 2023**

Subwatershed (HUC-12)	Upper Conesus Creek (Conesus Inlet and South McMillan)	Middle Conesus Creek (North McMillan, Direct Drainage)	Total
Number of farms in Tier 1	0	7	7
Number of farms in Tier 2	0	11	11
Number of farms in Tier 3	0	6	6
Acres of farmland in Tier 3	0	366	366
Number of farms in Tier 4	1	5	6
Number of farms in Tier 5	0	2	2
Acres of farmland in Tier 5	0	374	374

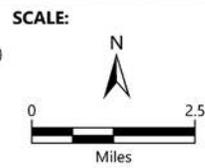
Source: NYSAGM 2024

Figure 2-14
HUC-12 Subwatersheds Comprising the Conesus Lake Watershed



- LEGEND:**
- ▬ Watershed Boundary
 - ▬ Subwatershed (12-Digit HUC)
 - Town Boundary
 - Village Boundary
 - ▬ Lake

- SOURCES:**
1. Basemap: Esri (2024)
 2. Watershed/Lake: Livingston County (2024)
 3. Town/Village: New York State (2024)



2.3.3 Water Use

2.3.3.1 Designated Use and Regulatory Classification

NYSDEC classifies surface waters, including lakes, rivers, streams, and groundwater, with respect to their designated use. These classifications can be found on the [NYSDEC website](#).¹¹ Ambient water quality standards and guidance values are in place for each classification to protect public health and environmental quality.

All tributaries to the Lake are Class C waterbodies. According to Title 6 Section 701.5 of the New York Codes, Rules and Regulations (NYCRR), the best uses of Class C waters are the following:

- Noncontact recreation
- Fishing (the waters shall be suitable for fish, shellfish, and wildlife propagation and survival)

Class C streams are not classified or monitored to serve as a source of potable water or used for water contact recreation.

Conesus Lake is classified as a Class AA waterbody. According to Title 6 Section 701.5 of the NYCRR, the best usages of Class AA waters are the following:

- Source of water supply for drinking, culinary, or food processing purposes
- Primary and secondary contact recreation
- Fishing (the waters shall be suitable for fish, shellfish, and wildlife propagation and survival)

Further, this classification may be given to those waters that, if subjected to approved disinfection treatment, with additional treatment, if necessary, to remove naturally present impurities, meet or will meet New York State Department of Health (NYSDOH) drinking water standards and are or will be considered safe and satisfactory for drinking water purposes.

As described in the following subsections, the Lake currently is managed to support multiple uses as a public water supply for the Village of Avon and Village of Geneseo water distribution systems, a recreational asset, and a productive fishery. Section 2.4 discusses the extent that the waterbodies attain their designated uses.

2.3.3.2 Water Supply

Approximately 20,000 residents within portions of the Towns of Geneseo, Avon, York, Groveland, and Leicester and the Villages of Avon and Geneseo (collectively 22% of Livingston County's population) obtain drinking water from the Lake (NYSDEC et al. 2018). The Villages of Avon and Geneseo hold permits to draw and treat water from the Lake to supply the public. As shown in Table 2-17, the total permitted surface water withdrawal is 6.5 million gallons per day (MGD); the Village of Avon is

¹¹ This information is accessible from <https://dec.ny.gov/environmental-protection/water/water-quality/standards-classifications>

allocated 3.5 MGD and the Village of Geneseo is allocated 3.0 MGD (LCPD and CPL 2020). Total average withdrawal by both purveyors, 1.7 MGD, is substantially less than the permits allow (LCPD and CPL 2020); the average daily water use for the Village of Avon is 0.75 MGD (maximum daily use is 1.1 MGD), and the average daily water use for the Village of Geneseo is 0.95 MGD (maximum daily use is 2.2). The combined maximum water use of 3.3 MGD is also well below the 6.5 allocation limit.

A safe yield analysis for the Lake was completed in 2021 (Schnabel Engineering 2021) to support future water supply management decisions. Safe yield for water supply calculates the volume of water that can be continuously withdrawn from the Lake during an extreme drought while still meeting regulatory and operational constraints. The safe yield was calculated using information related to water inflows, outflows, storage, and evaporation. The safe yield calculation incorporates three operational constraints that could affect future water withdrawal from the Lake. The first constraint is the existing permitted allocations to the Villages of Avon and Geneseo. Secondly, the Lake water level is guided by seasonal target water levels established by the U.S. Army Corps of Engineers (USACE) known as the rule curve. The rule curve establishes target summer and winter water levels to protect multiple uses, including flood protection, habitat, and recreation. The third constraint is the regulatory requirement for the Livingston County Water and Sewer Authority (LCWSA) to provide a minimum downstream release for water quality and habitat protection (Schnabel Engineering 2021). Lakeville Wastewater Treatment Plant discharges to the Lake outlet; the facility’s discharge permit requires LCWSA to maintain a minimum stream flow in Conesus Creek upstream of the facility’s outfall for dilution.

**Table 2-17
Summary of Water Allocation and Safe Yield Calculations**

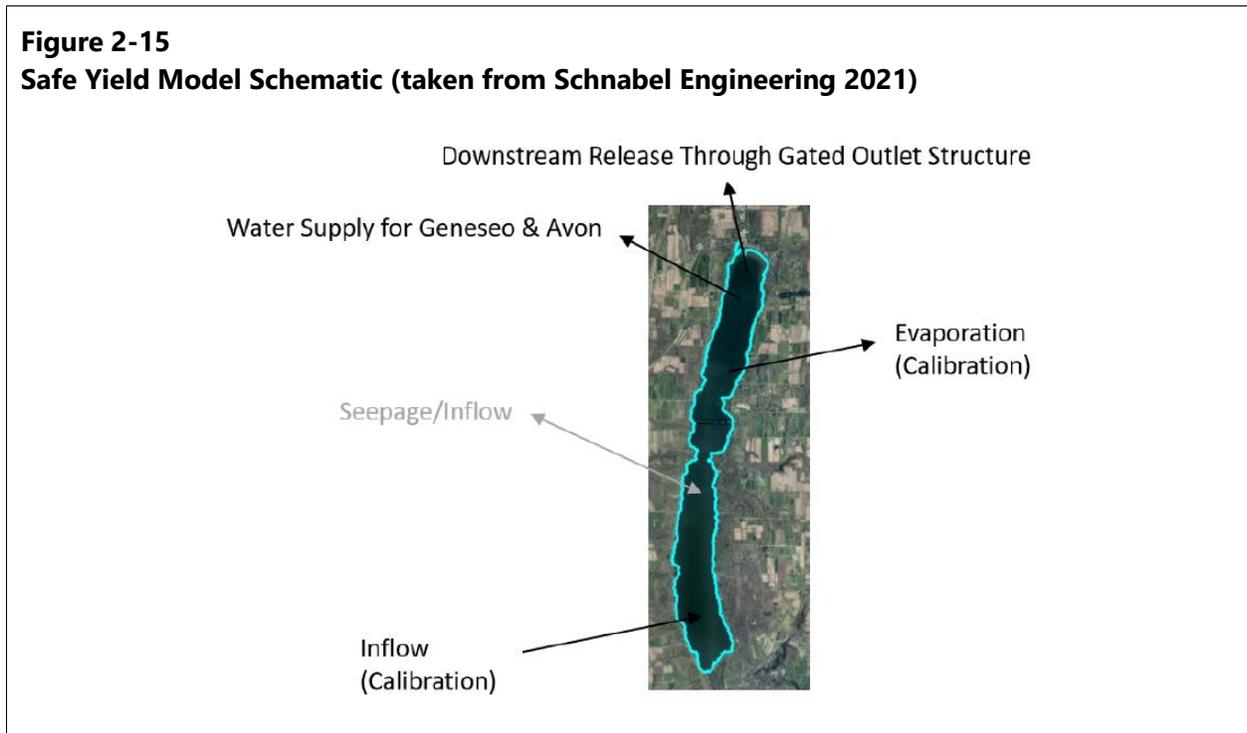
Allocated Use	Permitted Withdrawal (MGD)	Average Daily Withdrawal (MGD)
Water Supply: Town of Avon	3.5	0.75
Water Supply: Town of Geneseo	3.0	0.98
Downstream minimum release required for wastewater dilution	6.5	Consistently at or above 6.5 MGD
Total allocation	13.0	
Safe Yield at 3 feet drawdown (Lake elevation of 815.5 feet; water supply and release) ¹	10.7	
Deficit/over-allocation	2.3	

Source: LCPD and CPL 2020

The safe yield analysis engineering team developed a hydrologic model to project the volume of water available for public water supply under future extreme drought scenarios, given the rule curve and required downstream release (Schnabel Engineering 2021). The model, depicted below in

Figure 2-15, included outflow components (water supplied to the Villages of Avon and Geneseo, downstream release through the gated outlet, and evaporative loss); water inflow component (direct precipitation onto the Lake surface plus watershed and stream inflows) and water storage in the Lake. They concluded that maintaining the winter USACE target elevation of 816.5 feet for the Lake would not be achievable during an extreme drought if both water purveyors continually withdrew water at their maximum permitted rate. The study also recommends updating the safe yield analysis as the hydrologic conditions change, demand for water changes, water systems are upgraded, or if regulatory requirements are modified.

Figure 2-15
Safe Yield Model Schematic (taken from Schnabel Engineering 2021)



There are workable, temporary measures that would sustain delivery of an adequate supply of public water during extreme drought conditions. A short-term modification of the Lake elevation target is one temporary measure, though it is complicated by the USACE rule curve restrictions. If the Lake elevation targets were temporarily relaxed to an elevation of 815.5 feet during a drought emergency, the analysis determined a safe yield for water supply of 4.2 MGD and a dependable yield (water supply plus downstream release) of 10.7 MGD (Schnabel Engineering 2021). This value can be compared with the current actual average daily water use by the Avon and Geneseo water treatment facilities, which total less than 2 MGD of the permitted 6.5 MGD. Another approach would be to enact water conservation measures, although this reduction in water demand may be inadequate to meet the target. Another measure would be to pump water over the outlet dam to maintain outflows

at necessary levels; this would require significant funding resources to implement and coordination to determine jurisdiction for controlling the pumps.

While the current demands on the Lake for water withdrawal can be met with no adverse impact on maintaining target Lake levels, future demand is a potential issue of concern. Livingston County and its consultant CPL completed an update to the 1991 *Comprehensive Water Supply Study* (LCPD and CPL 2020). The analysis identified the issue of over-allocation of surface water resources in the county, notably Conesus, Silver, and Hemlock Lakes. Increased redundancy and interconnections among the water systems are key recommendations of the 2020 report. Such interconnections are consistent with the Drought Preparedness Recommendations from the NYS Comprehensive Emergency Management Plan (DHSES 2025) and can serve as a significant supplement to the Lake source, especially during drought or abnormally dry events. In addition to an integrated evaluation of each permitted withdrawal, additional investment in infrastructure for water storage, treatment, and delivery is recommended. These actions can help ensure a continued supply of safe drinking water as well as improved capacity for regional economic development.

The *Water Supply Study* update considered the impacts of demographics, development trends, and desired growth patterns on the future demand for water. Projected demand for public water supply indicates that the 2050 average water demand could reach 7.25 MGD, which is nearly 3.5 MGD above current levels. These projections confirm that the current overallocations must be addressed to support the community vision for growth and economic development. The NYSDEC has indicated that discussion of permitted allocation will launch in response to a request for additional withdrawal to accommodate a change in use.

2.3.3.3 Recreation

The Lake is a year-round sporting and water-based recreation destination. In the warmer months, the Lake is a popular fishing, power boating, sailing, canoeing/kayaking, and swimming destination. Waterfowl hunting is popular in autumn, and ice fishing, ice skating, and snowmobiling are the predominant recreational activities when the Lake is frozen.

There are no official public bathing beaches on the Lake; the Long Point Park public beach is no longer open for swimming. There are two regulated private bathing beaches on the Lake: Conesus RV Park and Camp Stella Maris. Water quality at these beaches is monitored by the LCDOH weekly during the recreational season (Memorial Day to Labor Day) and more frequently in response to visual observation of turbidity or phytoplankton blooms. Public boat launches, described in Table 2-18 and shown in Figure 2-16, and private marinas provide access to the Lake.

The Conesus Lake State Boat Launch, located on the eastern side of the Lake, is the only public boat launch with a concrete ramp for trailer launching. The two private marinas are Mark's Leisure Time Marine and Smith Boys, which are both located on East Lake Road in the Town of Conesus.

Since 2018, the State Park’s boat launch has participated in the Watercraft Steward Program. Annual reports of the program provide information regarding Lake usage; however, data may not be comparable between years due to changes in staffing and hours of coverage at the State Parks’ boat launch. Usage at the other access points to the Lake is not routinely monitored. The 2023 Watershed Steward Report notes a total of 3,895 inspections at the State Park Boat Launch; these numbers may include multiple launches of individual watercraft over the recreational season. See Section 2.7.2 for additional details about this program as it relates to invasive species.

**Table 2-18
Public Boat Launches for Conesus Lake**

Town	Location	Type	Manager or Operator
Conesus	Conesus Inlet WMA	Hand launch	NYSDEC
Geneseo	Long Point Park	Hand launch	Town of Geneseo
Livonia	State Boat Launch on East Lake Road	Hard surface launch for trailers	NYSOPRHP
Livonia	Pebble Beach Road	Hand launch	NYSDEC
Livonia	Vitale Park, Sand Point	Hand launch	NYSDEC, Town of Livonia

Notes:

Hand launches do not have trailer capacity, and boats must be hand carried to the water.

Source: [NYSDEC Boat Launch Sites for Livingston County](#)

2.3.3.4 Fisheries Management

The Lake is a popular year-round destination for anglers. The Lake’s fish community is regularly surveyed and actively managed by biologists at NYSDEC Region 8, as discussed in Section 2.2. In addition to these efforts, the WMA at the Lake’s southern end is managed to enhance habitat for northern pike spawning.

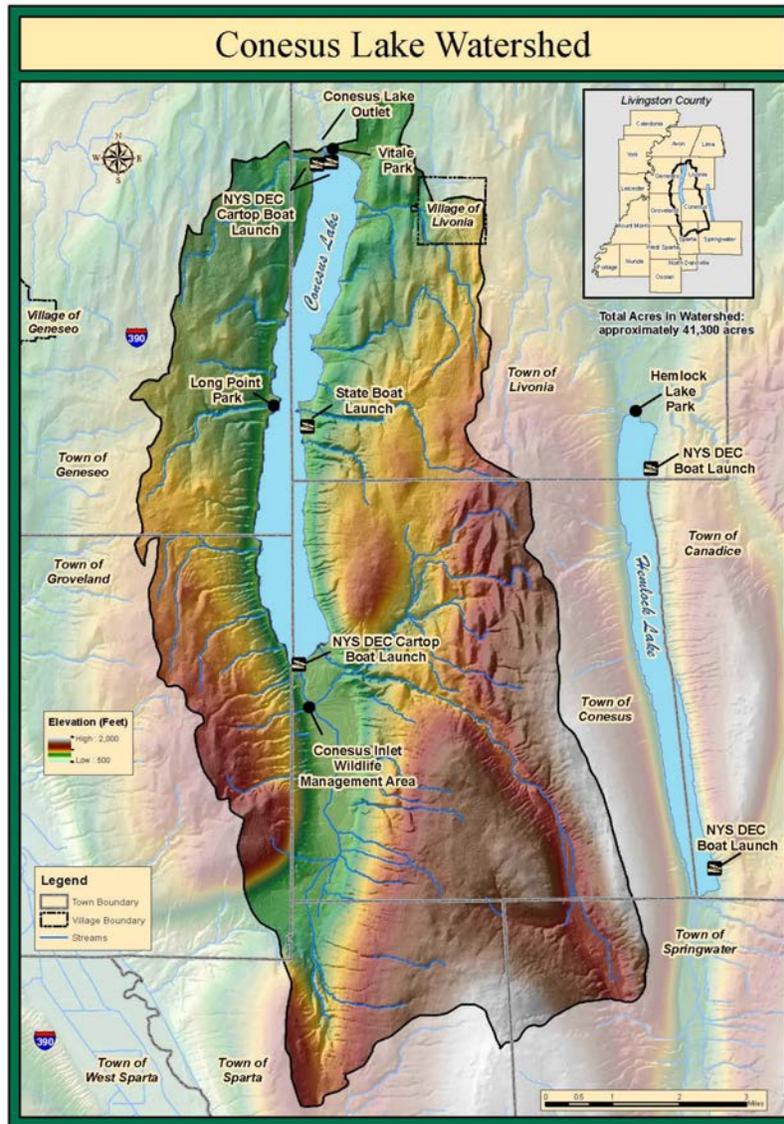
2.3.4 Relationship Between Land Use Trends and Water Quality

The shoreline of the Lake is densely developed, except the NYSDEC WMA located near the Conesus Inlet. The land adjacent to the Lake has a high percentage of impervious surfaces, including buildings, driveways, parking areas, and roads associated with residential properties. Impervious surfaces do not allow water to infiltrate; consequently, precipitation and snowmelt run directly over land into the Lake, picking up pollutants along the way and increasing its erosive potential.

Twenty years ago, the trend was increasing density of small seasonal residences along the lakeshore. Over time, the trend has shifted toward larger homes, many of them occupied year-round, with increased area of impervious cover.

Residential development is increasing in more rural areas of the watershed, including areas with steeper slopes. Development on steeper slopes is especially vulnerable to soil erosion during construction and presents challenges for effective stormwater management.

Figure 2-16
Public Boat Launches on Conesus Lake



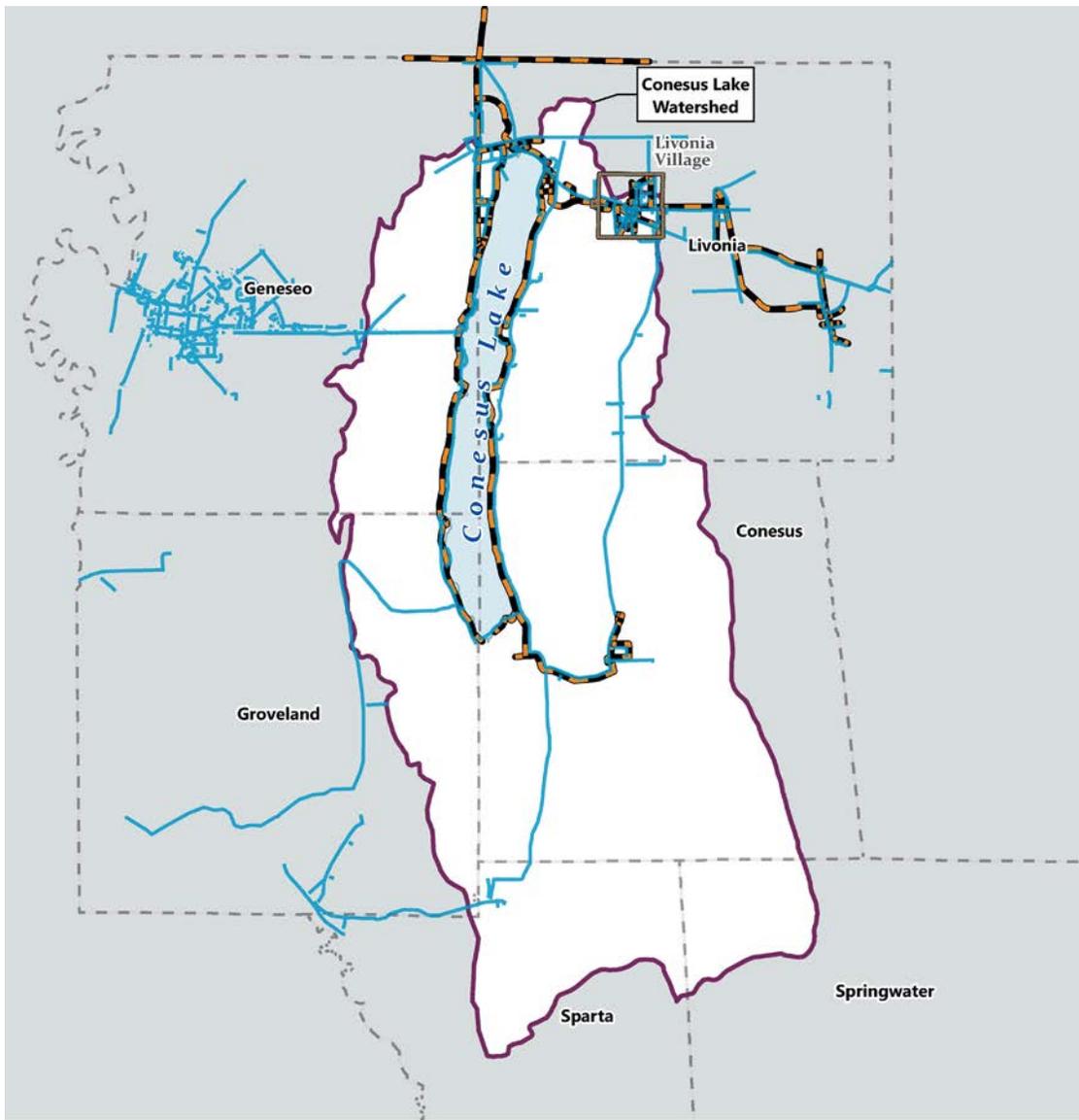
Source: CLWC

The surface area of roadways in the watershed has also increased over time, which is correlated with a steady increase in the concentration of sodium (Na) and chloride (Cl) in Lake water, potentially a result of winter deicing practices.

As described earlier in this section, agriculture continues to be a dominant land use in the Conesus Lake watershed. Agricultural land uses have intensified in recent decades in response to national and regional economic forces. The trend in Livingston County is towards larger herd sizes and increased mechanization. Fields are cultivated closer to streams and drainage ways, and many hedgerows have disappeared. Intensification of land use contributes to erosion and nutrient loading to adjacent streams and, ultimately, the Lake. On the positive side, agricultural producers apply far fewer 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. Larger farming operations have developed comprehensive nutrient management plans to minimize the risk of discharges to surface waters. Another positive change is the expanded adoption of cover crops to reduce erosion and improve soil health. The continued participation in the AEM program demonstrates a commitment by the local agriculture community to environmental stewardship.

Wastewater collection and treatment have also improved with time. In May 2024, LCWSA completed improvements to the Lakeville wastewater treatment facility discharging to the Lake outlet, which have reduced the effluent concentrations of ammonia and oxygen-demanding materials. The collection system currently serves approximately 3,600 units (at 2.5 persons per unit, this equates to a population of 9,000) within the Towns of Livonia, Conesus, Groveland and Geneseo. In 2009, sewer service was extended into the Hamlet of Conesus in the Town of Conesus. Figure 2-17 shows the extent of existing sewer and water lines within the watershed.

Figure 2-17
Water and Sewer Lines in the Conesus Lake Watershed.



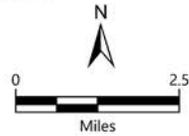
LEGEND:

- Watershed Boundary
- Town Boundary
- Village Boundary
- Lake
- Sewer Line
- Water Line

SOURCES:

1. Basemap: Esri (2024)
2. Watershed/Lake: Livingston County (2024)
3. Utility Data: Livingston County (2024)

SCALE:



2.4 Water Quality

2.4.1 *Monitoring Efforts*

There is extensive data and information on the nature of Conesus Lake and its watershed. A summary of the monitoring efforts is provided in Table 2-19; these efforts encompass chemical, physical, and biological parameters. NYS agency staff, university researchers, trained community volunteers, CLA members, Livingston County staff, and many others have contributed to this robust dataset of water quality and ecological conditions. The WCR Update (EcoLogic and LCPD 2013) provides a more detailed overview of the earlier studies listed in Table 2-19 related to nutrient loadings, water clarity, sedimentation, and biological surveys, including studies by NYSDEC and SUNY Brockport and SUNY Geneseo researchers.

The findings of ongoing research and monitoring efforts guide the CLWC's adaptive management approach. The 2003 CLWMP recommended a monitoring framework to evaluate water quality and ecological conditions, assess the effectiveness of BMPs, and identify the need for additional actions. An annual monitoring meeting is convened each winter to define partners, programs, and resources for the upcoming field season.

The in-lake monitoring program has provided a quantitative estimate of the magnitude of internal phosphorus loading, defined as legacy phosphorus, that entered the Lake over time and continues to cycle from Lake sediments to the overlying water. Understanding that the internal phosphorus flux represents the major annual total phosphorus (TP) load to the Lake, far surpassing the TP load from the watershed, helps guide remedial alternatives and set community expectations.

Monitoring the Lake's biological resources helps guide management alternatives. Dynamics of the phytoplankton and zooplankton community inform our understanding of factors affecting water clarity and the risk of HABs. Long-term monitoring programs help track species composition and abundance over time and support early detection of and rapid response to invasive species. Tracking these elements of the food web supports fisheries management decisions as well.

Like the in-lake monitoring program, data generated through the watershed monitoring program guide management decisions. Stream sampling, which includes water quality and biological parameters, supports estimates of nutrient and sediment input to the Lake, evaluations of the effectiveness of BMPs, and identification of stream segments with eroding banks and beds. This information helps designate priority areas for protection and remediation.

Design of the annual monitoring programs is influenced by emerging issues and available resources. However, a general commitment to a 3-year rotating focus (in-lake trophic state, tributary loading, and site-specific watershed assessments) has been in place for the last 20 years. Researchers from SUNY Brockport and SUNY Geneseo have conducted numerous monitoring studies of the Lake and

its watershed since 2003. Details of the studies and their findings are archived on the [LCPD website](#).¹² Highlights of these extensive efforts from 2003 to 2024 are summarized in Table 2-19, which shows the available data on TSI, TP, food webs, lake remedial measures, tributary studies and BMPs, and streambank stabilization. The CLWC issues annual report cards that summarize activities in the watershed, including water quality conditions.

**Table 2-19
Summary of Monitoring Programs, Conesus Lake and Watershed**

Year	TSI*	Internal Total Phosphorus	Food Web	Lake Remedial Measures	Tributary BMPs and Load	Stream Stabilization
2003	√	√	Macrophytes		√	
2004			Macrophytes, phytoplankton, fish	DEIS	√	
2005			Macrophytes and macrobenthos	Alum jar tests	√	
2006	√		Macrophytes	SolarBee	√	
2007	√		Macrophytes	SolarBee	√	√
2008	√		Macrophytes		√	√
2009	√	√	Macrophytes, phytoplankton, fish	Bathymetric survey	√	
2010			Macrophytes		√	
2011	√				√	
2012	√		Macrophytes		√	
2013			Zebra mussels			
2014	√		Phytoplankton and fish			
2015					√	
2016					√	√
2017	√ CSLAP	√	Macrophytes and cyanobacteria			
2018	√ CSLAP	√	Macrophytes, cyanobacteria, dreissenid mussels			
2019	√ CSLAP	√	Cyanobacteria		√	√
2020	√ CSLAP	√	Macrophytes and phytoplankton		√	√
2021	√ CSLAP		Macrophytes and zooplankton		√	√
2022	√ CSLAP		Phytoplankton		√	√
2023	√ CSLAP		Phytoplankton and cyanobacteria		√	
2024	√ CSLAP	√			√	

Notes:

* TSI (trophic state parameters) are total phosphorus, chlorophyll-a, and Secchi disk transparency.

Source: CSLAP (NYSFOLA and NYSDEC 2017 through 2024)

¹² Documents are accessible from <https://www.livingstoncountynyny.gov/780/Reports-Publications-Educational-Resourc>.

In addition to these research and monitoring efforts, the Watershed Inspection Program of the LCDOH monitors public bathing beaches for the presence of fecal coliform bacteria and cyanobacteria on a weekly basis while they are operational. Since 2011, the LCDOH has taken 501 water samples at public beaches and special sampling sites (LCPD 2024a). The Watershed Inspector also works with town and village personnel throughout the watershed to inspect stormwater controls on construction sites and respond to complaints.

The Lake currently participates in the CSLAP, a volunteer lake monitoring program run by NYSDEC and the New York State Federation of Lake Associations (NYSFOLA). CSLAP monitoring occurred from 1986 to 1990 and restarted in 2017 as an initiative of the NYSDEC Finger Lakes Water Quality Hub. Early monitoring efforts focused on the deepest point of the Lake in the southern basin; efforts since 2017 have included a second location in the northern basin.

The CSLAP program relies on trained CLA volunteers to conduct biweekly water quality monitoring from June through September. These community scientists monitor water quality conditions and collect samples for chemical analyses from the Lake's surface and deep waters. Monitored parameters include water clarity (Secchi disk transparency [SDT]), field profiles of water temperature, specific conductance, and pH; and grab samples of color, TP, nitrogen (N), chlorophyll-a (Chl-a), calcium (Ca), and chloride (Cl). Water samples are sent to Upstate Freshwater Institute in Syracuse, New York (ELAP No. 11462 and USEPA No. NY01276) for analysis. CSLAP reports can be found on the [NYSDEC website](#).¹³

As part of the *Conesus Lake Harmful Algal Blooms Early Detection and Rapid Response Plan* (CLWC 2015), the LCDOH Watershed Inspector works with trained CLA volunteers to conduct regular surveys of shoreline areas for the potential presence of HABs. Data from the surveillance effort support the NYSDEC's New York Harmful Algal Bloom System (NYHABS) initiative. Coordinated response partners also include SUNY Geneseo, Livingston County Sheriff's Marine Patrol, and the Conesus Lake Watershed Manager. Additional information on the HABs initiative is included in Section 2.7.1.

2.4.2 Current Conditions and Trends

2.4.2.1 Trophic State

Like all the Finger Lakes, the level of primary productivity (i.e., growth of plants, algae, and cyanobacteria) in the Lake is limited by the supply of available phosphorus. Lakes are often classified according to their trophic state and assigned a term describing their position on a continuum of primary productivity (NYSDEC and NYSFOLA 2019). Eutrophic lakes are highly productive lakes that exhibit elevated concentrations of phosphorus and phytoplankton and low water clarity. At the other end of the trophic continuum are lakes of low productivity, which are oligotrophic lakes, and these

¹³ Documents are accessible from <https://experience.arcgis.com/experience/c32878596a0a47deb5f97ea5e07ec9c5/page/Dashboard/>

lakes have low concentrations of phosphorus and phytoplankton and exhibit high water clarity. A mesotrophic lake falls somewhere in between oligotrophic and eutrophic. In 2002, the Lake was classified as eutrophic. Since 2013, the Lake has been classified as mesotrophic (Ecologic and LCPD 2013, NYSFOLA and NYSDEC 2017-2024).

Lakes naturally increase in productivity as they age and accumulate nutrients and sediments carried in through precipitation, stormwater runoff, groundwater seepage, and atmospheric deposition or from the existing aquatic plant life. Both the process and the consequences of lake aging are referred to as eutrophication. While eutrophication is a natural process, lakes can exist for centuries in a state of relative trophic equilibrium. Human actions that increase nutrient loading can accelerate the process; this is referred to as cultural eutrophication (NYSFOLA 2009, NYSDEC and NYSFOLA 2019).

Because phosphorus limits the growth of phytoplankton (microscopic algae and cyanobacteria), and phytoplankton suspended in the water column directly affect water clarity, lake managers typically assess the level of primary productivity (defined as trophic state) by measuring the following three inter-related parameters: TP, SDT, and Chl-a (NYSFOLA 2009, NYSDEC and NYSFOLA 2019). These parameters are discussed as follows:

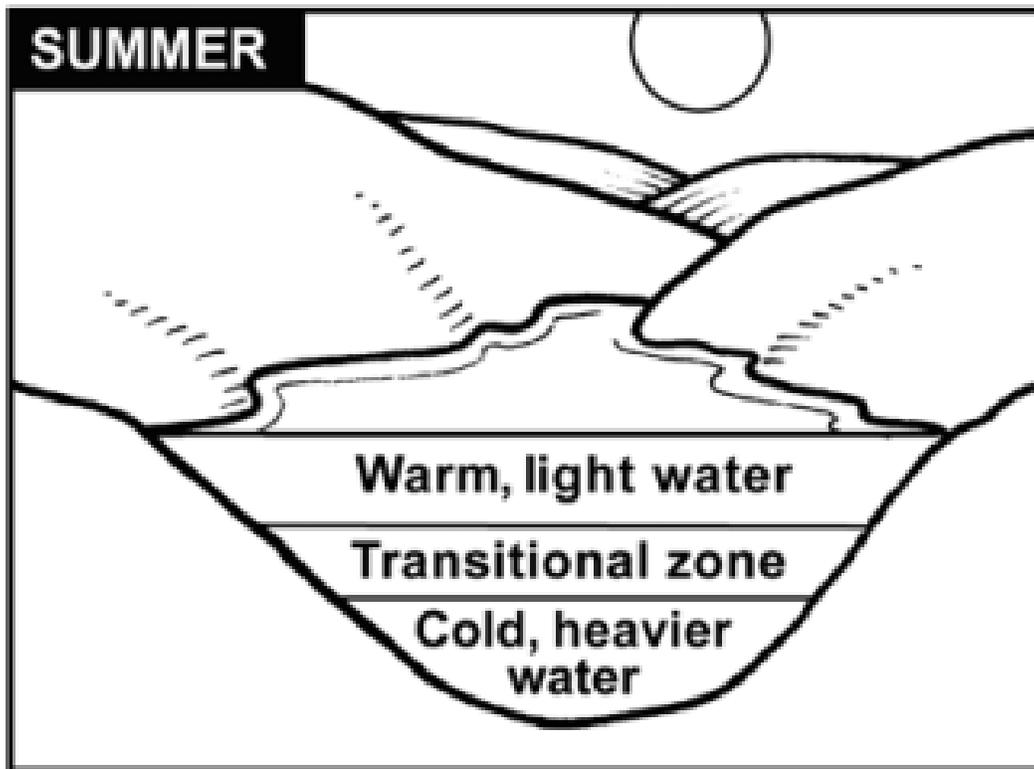
- **TP:** TP is typically the nutrient limiting phytoplankton growth for lakes at this latitude; therefore, phosphorus availability is a key determinant of trophic state.
- **Chl-a:** Chl-a is a photosynthetic pigment present in phytoplankton. The concentration of Chl-a in lake water samples is an excellent surrogate for phytoplankton abundance.
- **Water clarity:** Water clarity is commonly measured by SDT. Secchi disks are 20-centimeter diameter flat disks with alternating quadrats of black and white. The disk is lowered through the water column until it is no longer visible, and that depth is recorded. This simple metric is widely used for its ease and comparability.

In lakes deep enough to undergo thermal stratification in the summer, such as the Lake, oxygen can be depleted in deeper waters as the microbial community decomposes phytoplankton and other organic material produced within the lake (NYSFOLA 2009). Figure 2-18 depicts summer stratification, where the upper waters (the epilimnion), which are warm and well-mixed, are separated by a thin transition layer (the metalimnion) from deeper waters (the hypolimnion), which are colder and do not mix. Within the hypolimnion, the thermocline is where water temperatures rapidly change with depth.

The rate and magnitude of oxygen depletion is an indication of relative supply (governed by lake volume and bathymetry) and demand (governed by production of bacteria, algae, and plants). Lakes with low primary productivity exhibit minimal oxygen depletion compared with more productive lakes. Oxygen depletion of the lower waters affects a lake's aquatic habitat and chemistry. When deep waters become anoxic (without oxygen), chemical changes occur at the sediment surface that

release P chemically bound to bottom sediments to the waters above; this process is termed internal P loading. For this reason, dissolved oxygen (DO) in deep waters is often tracked among the trophic state parameters.

Figure 2-18
Summer Lake Stratification (=Diet for a Small Lake; NYSFOLA 2009)



Source: Diet for a Small Lake, NYSFOLA 2009

Delineations between trophic state are not fixed. Many water resources management agencies use the 1977 Carlson Trophic State Index as a guide to differentiate oligotrophic, mesotrophic, and eutrophic lakes (Carlson 1977). Various states, including New York, have refined the delineations based on regional conditions. The New York-designated ranges of the trophic state indicator parameters (i.e., TP, Chl-a, and SDT) and description corresponding with each trophic state classification are provided in Table 2-20 (NYSDEC and NYSFOLA 2019). Lakes with high concentrations of TP and Chl-a, and low transparency are considered eutrophic. Lakes with low aquatic nutrients and parameters, and high oxygen levels, especially in deep waters, are considered oligotrophic. Lakes with intermediate levels of all three trophic state indicator parameters are considered mesotrophic. The Lake is currently classified as a mesotrophic lake NYSFOLA and (NYSDEC 2024).

Table 2-20
Trophic State Indicator Parameters

Trophic State	Attributes and Recreational Use	TP (µg/L)	Chl-a (µg/L)	SDT (meters)
Oligotrophic	Clear water; oxygen present year-round in deeper waters; cold-water fisheries habitat	<10	<2	>5
Mesotrophic	Water moderately clear; increasing probability of oxygen depletion in deeper waters during summer; limited habitat for cold water fish community	10 to 20	2–8	2–5
Eutrophic	Oxygen depletion in lower waters; excessive macrophytes possible; cyanobacteria may dominate the plankton; warm-water fisheries only; Nuisance macrophytes, algal scum, and low transparency may discourage swimming and boating.	>20	>8	<2

Source: NYSDEC and NYSFOLA, 2019

Limnologists and lake managers have compiled extensive datasets demonstrating the correlation among these variables and defining thresholds of what constitutes a “healthy” lake. Defining what is healthy includes analysis of a lake’s habitat for aquatic life, as well as the lake’s ability to support desired human uses, such as water supply, recreation, and aesthetics. There are no promulgated regulatory standards for Chl-a, TP, or SDT. In 1993, NYS adopted a guidance value for TP in ponded waters of 20 micrograms per liter (µg/L); this value, shown in Table 2-21, was selected to be protective of recreational uses (NYSDEC 1993). In December 2024, NYSDEC released the proposed new water quality guidance values for public comment, as shown in Table 2-21. These guidance values were developed to reflect current water quality issues, including HABs. The Lake is classified as AA waterbody. These proposed guidance values are lower than current and historical levels of TP and Chl-a in the Lake. In addition to the NYSDEC guidance values for TP and Chl-a, NYSDOH uses an SDT guidance value of 2 meters for swimming safety. The water clarity guidance value applies to Class A, A-S, AA, AA-S, and B waters.

Table 2-21
Current and Proposed Guidance Values for Trophic State Indicator Parameters, Ponded Waters

Water Classification	TP, Summer Average	Chl-a, Summer Average	Rationale
Current Guidance Values			
A, A-S, AA, AA-S, B	20 µg/L	6 µg/L	Recreational uses
Proposed Guidance Values			
AA, AA-S	12 µg/L	4 µg/L	Drinking Water (Human Health)
A, A-S	17 µg/L	6 µg/L	Drinking Water (Human Health)
A, A-S, AA, AA-S, B, C	20 µg/L	8 µg/L	Fishing (Aquatic Life)

Source: Current Guidance Values are from NYSDEC 1993; Proposed Guidance Values are from NYSDEC 2024

The extensive monitoring of the Lake has generated an excellent long-term dataset to illustrate trends over time in the three trophic state indicator parameters. In addition, scientists have consistently measured the Lake’s DO profile during the summer period of thermal stratification. The annual monitoring efforts led by SUNY Geneseo and SUNY Brockport have provided detailed information regarding the Lake ecosystem as well as the nature of the watershed streams. The trophic state indicators and DO data described in the following sections include graphs of historical and recent data; sources for the data are provided in Table 2-22.

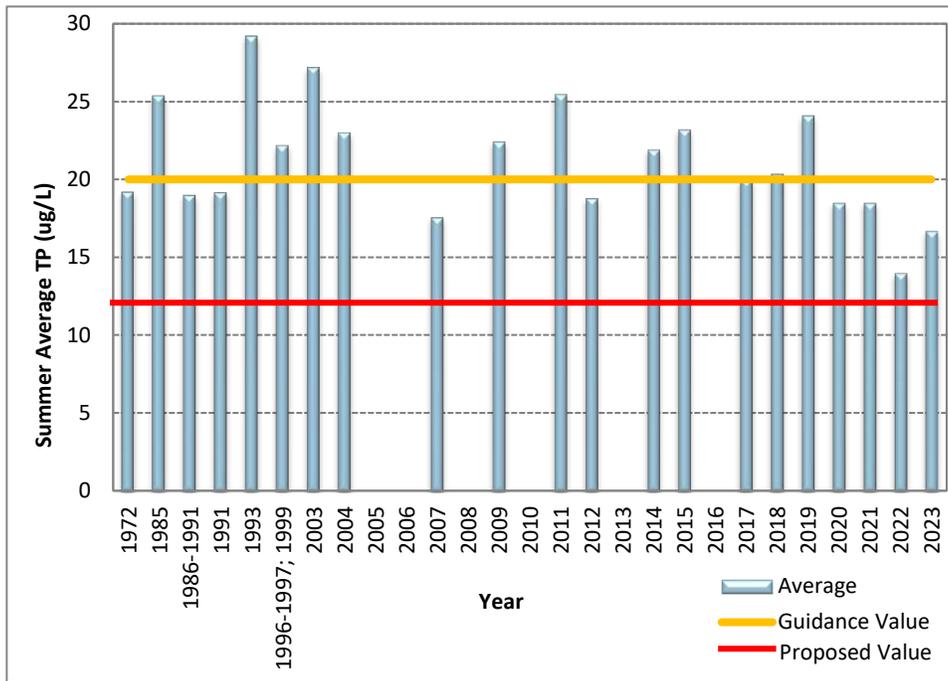
Table 2-22
Sources of the Conesus Lake Data Shown in the Trophic State Figures

Parameter	Year	Data Source	Author Affiliation
DO	1910	Birge and Juday 1914	Wisconsin Geology & Natural History Survey
TP, Chl-a, SDT, DO	1972	Mills 1975	Cornell University
DO	1980	Stewart, unpublished	SUNY Buffalo
TP	1985	Makarewicz 1986	SUNY Brockport
Chl-a	1985	Crego 1994	SUNY Brockport
TP, Chl-a, SDT, DO	1986-1991	CSLAP 2009	NYSDEC
TP	1991, 1993	Crego 1994	SUNY Brockport
TP, Chl-a, SDT, DO	1996, 1997, 1999	Callinan 2001	NYSDEC
Chl-a	2000	Makarewicz et al. 2001	SUNY Brockport
TP	2003	Makarewicz et al. 2012	SUNY Brockport
TP, Chl-a	2004	Makarewicz et al. 2012	SUNY Brockport
TP	2007	Makarewicz et al. 2008	SUNY Brockport
TP, Chl-a	2009	Makarewicz and Lewis 2009	SUNY Brockport
TP, Chl-a, DO	2011	Bosch et al. 2011	SUNY Geneseo
TP, Chl-a	2012	Makarewicz et al. 2012	SUNY Brockport
TP, Chl-a, SDT, DO	2015	Bosch et al. 2015	SUNY Geneseo
TP, Chl-a, SDT, DO	2019	Bosch et al. 2020	SUNY Geneseo
TP, Chl-a, SDT, DO	2022	Bosch et al. 2023	SUNY Geneseo
TP, Chl-a, SDT, DO	2017–2023	CSLAP 2017-2023	NYSDEC

2.4.2.1.1 Total Phosphorus

TP has been measured routinely in the Lake. As shown in Figure 2-19, the summer average TP concentration has exceeded the current guidance value of 20 µg/L to protect recreational uses numerous times during the past 50 years; the value has been below this guidance threshold for the last several years since 2020. There are no observations of compliance with the proposed guidance value of 12 µg/L.

**Figure 2-19
Summer Average Total Phosphorus (µg/L) in Upper Waters of Conesus Lake**



Notes:

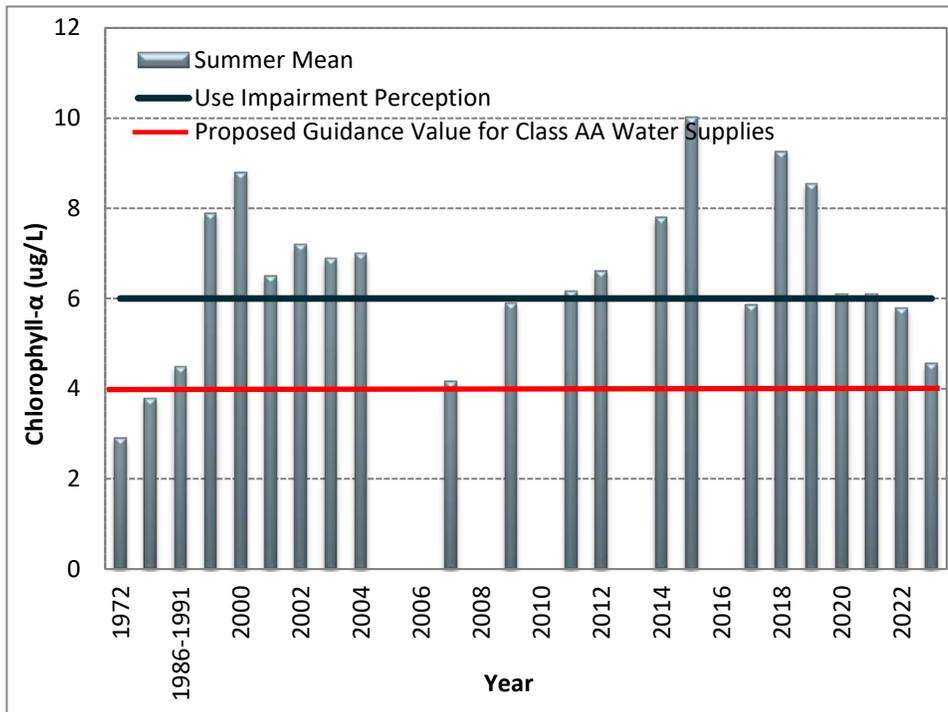
Summer data are generally defined as the period June to August; seasonal sampling period for data prior to 2003 cannot be verified and is assumed to represent summer.

Data Sources: Bosch et al. 2011; Bosch et al. 2015; Bosch et al. 2020; Bosch et al. 2023; Callinan 2001; Crego 1994; CSLAP 2009, 2017-2023; Makarewicz 1986; Makarewicz and Lewis 2009; Makarewicz et al. 2008; Makarewicz et al. 2012; Mills 1975

2.4.2.1.2 Chlorophyll-a

Long-term trends in summer average Chl-a concentrations in surface waters are displayed in Figure 2-20. The current guidance value of 6 µg/L references the use impairment perception, which is the threshold when lake users begin to consider the lake waters less attractive for water contact recreation (NYSDEC 1993). The Lake has frequently exceeded 6 µg/L during the last 50 years, with improvement in recent years. As a water supply lake, the proposed guidance value for Class AA Water Supplies in the Lake is 4 µg/L. This low concentration is considered appropriate to minimize the levels of cyanobacteria and other forms of organic carbon entering public water supplies and the associated risk of formation of disinfection byproducts in finished water. As shown in Figure 2-20, the Lake has routinely exceeded this proposed threshold during the last 50 years.

Figure 2-20
Historical Summer Average Chl-a ($\mu\text{g/L}$) Concentration in Upper Waters of Conesus Lake



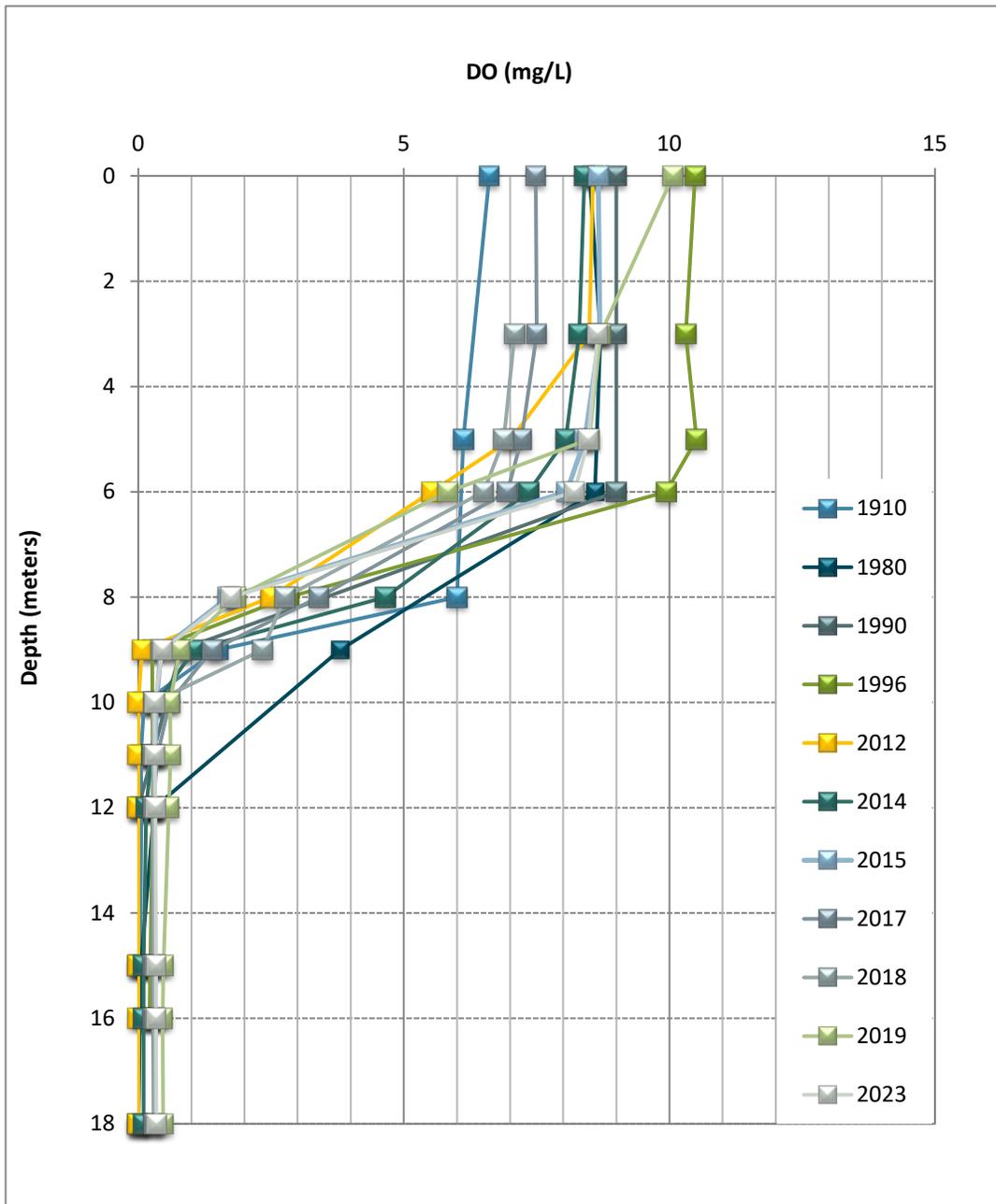
Data Sources: Bosch et al. 2011; Bosch et al. 2015; Bosch et al. 2020; Bosch et al. 2023; Callinan 2001; Crego 1994; CSLAP 2009, 2017-2023; Mills 1975; Makarewicz et al. 2001; Makarewicz and Lewis 2009; Makarewicz et al. 2012

2.4.2.1.3 Secchi Disk Transparency

SDT is a measurement of water clarity, which can be affected by algal abundance. Clarity affects how deep sunlight penetrates the water, impacting photosynthesis and habitat for rooted aquatic plants. When algal abundance is high, water clarity is diminished, and SDT measurements are lower. Clear water is also more appealing for recreational activities like swimming, fishing, and boating. Long-term SDT data can provide valuable insights into a lake's ecological health and pollution levels, guiding effective lake management and conservation strategies.

SDT measurements have been collected intermittently in the Lake, as shown in Figure 2-21. Measurements made prior to the 1980s exceeded 4 meters but have since declined to consistently be approximately 3 meters. Note that the NYSDOH uses a guidance value of 2 meters as a threshold for swimming safety; this guidance value is typically met in the Lake.

Figure 2-22
August Dissolved Oxygen Profiles of Conesus Lake



Data Sources: Birge and Juday 1914; Bosch et al. 2011; Bosch et al. 2015; Bosch et al. 2020; Bosch et al. 2023; Callinan 2001; CSLAP 2009, 2017-2023; Mills 1975; Stewart (SUNY Buffalo), unpublished

Anoxic conditions develop during thermal stratification and can extend upward through the water column to a depth of approximately 9 meters. DO concentrations in the Lake are typical of a shallow productive lake, with variations in DO concentration occurring seasonally and with depth. Note the

relative consistency of the August DO profiles collected over more than a century of monitoring. The Lake's relatively limited volume of deep water, extensive areas where light can penetrate to support photosynthetic production, and productive watershed soils have led to a mesotrophic lake ecosystem.

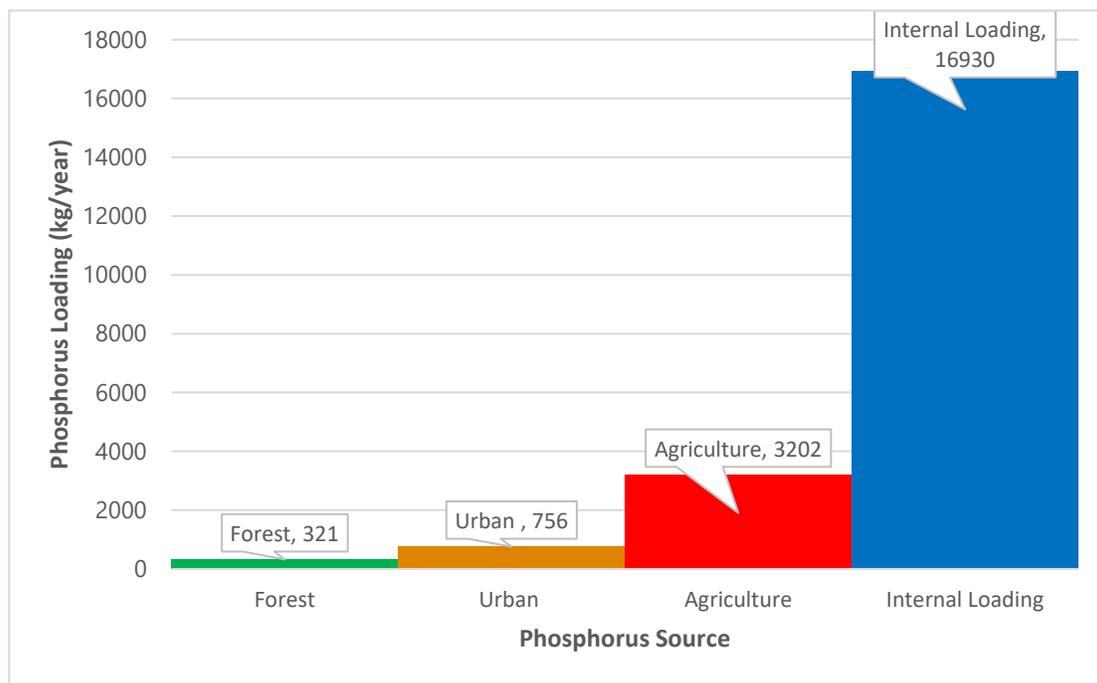
2.4.2.2 Phosphorus Sources and Loading

As referenced previously, a P TMDL was required for the Lake (USEPA and NYSDEC 2019). The TMDL team developed mathematical models of both the Lake and its watershed, with a focus on P sources, transport, and impact. The team selected the widely used watershed model Soil and Water Assessment Tool (SWAT) to estimate sources of P. An in-lake model CE-QUAL W2 was applied to predict the fate and transport of P in the Lake ecosystem and help quantify internal loading. The model team used site-specific data to develop, test, and validate that the model assumptions were reflective of local conditions.

The in-lake model CE-QUAL W2 estimated internal P flux from Lake bottom sediments contributes 16,930 kilograms per year (kg/year; 79.8% of the total P load) to the Lake ecosystem (USEPA and NYSDEC 2019). This is shown as the blue bar in Figure 2-23. This internal load represents the continued cycling of legacy P that entered the Lake from the watershed over decades and is the largest source of phosphorus loading to the Lake.

The SWAT model projections indicated that a substantial portion of the watershed P loading originated from agricultural and urban sources, such as fertilizer, animal waste, soil loss, and stormwater runoff from developed areas. These sources are shown in Figure 2-23. Total nonpoint loads from the watershed into the Lake were estimated to be 4,279 kg/year, with 75% of the nonpoint P load (15% of the total P load) originating from agricultural sources (USEPA and NYSDEC 2019). While agriculture is only 15% of the total P load, it comprises 75% of the nonpoint load, making agricultural BMPs a high priority for reducing nonpoint source sources of P. Tributary sources are more likely to impact the water quality in the areas where the tributaries flow into the Lake than in the deeper portions of the Lake, which will be more impacted by internal phosphorus loading.

Figure 2-23
Phosphorus Sources to Conesus Lake Waters



Data Source: USEPA and NYSDEC 2019

2.4.2.3 Tributary Monitoring

In the early 2000s, several small tributary subwatersheds were selected to evaluate the effectiveness of agricultural BMPs in reducing soil and nutrient runoff to the Lake (Herendeen and Glazier 2009; Makarewicz et al. 2009). Monitoring began prior to BMP implementation (Makarewicz et al. 2008) and continues through to present day. BMP implementation was voluntary; details can be found in the journal article by Herendeen and Glazier (2009). Additional tributaries draining agricultural areas without BMPs were monitored in 2021 and 2023 as a control (Beers and Chislock 2022, 2024). The overall conclusion of the monitoring efforts is the BMPs can improve water quality both within tributaries and in the Lake and near the tributary mouths; bacteria, macrophytes, and algae can be reduced by implementation of BMPs (Makarewicz et al. 2008; Bosch et al. 2009; Makarewicz and Lewis 2009).

Tributary monitoring results indicate that highly agricultural watersheds continue to show greater nutrient concentrations than the reference stream (North McMillan Creek) and streams that have less agricultural activities occurring in their watersheds, such as North Gully and Wilkins Creek, during baseflow (Beers and Chislock 2022). However, during large storm events in 2021, there was significant loading of suspended sediments and TP even in North Gully and Wilkins Creek (Beers and

Chislock 2022); 2023 was a dry summer and fall, and many of the streams dried up (Beers and Chislock 2024).

2.4.2.4 Waterbody Inventory/Priority Waterbodies List

Under the federal CWA, NYSDEC is required to periodically monitor and assess water resources throughout the state, including an assessment of whether water quality and habitat conditions support the designated use. The assessment process, which gathers data and information from local stakeholders, results in a statewide listing of priority waterbodies (i.e., Waterbody Inventory/Priority Waterbodies List; NYSDEC 2024b) that identifies waterbodies that may not be fully attaining their designated uses.

Waterbodies in the Lake are assessed for their ability to support their designated uses. All streams in the watershed are categorized as Class C streams, so their designated use is aquatic life support. According to the most recent (2020 to 2022) Waterbody Inventory/Priority Waterbodies List evaluation, shown in Table 2-23, many of the smaller streams are unassessed (NYSDEC 2024b). North and South McMillan Creeks have been evaluated, and conditions fully support the designated use (Table 2-23).

**Table 2-23
Assessment of Major Streams Within the Conesus Lake Watershed**

Stream Segment	Subwatershed	Water Quality Classification	Use Assessment (Fishing)	Pollutants
North McMillan Creek and tributaries	North McMillan	C	Fully supported	DO and pH
South Branch McMillan Creek and tributaries	South McMillan	C	Fully supported	None
Conesus Inlet and minor tributaries	Inlet	C	Unassessed	Unassessed
Other minor tributaries to Conesus Lake	All subwatersheds except Inlet, North and South McMillan Creeks	C	Unassessed	Unassessed
Conesus Creek and minor tributaries ¹	Outside of Conesus Lake watershed	C	Stressed	pH

Notes:

1. Conesus Creek is the outlet of Conesus Lake; it is included to reflect water conditions leaving the watershed.

Source: Waterbody Inventory/Priority Waterbodies List (NYSDEC 2024b)

According to the water index by NYSDEC, shown in Table 2-24, the Lake (water index number: Ont 117-40-P67; segment ID 0402-0004) was listed as impaired for primary and secondary contact recreation based on DO and TP levels. The Lake was also listed as a stressed water supply source based on CI and TP levels.

**Table 2-24
Conesus Lake Priority Waterbodies List Status, as Published in 2024**

Designated Use	Use Assessment	Pollutants
Fishing	Unassessed	Unassessed
Secondary contact recreation	Impaired	DO and TP
Primary contact recreation	Impaired	DO and TP
Source of water supply	Stressed	Cl and TP

Source: NYSDEC 2024b

In 2004, NYSDEC placed the Lake on its CWA Section 303(d) List Impaired/TMDL Waters, in Part 1 – Individual Waterbody Segments with Impairment Requiring TMDL Development. It was placed on the list due to impairment from high P and low DO levels and cited agriculture as the presumptive source of excessive P loading. The 303(d) list is a compilation of lakes, streams, and coastal areas where water quality conditions were compared to established criteria and determined not to be adequate to support a designated use; it is required under the CWA and updated every 2 years.

The 2020 to 2022 303(d) list that NYSDEC submitted to the U.S. Environmental Protection Agency (USEPA) indicated the Lake should be included on the 303(d) list for DO only, reflecting USEPA acceptance of the Conesus Lake P TMDL in 2019. In January 2025, USEPA partially approved and disapproved the NYSDEC final 2020 to 2022 303(d) list. One of the federally required changes was to list the Lake as impaired by algal/weed growth. The Lake was included as a Category 4c waterbody, indicating that further action is pending by USEPA (USEPA 2025).

2.5 Local Laws and Protections

New York is a “home rule” state, meaning that primary authority for guiding community planning and land development is vested in cities, towns, and villages. Thus, local municipalities have the power to define how their community grows; however, home rule can also complicate watershed management efforts if differences among local laws result in inconsistent water resources-related protections within a watershed.

There is a suite of local planning and zoning tools that hold significant potential to mitigate potential adverse impacts of land development or disturbance on water resources; for example, NYSDOS maintains a compendium [Model Local Laws to Increase Resilience](https://dos.ny.gov/model-local-laws-increase-resilience).¹⁴ The update to the 2003 CWMP includes a detailed review and analysis of each watershed municipality’s local codes and recommends potential additions to enhance water resources protection and strengthen consistency across the watershed. This section summarizes that inventory and assessment; the detailed evaluation is included as Appendix A.

¹⁴ Document is accessible from <https://dos.ny.gov/model-local-laws-increase-resilience>.

The evaluation of measures to protect water resources in the Conesus Lake watershed was based on the NYSDOS process. The process began with identifying existing local laws and tools that watershed communities use to guide land use. The review of existing laws and tools focused on the following:

- Comprehensive/land use plans
- Zoning
- Site plan review and subdivision regulations
- Erosion and sediment control (ESC) regulations

Many watershed municipalities have updated their local land use regulations during the last 20 years, as reflected in the inventory of current codes. Table 2-25 provides an overview of the land use regulations in place for each of the towns and the village and indicates which regulations are new since 2012, when the last WCR update was completed (EcoLogic and LCPD 2013). Within the watershed, there is a large variability in the number of municipal tools used by the towns and village to protect watershed resources. Figure 2-24 presents the number of land use regulatory tools in place within each of the municipalities. Some municipalities, such as the Town of Geneseo, have enacted a wide variety of protections, while other municipalities have fewer tools to protect water resources in place. These municipal land use regulations are enforced at the local level by municipal boards (Planning Board and Zoning Board of Appeals), municipal code enforcement officers, and elected officials (Town Board and Village Board of Trustees).

Table 2-25
Inventory of Municipal Land Use Regulations

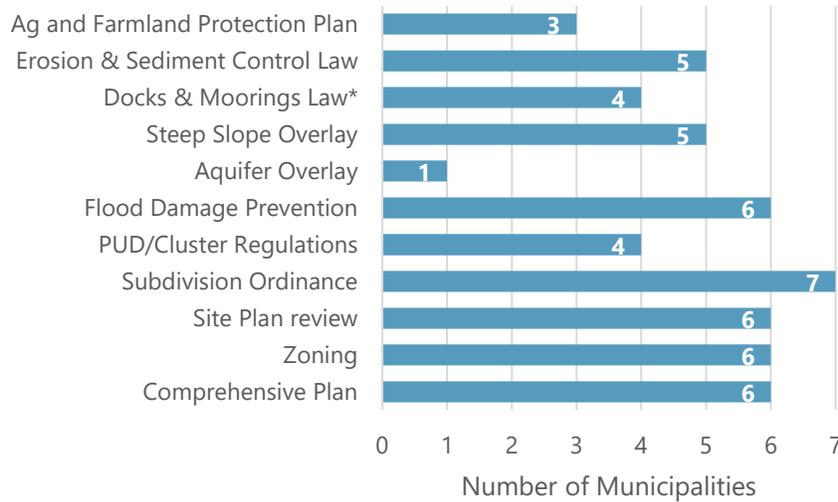
Local Planning Document	Town of Conesus	Town of Geneseo	Town of Groveland	Town of Livonia	Town of Sparta	Town of Springwater	Village of Livonia
Comprehensive Plan	2005	2009	No	2005 ^b	2010	2017	2005 ^b
Zoning Regulations (last major update)	2015	2016	1966 - 2009	2010	2020	No	2010
Site Plan Review	Yes	Yes	Yes	Yes	Yes	No	Yes
Subdivision Regulations	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Flood Damage Prevention	2001	2001	Yes	2001	Yes	No	1995
Steep Slope Overlay	Yes	Yes	No	Yes	Yes	No	Yes
Dock and Moorings Law	2021	2021	2018	2010	N/A	N/A	N/A
Sediment and Erosion Control Law	2002 ^a	2006 ^a	2007 ^a	2010 ^c	No	No	2010 ^c
Agricultural and Farmland Protection	No	2016	2010	No	2018	No	No

Notes:

- a. Adopted Model Law
- b. Currently being updated
- c. Language is incorporated into existing zoning regulation

Bold indicates updates since 2012.

**Figure 2-24
Municipalities Within the Conesus Lake Watershed Covered by Land Use Law or Tool**



*Shoreline municipalities only

2.5.1 Comprehensive Plans

Comprehensive plans are long-term planning documents that define a community’s vision and goals for future growth and development. Comprehensive plans are created through a collaborative process involving public officials, planners, community members, and other stakeholders. They provide a framework for decision-making on land use, infrastructure, housing, transportation, and environmental protection. Zoning ordinances and other regulatory tools must be consistent with a community’s comprehensive plan. While not regulatory documents themselves, comprehensive plans inform the creation and amendment of zoning laws, subdivision regulations, and other local policies. By providing a clear vision and set of priorities, they guide decision-makers in shaping the future development of the community in a way that aligns with residents’ goals and long-term sustainability.

Comprehensive plans have been adopted by six out of the seven municipalities in the watershed. The Village of Livonia and all the towns except Groveland have comprehensive plans. The Town of Groveland uses its Agricultural Plan, in part, for comprehensive planning. Most comprehensive plans are more than 10 years old. The Town and Village of Livonia are currently updating their comprehensive plan, and only the Town of Springwater has a comprehensive plan less than 10 years old. The comprehensive plan update process is an opportunity to incorporate strong vision and goals for protecting the watershed and to respond to emerging issues.

2.5.2 Zoning

Zoning laws are a set of regulations enacted by local governments to control how land within their jurisdiction can be used, developed, and organized. Zoning laws must be consistent with the community's comprehensive plan. These laws divide a community into different zones or districts, each with specific rules governing land use, building types, density, and physical characteristics of structures. The primary purpose of zoning is to promote orderly development, protect property values, and ensure public health, safety, and welfare by separating incompatible land uses and ensuring growth aligns with the community's long-term planning goals.

Zoning laws typically categorize areas into basic types of use, such as residential, commercial, and agricultural zones. Overlay zoning districts provide additional protection addressing a topic of particular concern, such as steep slopes, riparian buffer, aquifer recharge, and lakeshore. Overlay districts overlap the underlying zoning and provide more stringent regulations for an area that needs additional protection.

Zoning laws are typically enforced through local planning boards, Zoning Boards of Appeals, and Municipal Code Enforcement Officers, which review development proposals, issue permits, and ensure compliance with regulations. Zoning laws can be modified through zoning amendments or variances, or special use permits can be used to allow an action that would otherwise not meet zoning requirements. This provides flexibility for unique projects or changing community needs while maintaining overall land-use goals; however, exceptions to zoning laws should be granted thoughtfully to prevent the zoning laws from losing effectiveness for the intended purpose.

Zoning laws exist in all except one of the municipalities in the watershed. Only one municipality has an aquifer overlay as part of its zoning; five have steep slope overlays to control development on steep slopes where erosion would be a significant issue. All four towns with Lake boundaries (i.e., Conesus, Geneseo, Groveland, and Livonia) have zoning specific to the lakeshore. The minimum lot size and maximum lot coverage requirements can be used to control the density of development and the amount of impervious cover along the lakeshore. The requirements vary for each of the towns; these values are provided in Table 2-26. The Town of Livonia also has a watershed overlay that establishes 100-foot buffers around steep slopes, shorelines, tributaries, and sensitive environmental areas.

Table 2-26
Special Zoning Regulations for Properties Along the Lakeshore

Municipality	Zoning District	Minimum Lot Size	Maximum Lot Coverage
Town of Conesus	Lakeshore	5,000 square feet	35%
	Upland Lake	2 acres	35%

Municipality	Zoning District	Minimum Lot Size	Maximum Lot Coverage
Town of Geneseo	Lakeshore Residential	10,000–30,000 square feet for single-family; 1 acre for Specially Permitted Uses	35%–40%
	Lakefront Neighborhood Commercial	30,000	35%–60%
Town of Groveland	Lake Shore Residential	6,000 square feet	35%
	Lake Residential	20,000 square feet	35%
Town of Livonia	Neighborhood Residential	15,000–20,000 square feet, depending on water and sewer availability	25%
	Waterfront Development	Determined by Planning Board	40% ¹

Note:

1. Also has a 30% open space requirement

2.5.3 Subdivision Regulations

All watershed municipalities have adopted subdivision regulations. Subdivision regulations provide a framework for balanced development, ensuring that growth is consistent with broader community goals and land use plans while mitigating the negative impacts of sprawl and haphazard development. These regulations set the standards for dividing land into smaller parcels for development, typically addressing issues, such as infrastructure, land use, and community needs. Subdivision regulations can control the density of developments and the layout of neighborhoods. These regulations can include provisions to preserve open space and vegetation, protect unique natural areas, minimize impervious surfaces, limit erosion and runoff, cluster buildings, ensure walkability, and promote green infrastructure.

2.5.4 Site Plan Review

All watershed municipalities require site plan reviews, except the Town of Springwater. Site plan review is a powerful tool when development is to occur on a single parcel of land. Site plan reviews are performed to ensure proposed development complies with local zoning ordinances, land use policies, and other regulations. The site plan review process creates an opportunity for municipal decision-makers to examine a plan’s potential impacts related to erosion, impervious surfaces, vegetation, and stormwater and to require changes that will protect water quality and promote environmental sustainability. Because site plan review often relies on the expertise and knowledge of the reviewing board, training decision-makers is important to ensuring this tool is effectively used to protect water resources.

2.5.5 Erosion and Sediment Control Laws

Erosion and sediment control (ESC) laws are regulations designed to prevent or minimize soil erosion and sedimentation of waterways. They are more stringent than NYSDEC and require an ESC permit for any soil disturbance greater than 500 square feet. These laws are enforced by local municipalities and typically apply to construction, land development, and other land-disturbing activities.

Agricultural operations and gardens are exempt from the county model law for ESC. The goal is to protect natural resources, including water quality. ESC laws can require ESC plans and the use of BMPs for managing erosion and limiting impacts to waterways.

ESC laws have been adopted for five of the seven municipalities in the watershed, as shown in Table 2-25. Three towns (Conesus, Geneseo, and Groveland) adopted the county model law. Appendix A Local Law Assessment evaluates the county model law and makes detailed recommendations to strengthen water quality protections. The Town and Village of Livonia have incorporated ESC language into the existing zoning regulations.

2.5.6 Docks and Moorings Laws

Laws governing docks and moorings are crucial for balancing the use and conservation of aquatic environments, ensuring sustainable development, and promoting safe recreational and commercial boating. These regulations help protect fragile lakeshore ecosystems and the local flora, by limiting the construction of docks and placement of moorings in sensitive areas. By doing so, they mitigate the physical damage that can result from boat anchoring or poorly placed infrastructure, which could otherwise disrupt aquatic life and degrade water quality. Moreover, dock and mooring laws play a vital role in managing overcrowding.

All watershed municipalities (i.e., Towns of Geneseo, Livonia, Conesus, and Groveland) with lakefront boundaries have dock and moorings laws. All four towns allow parcels to have one dock per 50 lineal feet of lakeshore. The Towns of Geneseo, Livonia, and Conesus have boat limits of one boat for lakeshore less than 15 lineal feet; two boats for properties with 15 to 20 lineal feet of lakeshore; and one boat is allowed per additional 20 lineal feet beyond the initial 20 feet. The towns also have restrictions for shared access and subdivisions. The Town of Groveland's 2018 Dock and Moorings Law allows four slips per dock.

2.5.7 Assessment of Local Land Use Plan, Regulations, and Programs

Municipal assessment forms were completed by town and village staff to assist in understanding the law, regulation, or practice that implements BMPs that reduce point and nonpoint source pollutions, protects habitat, and protects water quality.

Zoning Overlays

The lakefront towns, including the Town of Conesus, Town of Livonia, Town of Geneseo, and Town of Groveland, each have zoning specific to the lakeshore. The towns do not currently have overlay districts specific to incorporating additional protections for the lakeshore or water resources.

However, the Town of Livonia Code includes additional provisions to protect natural resources. The Town of Livonia provides supplemental maps and guides to determine what special conditions, if any, should be imposed before allowing development to proceed in environmentally sensitive areas. The town requires site plan review for all development occurring in forests/woodlands, wetlands, along steep slopes, in a floodplain, in a major scenic overlook, along a stream corridor, and in the Conesus and Hemlock Lake watersheds. All municipalities in the watershed, regardless of the proximity to the lakeshore, could consider adopting a watershed overlay to enhance protections of water resources. For example, the watershed overlay may include a 100-foot buffer around the Lake and the adjoining streams and require that all development comply with the municipality's erosion and sediment control law.

Shoreline Setback and Impervious Surface Cover Requirements

Four municipalities in the watershed directly border the Lake, including the Town of Conesus, Town of Livonia, Town of Geneseo, and Town of Groveland. Due to the nature of the development along the lakefront, the rear setback from the water is minimal. For example, Conesus requires a 10-foot setback, and Groveland requires a 5-foot setback in each of the Lake Shore Districts. While there is limited space in single parcels along the Lake, towns could consider increasing shoreline setbacks in the case of redevelopment. Further, towns could consider requiring all redevelopment (including single family homes) along the lakeshore to comply with the County Erosion and Sediment Control Law and any incorporated green infrastructure requirements. The Town of Livonia could consider adopting the County Erosion and Sediment Control Law.

The maximum lot coverage in residential districts in each town varies between 10% and 50%. Impervious surface cover, especially in lots adjacent to the Lake and its adjacent streams, negatively impacts water quality. To mitigate negative impacts, municipalities could consider reducing maximum lot coverage by 5% to 10% in all residential districts. This threshold is consistent with other municipalities in the Finger Lakes Region, such as the Town of Canandaigua, the Village of Skaneateles, and the Town of Geneva.

Erosion and Sediment Control Law

Three of the municipalities in the Conesus Lake watershed currently use the County Erosion and Sediment Control Model Law. The law requires an erosion control permit for activity disturbing over 500 square feet of soil and an erosion control plan for activity disturbing over 10,000 square feet of soil. Obtaining an erosion control permit requires a meeting with the Code Enforcement Officer and the Conesus Lake Watershed Inspector. Receiving approval for an erosion control plan requires

review by the municipality's planning board so long as the plan meets the performance standards as outlined by the law. The Model Law and corresponding municipal laws could be amended to include stricter requirements for inclusion of green infrastructure measures to further reduce stormwater runoff and improve water quality. Specific recommendations are included in the Green Infrastructure Analysis section below and in Appendix A.

Dock and Moorings Law

The four lakeshore towns have dock and moorings laws to regulate the use of the shoreline. The Towns of Conesus, Geneseo, and Livonia have similar restrictions in that the regulations allow for one boat for a single lakeshore parcel that is less than 15 lineal feet, two boats for a single lakeshore parcel that is 15 to less than 20 lineal feet, and one additional boat for each additional 20 lineal feet of shoreline. One dock is allowed for lineal feet of lakeshore up to 50 feet, and one additional dock is allowed for each additional 50 feet of lakeshore. The Town of Groveland Dock and Moorings Law is less restrictive in that it allows for one dock or boat house for each 50 feet of shoreline and two docks or boat houses for each 75 feet of shoreline. Further, it allows for up to four boatslips per dock. The Town of Groveland could consider revising the Dock and Moorings Law to match the Towns of Conesus, Groveland, and Livonia to limit erosion caused by development and wave action and better support shoreline resiliency.

2.5.7.1 Green Infrastructure Gap Analysis and Recommendations

Each municipality's zoning ordinance was reviewed for green infrastructure or low-impact development provisions. The Erosion and Sediment Control Model Law developed by Livingston County has been adopted by three municipalities in the watershed. This law was also reviewed for green infrastructure and low-impact development provisions, as well as consistency with each municipality's zoning ordinance. Through the review process, it was determined that, generally, municipalities in the watershed do not require green infrastructure or low-impact development measures. For example, landscaping regulations are included in the Towns of Geneseo, Conesus, and Livonia ordinances, as well as the Village of Livonia's ordinance. These regulations require landscaped buffers, islands, and streetscapes. However, there are limited references to specific measures that treat and reduce stormwater runoff. The Town of Geneseo references stormwater facilities and detention ponds as acceptable substitutes for landscaping but only includes engineered systems as examples.

Each municipality's zoning ordinance has some variability in the definitions for lot coverage and impervious surface. These are two key definitions that control how much stormwater infiltrates the ground. Furthermore, none of the zoning ordinances include a reference to or definition of green infrastructure. The County Erosion and Sediment Control law lacks a definition for impervious surface, which should be included to align with the zoning ordinances. Consistency in the definitions within each municipality's land use regulations and across zoning ordinances could facilitate more

regular development and consideration for green infrastructure practices, or at the least, less development of impervious surfaces.

The primary purpose of implementing green infrastructure measures is to reduce and treat stormwater runoff through natural measures. NYSDEC continuously updates BMPs and educational materials for implementing green infrastructure measures in the Stormwater Management Design Manual. Rather than using local resources to update or create new manuals on stormwater management, municipalities can reference the NYSDEC Stormwater Management Design Manual in each Zoning Ordinance and the County Erosion and Sediment Control Law to foster consistency and efficiency throughout the watershed.

Parking lots create a significant amount of impervious surface cover and are typically exposed to pollutants that communities want to prevent from entering nearby waterways. There is an opportunity to amend the parking requirements in each municipality's zoning ordinance to require low-impact development and green infrastructure, so long as the measures are feasible based on engineering and site conditions. Examples may include impervious surface reduction, vegetated swales, rain gardens, bioretention facilities, permeable pavers, porous pavements, infiltration facilities, or dry swales. The NYSDEC Stormwater Management Design Manual provides guidance for implementing the most appropriate measures based on site conditions, such as depth to the water table, the available area needed for implementation, and the preferred maximum slope of the area.

To further support implementing green infrastructure and low-impact development BMPs, the County Erosion and Sediment Control Model Law, which has been adopted by three of the municipalities in the watershed, could be amended to require stricter stormwater management provisions. The law requires an erosion control permit for activity disturbing over 500 square feet of soil and an erosion control plan for activity disturbing over 10,000 square feet of soil. Obtaining an erosion control permit requires a meeting with the Code Enforcement Officer and the Conesus Lake Watershed Inspector. Receiving approval for an erosion control plan requires review by the municipality's planning board so long as the plan meets the performance standards as outlined by the law.

The County Erosion and Sediment Control Model Law could be amended to include provisions for green infrastructure. For example, §79-11 Performance Standards could include requirements for incorporating low-impact development and green infrastructure measures as outlined in the NYSDEC Stormwater Management Design Manual. Referencing the NYSDEC Stormwater Management Design Manual as an appendix in the County Erosion and Sediment Control Law will help direct residents and developers to the document, which provides up-to-date educational material and guidance. Other recommended amendments to this law are included in Appendix A.

2.5.7.2 Green Infrastructure Emerging Tools and Technologies

Climate change adaptation and contemporary green infrastructure development involve technological, financial, political, and social support to plan and implement various approaches to landscape protection, flow volume control, and water quality treatment. In addition to incorporating green infrastructure requirements into municipal codes, municipalities must identify the most suitable green infrastructure and stormwater abatement technologies for their needs and determine how to finance them.

The NYSDEC Stormwater Management Design Manual is regularly updated with site- and neighborhood-specific BMPs to reflect the latest innovations. Advancements in mapping and analysis technologies that have progressed in the last few years will help municipalities and individuals accurately and efficiently plan for incorporating green infrastructure. USEPA and the National Oceanic and Atmospheric Administration (NOAA) have developed technologies, toolkits, and models to assist communities in incorporating green infrastructure practices and water management. USEPA provides downloadable software models that can be used to calculate stormwater flow, analyze soil conditions, and estimate green infrastructure costs in different climate scenarios. The Green Infrastructure Flexible Model is a computer program that can evaluate the performance of green infrastructure practices based on conceptual models. NOAA's Mid-Atlantic Regional Integrated Sciences and Assessments team has published two open-source tools, the Stormwater Management Model and Rhodium (a Python library), to search for and identify green infrastructure vulnerabilities efficiently. These tools help stormwater professionals, community planners, and local decision-makers understand and weigh their green infrastructure options.

Solutions to a lack of municipal resources most commonly include general funds, green bonds, and stormwater fees; these efforts are often tied to community goals, plans, and programs. Minneapolis, Minnesota, for example, adopted a stormwater fee structure that bills property owners based on the amount of impervious surface to combat degraded water quality in its communities. Municipalities can also offer credits, rebates, or discounts for BMPs to incentivize residents and developers to finance green infrastructure. People in communities that provide green infrastructure incentives are more likely to support the maintenance and development of green infrastructure, which results in widespread infrastructure equipped to handle stormwater flows.

2.5.8 Local Laws Gap Analysis

The Local Law Assessment (Appendix A) evaluated local planning, land use regulations and zoning tools and provided recommended actions for each municipality to enhance their ability to protect the lands and waters. This section provides a summary of those findings.

Currently, the Town and Village of Livonia are updating their comprehensive plan. Except for the Town of Springwater, the comprehensive plans of watershed municipalities are more than 10 years

old. Comprehensive plan updates represent an important opportunity to incorporate a strong vision and set of goals for environmental protection within the watershed and respond to emerging issues and/or community concerns. Municipalities can bolster protections for environmental protection by updating comprehensive plans on a regular basis and referencing the CLWMP Update. After each update, the municipalities should review regulations to ensure they are consistent with the vision and goals of the comprehensive plans.

Municipalities should periodically review their zoning laws, regulations, and land use planning documents to ensure they adequately protect the vision and goals laid out in their comprehensive plans. Municipal leaders can refer to model ordinances as a guide to implementing watershed protections. Stronger impervious cover standards, subdivision regulations, setback requirements, and minimum lot sizes can be used to guide development and enhance the protection of open space and sensitive areas, such as steep slopes and wetlands. The Town of Springwater would benefit from strengthening environmental protections within the watershed through development of zoning laws. In communities with existing zoning laws, overlay districts are another tool that can provide additional protections to sensitive environmental areas.

Appendix A contains an evaluation of the Livingston County ESC Model Law and makes detailed recommendations to strengthen water quality protections by including additional definitions and revising the applicability and procedures to incorporate low-impact development and green infrastructure options.

The municipalities, along with Livingston County, would greatly benefit by building upon their strong cooperative relationships and working towards consensus on consistent regulations and protection standards, particularly for sensitive environmental areas such as steep slopes, wetlands, and along streams and lakeshore.

A potential opportunity for all municipalities within the watershed is to evaluate current training tools and staffing levels to ensure all staff and land use boards have the proper training and support needed to provide effective and consistent application and enforcement of regulations and requirements that apply to existing development (e.g., home additions) and new construction. Periodically evaluating and improving guidance for land use boards, training opportunities, and staffing support for code enforcement officers can help increase consistency.

Livingston County has had solid participation in the New York State Energy Research and Development Authority Clean Energy Communities Program, yet there is much more opportunity available, especially for the watershed communities. None of the watershed communities are currently participating in the NYS Climate Smart Community Program. This program helps local governments take action to adapt to a changing climate and offers grants and free technical assistance. Given the significant risk to water and land resources posed by a changing climate, these

programs present opportunities to assess local preparedness, raise awareness, and implement effective actions at the local level to reduce greenhouse gas emissions, which would lead to improved public health and a more sustainable environment.

While they are currently updating the maps, many of the current Federal Emergency Management Agency's (FEMA's) Flood Insurance Rate Maps are outdated and do not reflect current flood risks; most date back to the late 1980s and early 1990s. The updated FEMA maps should be used as soon as they are released. Municipalities could also use NYS model laws, such as the NYSDOS Model Local Laws to Increase Resilience, as well as other NYS resources to increase protection from flood damage.

Maps and descriptions of overlays and sensitive environmental areas should be made widely available as georeferenced data layers to assist property owners and municipal staff with compliance and enforcement of the regulations and recommendations related to environmental resource protection.

2.6 Programs to Implement Best Management Practices to Protect Water Quality

Over the 20 plus years since the 2003 CLWMP, numerous programs and projects to protect the Lake have been implemented (LCPD 2024a). Below is a summary of some of the major programs and efforts employed within the watershed during that time.

2.6.1 Agricultural Best Management Practices

The goal of agricultural BMPs is to prevent soil, nutrients, and other pollutants from leaving the landscape and entering waterways. Over the last 20 years, approximately \$2 million has been spent on agricultural BMPs in the Conesus Lake watershed on more than 50 farms (LCPD 2024a). These projects have been implemented through partnerships with LCSWCD and the USDA NRCS. LCSWCD works with local farmers to implement agricultural BMP projects as part of the Upland Watershed Protection Program, including several recent projects involving installation of water and sediment control basins and associated subsurface drainage tiles to address stormwater and non-point source pollution issues.

Some BMPs employed in the Conesus Lake watershed include the following:

- Conservation tillage (no-till)
- Use of cover crops to reduce erosion and take up nutrients
- Establishing and protecting vegetated buffers along ditches, steep slopes, wetlands, streams
- Fencing livestock out of streams to reduce streambank and streambed disturbances
- Maintaining grass cover in areas of cropland that experience overland flow to slow water movement and reduce erosion

- Field terracing
- Underground outlets
- Subsurface drainage
- Nutrient management to apply the correct amount of nutrients for crop yield
- Stormwater management facilities

Figure 2-25 shows two agricultural BMP projects completed by the LCSWCD. The photograph on the left depicts a large water and sediment control basin constructed in the Town of Livonia in 2015. The photograph on the right is an example of the use of cover crops. LCSWCD regularly promotes planting cover crops to protect soil from erosion, improve soil and water quality, and increase farm resilience. LCSWCD supported the planting of 507 acres of cover crops in the Conesus Lake watershed in 2020 (CLWC 2020).

Figure 2-25
Example of Agricultural BMPs Installed by the Livingston County Soil and Water Conservation District



Note: The photograph on the left depicts a large (800 foot long by 60 foot wide) water and sediment control basin in the Town of Livonia. The photograph on the right provides an example of the use of cover crops; LCSWCD promotes planting cover crops to protect soil from erosion, improve soil and water quality, and increase farm resilience.

Photograph credit: CLSWCD

Additional resources for BMPs include the NYS Soil and Water Conservation Committee catalogue of agricultural BMPs (NYS Soil and Water Conservation Committee 2024), which serves as a valuable resource for implementation of agricultural BMPs. The *Conesus Lake Stormwater Toolkit* documents (B&L 2018a, 2019) are a comprehensive guide to reducing the impacts of land use development and infrastructure, including agricultural activities, on water quality. Stormwater management ponds, such as the one shown in Figure 2-26, are a successful strategy for stormwater management on agricultural lands. This water and sediment control basin was installed to control erosion and manage stormwater runoff from the agricultural fields.

Figure 2-26
Newly Constructed Stormwater Management Pond, Spring Box, and Rock Lined Spillway in the Town of Livonia



Photograph credit: LCSWCD

The New York State Agriculture and Market (NYSAGM) Agricultural Environmental Management (AEM) program, available through the LCSWCD, supports science-based, cost-effective measures to meet farm goals while protecting and conserving natural resources. The AEM program maintains a list of practices implemented within the Conesus Lake watershed through their cost-sharing programs. The most recent list includes the BMPs listed previously as well as other measures to help protect vulnerable areas on the working landscape, such as agrichemical handling facilities, critical area planting, improved access roads, roofs and covers, and waste storage facilities (Knapp 2024).

2.6.2 Construction BMPs

Town and Village ESC laws apply to many construction projects. The *Conesus Lake Stormwater Toolkit* documents (B&L 2018a, 2019) are a comprehensive guide to reducing the impacts of land use activities on water quality, including a variety of ESC actions for construction projects. Common BMPs related to construction projects include the following:

- Installation of silt fences, silt socks, erosion control blankets, and other erosion control devices to prevent soil movement off construction sites
- Maintaining buffers along waterways, wetlands, and ditches

- Establishment of ground cover as soon as practicable.

2.6.3 *Streambank and Road Ditch Protections and Remediation*

Restoration and stabilization of watershed streambeds continue to be among a high priority for the watershed. Streambank erosion and resulting sediment transport and deposition can degrade water quality, diminish recreational and aesthetic appeal, and affect habitat for plants and animals.

While streambank erosion is a natural process, it can be exacerbated by human activities within the watershed. Streambank erosion is often a result of cumulative impacts occurring throughout the watershed that alter water movement into waterways. BMPs related to streambank erosion include the use of riparian buffers, appropriately sized culverts, and the implementation of BMPs related to agriculture, construction, and forestry practices.

Homeowners can also help reduce flooding and erosion risks through embracing green infrastructure techniques. These include measures such as maintaining natural shorelines and planting vegetative buffers of shrubs and trees along waterways, minimizing traditional lawn areas by including naturalized areas, native and diverse plantings, rain gardens, rain barrels, etc. These actions can help restore and enhance the landscape's ability to effectively retain and absorb stormwater. Another best practice is to keep yard waste and other debris out of waterways and floodplains.

There are a variety of programs that fund riparian buffers, including the NYSAGM Agricultural Nonpoint Source and Abatement Program (NPS), the NYSDEC Trees for Tribes, and NYSDEC Water Quality Improvement Project (WQIP) program, and the Farm Service Agency's Conservation Reserve Enhancement Program.

There have been several projects focused on ditch and streambank remediation in the watershed over the past 20 years. In 2004, Livingston County received funding from NYS Quality Communities program to investigate erosion along twelve tributaries to Conesus Lake. Forty-one stream reaches were evaluated for possible stream stabilization measures (Stantec 2007) and seven reaches were eventually selected for remediation. In 2008 and 2009, the Town of Livonia was awarded grants from the NYS Environmental Protection Fund on behalf of the other municipalities to re-examine and remediate these seven areas (located along five streams: Long Point Creek, North McMillan Creek, North Gully Creek, Wilkins Creek, and Densmore Creek).

North Gully Creek and North McMillan Creek Restoration Projects. Figure 2-27 shows before and after photographs of the North Gully Creek and North McMillan Creek Restoration Projects, completed in 2015 and 2016, respectively, to address erosion issues. The 2016 North McMillan Creek Streambank Remediation Project, funded through the Environmental Protection Fund (EPF), was completed to address stream channel remediation focusing on a portion of the channel posing the most immediate risk to public infrastructure and safety. The reach remediation was designed,

permitted, and constructed to protect the adjacent Dacula Shores Road, a town road, from being undermined and at risk of failure. The project had the added benefit of reducing sediment loading to the Lake.

Figure 2-27

North Gully Creek and North McMillan Creek Restoration Projects

North Gully Creek Restoration Project: Before (top left) and After (top right)

North McMillan Creek Restoration Project: Before (bottom left) and After (bottom right)



Photograph credit: LCPD

In December 2023, stream channel stabilization changes and risk to road embankment preservation were identified. The *Livingston County Water Quality Monitoring – Tributary Program Reports* (Beers and Chislock 2020, 2021, 2022, 2024) and the *North McMillan Stressed Stream Analysis* (Beers and Chislock 2023) conducted by SUNY Brockport also identified that this stream reach remediation project area was exhibiting signs of structural challenge. In 2024, the Town of Conesus received FLOWPA funding for the North McMillan Creek Streambank Engineering Services project. This project was built upon the 2016 project and provided the town with engineered project designs, estimated project costs, and required state permits. The Town of Conesus Highway Department is anticipated to begin construction, using town labor and equipment, in 2025. The project was ongoing at the time of the adoption of the CLWMP Update. Figure 2-28 shows the permitted project design.

Figure 2-28
Permitted Design for the North McMillan Creek Streambank Remediation Project: Plan View (top) and Revetment Design (bottom), 2025



PROPOSED CONDITION PLAN VIEW
 SCALE: 1" = 20'



ROCK RESET & TRANSITIONAL ROCK REVETMENT
 SCALE: NTS

Source: JM Davidson Engineering, D.P.C.

Wilkins Creek Streambank Engineering Services. The Town of Livonia received funding through the NYSDOS Local Waterfront Revitalization Program to develop a Wilkins Creek Subwatershed

Stormwater Study. This study evaluated stormwater issues within the Wilkins Creek subwatershed and made recommendations for 16 improvements that would have positive impact on the environmental health of the Lake and address flood mitigation for the Town and Village of Livonia (B&L 2018a).

The Wilkins Creek Streambank Engineering Services project, funded through FLOWPA, was initiated in 2024. Figure 2-29 shows the project site in 2022. In summer of 2025, Livingston County received proposals for engineering services to address streambank stabilization and reorientation of the mouth of the stream along Wilkins Creek in the Town of Livonia. The project design will address mitigating impacts of future storm and flooding events, alleviating concentrated deposition of sediment and nutrients close to shore, and providing water quality improvements to the Lake. The results anticipated are engineered project designs for the Lower Reach of Wilkins Creek, estimated project costs, and required permitting.

Figure 2-29
Wilkins Creek Streambank Engineering Services Project Initiated in 2024



Photograph credit: LCDOH; Map Image: USDA Aerial Imagery as seen on Livingston County Interactive Map

This area was identified in the 2007 *Streambank Remediation Study Final Report* (Stantec 2007) and in the 2018 *Final Wilkins Creek Subwatershed Stormwater Study* (B&L 2018a). The overarching goals identified within the study were to reduce erosion potential and address back water influence and headcutting downstream of the culvert. The proposed engineering services in this current project, which was ongoing at the time of the adoption of the CLWMP Update, will build upon the data and recommendations from these previous studies/reports. Future construction on the site would be conducted by the Wilkins Beach Homeowners Association and participating landowners.

Roadside Ditch Improvements. In 2005, the Town of Groveland was awarded a grant under the EPF on behalf of the watershed municipalities to examine and remediate eight high-priority road ditch segments (EcoLogic and LCPD 2013). The Towns of Conesus, Geneseo, Groveland, and Livonia and Livingston County implemented structural erosion control measures at roadside drainage ditches along several road segments in the Conesus Lake watershed (EcoLogic and LCPD 2013). Priority locations were identified in a comprehensive inventory of roadside ditches. Roadside drainage ditches that were remediated included the following: Camel Road in the Town of Conesus; Booher Hill Road in the Town of Geneseo; David Gray Road, Lee Road and Rosebrugh Road in the Town of Groveland; East Lake Road and Pennemite Road in the Town of Livonia; and Conesus-Sparta Town Line Road in the Town of Sparta (EcoLogic and LCPD 2013). Municipal highway departments shaped the ditches to an appropriate cross section, graded the shoulders as necessary, installed geotextile fabric, and lined the ditches with medium stone fill, chinked with light stone fill (EcoLogic and LCPD 2013). These efforts stabilized 10,500 feet of roadside drainage ditches within the Conesus Lake watershed, with an estimated reduction in annual sediment loss of more than 50 tons (EcoLogic and LCPD 2013).

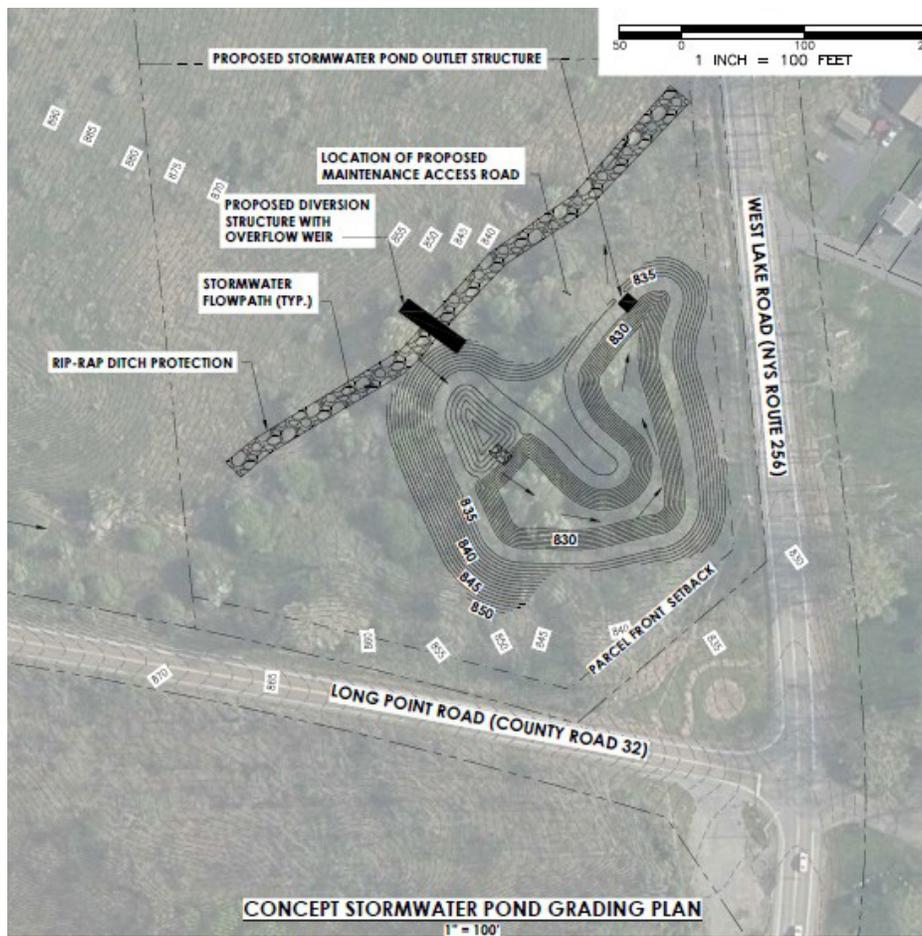
The Town of Conesus has received several additional grants to improve drainage and stabilize roadside ditches (EcoLogic and LCPD 2013). The Town of Conesus Highway Department has remediated and armored over 50,000 feet of roadside ditches (approximately 10 miles) located on 12% to 30% grades on roads that contribute runoff directly into McMillan Creek and the Conesus Lake Inlet (EcoLogic and LCPD 2013). This effort is projected to prevent tons of sediment from entering the streams and ultimately the Lake each year.

WQIP funding from NYS was secured for the Livingston County Road Ditch Remediation in the Conesus Lake Watershed project, during CFA Round 2021. Work is anticipated in 2025. Livingston County has partnered with the Towns of Conesus, Geneseo, and Sparta to implement erosion control measures on roadside ditches with severe erosion issues. The grant supports three projects in the Conesus Lake watershed: Jones Hill Road in the Town of Conesus, Long Point Road in the Town of Geneseo, and Story Road in the Town of Sparta. The program will improve water quality in Conesus Lake and its watershed with the installation of structural and vegetative stabilization measures on approximately 14,380 feet of eroding roadside ditches.

Long Point Stormwater Management Pond Grant. Livingston County contracted with CPL to conduct a feasibility study for a stormwater management facility at the northwest corner of the Long Point Road (County Road 32)/West Lake Road (NYS Route 256) intersection in the Town of Geneseo. The Feasibility Study for the Long Point Drainage Improvement Project, funded through the annual allocation of FLOWPA funds to Livingston County, was completed in 2022 and updated in 2024 (CPL 2022, 2024). The study included analyses of existing watershed conditions and stormwater infrastructure within the drainage area, and documentation of impacts of erosion and flooding.

In 2024, the Town of Geneseo received a Consolidated Funding Application Water Quality Improvement Grant to address concerns regarding stormwater management in the Long Point region, which was supported by the Feasibility Study for the Long Point Drainage Improvements Project. The project will reduce stormwater discharge and flooding of nearby properties, stabilize state and county roads, and minimize sediment and contaminant discharges into the Lake. Figure 2-30 displays the conceptual site plan for the stormwater management pond, as seen in the 2024 update to the Feasibility Study for the Long Point Drainage Improvement Projects (CPL 2024). The Town Highway Department will install and maintain the facility. The project was underway at the time of the adoption of the CLWMP Update.

Figure 2-30
Long Point Stormwater Management Pond Conceptual Site Plan, 2022 & 2024



Source: CPL Engineering

The Long Point Stormwater Management Pond grant is part of a larger project to address the stabilization of Long Point and West Lake Roads, installation of roadside swales and culverts, and

reduction of flooding in the Long Point drainage area. In 2021, the town secured WQIP funding for Phase I to stabilize roadside swales and ditches, the Livingston County Road Ditch Remediation in the Conesus Lake Watershed Project (see page 94) The Long Point Stormwater Management Pond grant funds Phase 2 to address flooding and stormwater management. Phase 3, the future and Final Phase will include West Lake Road culvert repairs/replacement

2.6.4 Green Infrastructure

As noted in Section 2.6.3, green infrastructure refers to natural and seminatural systems designed to manage water to reduce runoff, erosion, and pollution. Unlike traditional stormwater infrastructure, or gray infrastructure, which relies on engineered structures like pipes and concrete to manage water movement, green infrastructure uses vegetation, soils, and natural processes to absorb, filter, and store water, reducing negative impacts downstream. Examples include living shorelines, green roofs, rain gardens, permeable pavements, bioswales, forests, and restored wetlands. These elements help reduce stormwater runoff, erosion, and flooding, resulting in improved water quality and more resilient communities.

Vitale Park Rain Garden. Rain gardens are a green infrastructure tool for stormwater management. Water entering a rain garden may contain nutrients, sediments, and other pollutants. The gardens are designed to temporarily store stormwater, allowing time for sediments to settle out of the water and plants to remove nutrients and other pollutants. Figure 2-31 shows the successful rain garden installed at Vitale Park in 2018. The rain garden collects rainwater and snowmelt from the building, where native plants filter the water, resulting in cleaner water leaving the garden than what entered it.

Figure 2-31
Rain Garden Installed in Vitale Park in 2018 (Left), 2020 (Center), and 2023 (Right)



Photograph Credit: LCPD

Guide to Lake-Friendly Landscaping. The CLWC developed a *Guide to Lake-Friendly Landscaping*, which includes information on green infrastructure approaches that homeowners can implement to

do their part to improve water quality in the watershed. Both state and federal agencies, including USACE, have begun to prioritize nature-based solutions over more traditional gray infrastructure for dealing with flooding threats and climate resilience.

Vitale Park Natural Shoreline Remediation. In 2023, the Town of Livonia completed a natural shoreline restoration project along the eastern shore of Vitale Park using funds acquired through the NYSDEC WQIP Natural Shoreline Remediation Grant. Figure 2-32 shows before and after photographs of the restoration project. This site now serves as a demonstration project for lakeshore property owners around the Lake, offering an alternative to hardened shorelines, like breakwalls.

In 2025, the Town of Livonia evaluated the Vitale Park Natural Shoreline Restoration Project completed in 2023 and found a high number of invasive species and native plant mortality on site. To restore the project back to its intended purpose as a demonstration site, site remediation/species removal and replantings were identified. Final design will include coir log replacement, additional plantings, protective planting border, and interpretive signage to educate the patrons. This project was funded by FLOWPA and was ongoing at the time of the adoption of the CLWMP Update.

Figure 2-32
Natural Shoreline Demonstration Project: Before (Left) (2017) and After (Right) (2022)



Photograph Credit: LCPD

Lakeville Corridor Strategic Plan. The *Lakeville Corridor Strategic Plan*, under the direction of the Genesee Transportation Council and the Town of Livonia, was completed in 2024. This future development plan for the Route 20A corridor in the Hamlet of Lakeville in the Town of Livonia was designed with phased investments that promote resiliency through smart planning, and use of roadway and infrastructure improvements that reduce flooding in the Town of Livonia. The plan was created in part to address stormwater issues including ponding, flooding on properties and roadways, and resulting water quality impacts to Conesus Lake and the Conesus Lake Outlet. The plan's recommendations and strategies identify capital improvement projects that include infrastructure upgrades that address stormwater management through collection and drainage infrastructure, green infrastructure, and landscape improvements.



In June 2025, the Town of Livonia received an award through the Federal Highway Administration's Transportation Alternatives Program for their first project supported by the Corridor Strategic Plan. The Big Tree Road Improvement Project grant will improve the sidewalks, crosswalks, curbing, and drainage infrastructure on Big Tree Road from West Lake Road to Rochester Road in the Town of Livonia. The project was ongoing at the time of the adoption of the CLWMP Update.

2.7 Emerging Issues

2.7.1 HABs and Excessive Macrophyte Growth

Algae and macrophyte growth are sensitive to watershed inputs. Excessive growth and HABs tend to be most prevalent along shorelines, especially near tributary inflows to the Lake.

2.7.1.1 Phytoplankton and Harmful Algal Blooms

In most lakes, the phytoplankton community exhibits a predictable seasonal pattern, where Chl-a concentrations are low in spring and fall and higher in late summer, when water temperatures are warmest. However, algal abundance can respond to environmental conditions and change quickly.

HABs generally consist of visible patches of a bacteria called cyanobacteria. Cyanobacteria, also known as blue-green algae, are naturally present in low concentrations in most lakes and streams. Under certain environmental conditions, such as warm, nutrient-rich waters, cyanobacterial populations can grow rapidly and form surface blooms. Cyanobacteria are typically blue-green in color but can also be green, blue, reddish-purple, or brown. HABs can look like "pea soup," green or blue paint, or form puffy clumps that float on the surface of the water. Some cyanobacteria can produce toxins harmful to people and animals; the toxins can cause harm if ingested, through

contact with skin, or inhalation ([NYHABS Program](#)¹⁵). While not currently an issue of concern for the Lake drinking water supply, the continued occurrence of HABs, combined with organic matter levels in the Lake, could result in elevated levels of cyanotoxins and trihalomethanes (THM) in the drinking water supply.

Cyanobacteria are often confused with filamentous algae, which can also collect on the surface. Filamentous algae are nontoxic and have a hair-like or stringy appearance. The dominant cyanobacteria present in the Lake are in the genera *Dolichospermum*, *Lyngbya*, *Oscillatoria*, and *Woronichinia*, while *Microcystis*-dominated blooms occur infrequently (Bosch et al. 2021). Figure 2-33 is a photograph of a June 2020 HABs event on the Lake.

Figure 2-33
HABs Event on Conesus Lake in June 2020



Photograph credit: LCDOH

The NYHABS Program has established the following four levels of bloom status (NYSDEC 2020a):

- **No bloom:** Evaluation of a cyanobacteria bloom (HAB) report indicates low likelihood a cyanobacteria bloom is present
- **Suspicious bloom:** NYSDEC staff determined conditions fit the description of a HAB. Laboratory analysis has not been done to confirm if this is a HAB. It is not known if there are toxins in the water.
- **Confirmed bloom:** Water sampling results have confirmed the presence of a HAB, which may produce toxins or other harmful compounds (phycocyanin concentrations ≥ 25 $\mu\text{g/L}$ and/or

¹⁵ Information on HABs is accessible from <https://dec.ny.gov/environmental-protection/water/water-quality/harmful-algal-blooms>

microscopic confirmation that a majority of organisms are cyanobacteria). In the absence of those previous criteria being met, a HAB can be indicated by total microcystins $\geq 4 \mu\text{g/L}$ but $< 20 \mu\text{g/L}$ and digital photographs or a descriptive field report.

- **Confirmed with high-toxins bloom:** Water sampling results meet the criteria of a confirmed bloom AND any of the following criteria: 1) total microcystins $\geq 20 \mu\text{g/L}$ (shoreline samples only); 2) total microcystins $\geq 10 \mu\text{g/L}$ (open water samples only); and 3) NYSDEC and NYSDOH staff determine potential risk of exposure to anatoxin or another cyanotoxin.

Both the NYSDEC and LCDOH have HABs reporting protocols. In 2019, NYSDEC modernized its HABs Reporting and Notifications system and created NYHABS. NYHABS can be used to report a HAB to NYSDEC and see waterbodies in the state that have reported HABs. HAB reports can come from the public or HABs monitoring and surveillance programs. Suspected HABs can be reported to NYSDEC by submitting a [Suspicious Algal Bloom Report Form](#).¹⁶ Reports should include digital photographs, if possible. Anyone unable to complete the form can email HABsInfo@dec.ny.gov.

For Conesus Lake: the coordinated response and reporting protocols are identified in the Conesus Lake *HABs Response Plan* (CLWC 2015). The HABs monitoring team consists primarily of the LCDOH Watershed Inspector, CLA HABs monitoring volunteers, Livingston County Sheriff's Marine Patrol, and SUNY Geneseo. Training for the team on HABs identification is provided by the LCDOH Watershed Inspector. With over 100 CLA volunteers, much of the 18 miles of shoreline is assigned. The Marine Patrol travels the Lake daily with two boats, and the Watershed Inspector and assistants monitor public swimming areas/beaches. The LCDOH assesses public health risks, can close public beach areas as necessary, and reopen following proper analytical lab test results. The LCDOH also coordinates with the Public Water Supply Operators to ensure protection measures are in place, as needed. The Conesus Lake Watershed Manager provides support to the Watershed Inspector in the process as needed.

The HABs monitoring team reports suspected blooms to the Watershed Inspector. The Watershed Inspector conducts water sampling and microscope analysis, and SUNY Geneseo provides identification verification. The Watershed Inspector then reports to NYHABS. This local reporting protocol allows for a quicker response time and more confirmed, rather than suspected, bloom reports to NYHABS.

For the general public, suspected HABs can be reported to the LCDOH Center for Environmental Health during business hours or the Livingston County Sheriff's Office on weekends, evening, and holidays. Public information is provided through signage at key Lake locations, and HABs Health Advisories (with Blooms/No Blooms reported) posted on the LCDOH webpage.¹⁷ Notification of

¹⁶ Form is available from <https://survey123.arcgis.com/share/66337b887ccd465ab7645c0a9c1bc5c0>

¹⁷ LCDOH website address is <https://www.livingstoncountyny.gov/172/Department-of-Health>

stakeholders and the general public is completed as identified in the *HABs Response Plan* (CLWC 2015). A key to living safely with HABs is public education; the NYSDEC promotes “[Know it, Avoid it, Report it!](#)”¹⁸ as a helpful strategy. The Conesus Lake Watershed Manager and Watershed Inspector, WEC Committee, and the CLA coordinate on education and training on HABs and HABs resources.

Table 2-27
Confirmed HABs in Conesus Lake

Year	NYSDEC ^{1,2}	LCDOH ³		
	Confirmed HABs Reported	Confirmed HABs Reported	Number of Beach Closures (Events) Due to HABs	Number of Beach Closure Days Due to HABs
2012		9	6	
2013		3	2	
2014		16	13	
2015		5	0	
2016	*	13	11	
2017	*	6	0	
2018	*	17	3	
2019	10	19	2	
2020	3	1	1	
2021	8	5	5	
2022	9	5	3	**
2023	13	5	4	40
2024	4	2	4	48

Notes:

1. Source: NYHABs data (archived) on Open Data NY (https://data.ny.gov/Energy-Environment/Harmful-Algal-Blooms-by-Waterbody-Summary-Beginnin/95my-wijm/about_data and https://data.ny.gov/Energy-Environment/Harmful-Algal-Bloom-Statewide-Occurrence-Summary-2/qtq2-hjth/about_data) and NYSDEC HABs data (current season) on NYHABs (<https://dec.ny.gov/environmental-protection/water/water-quality/harmful-algal-blooms/notifications>)
 2. As of 2019, NYSDEC modified and standardized HABs reporting. Prior to 2018, data reported are the number of weeks with updates on HABs.
 3. Source: LCDOH HABs reports, 2012 to 2024
- * NYSDEC had confirmed HABs reported. Prior to 2018, data reported were the number of weeks on the NYSDEC HABs Notification List.
- ** LCDOH initiated this data collection in 2023.

NYSDEC released the [Conesus Lake HABs Action Plan](#)¹⁹ in 2018 (NYSDEC et al. 2018). This science-driven Action Plan to address HABs in the Lake included recommendations relating to BMPs to reduce stormwater and nutrient runoff and soil erosion, assessment of aeration and nutrient inactivants to address internal P sources in the Lake, and hydrodynamic modeling to evaluate the use

¹⁸ Information is available at <https://dec.ny.gov/environmental-protection/water/water-quality/harmful-algal-blooms>.

¹⁹ Document is accessible from https://dec.ny.gov/docs/water_pdf/conesushabplan.pdf.

of water circulation units. Table 2-27 shows the NYHABs reporting data over the past several years; the data shows no consistent temporal pattern in HABs. Researchers across the state are trying to understand why some waterbodies have blooms and others do not, as well as how to predict when or where a HAB will occur (NYSDEC 2021).

The Vitale Park Bridge was improved using funds acquired through the WQIP Old Outlet Reconfiguration Grant. The open span bridge was built to enhance circulation and reduce potential HABs. Figure 2-34 includes before and after photographs of this project.

Figure 2-34
Before (Left) and After (Right) Photos of the Vitale Park Bridge Replacement for Culverts at the Old Outlet



Photograph credit: LCPD

Figure 2-35 shows the replacement of the old dam gate at the Lake outlet in Lakeville. This project was also designed to mitigate HABs by increasing circulation through the dam with the installation of a top-down gate.

The Livingston County Board of Supervisors approved a grant contract in 2025 for the HABs Mitigation Pilot Project at Camp Stella Maris to determine if aquatic horizontal thrusters would be effective in mitigating HABs. Camp Stella Maris, which has a bathing beach regulated by the LCDOH, elected to be the host site/agency for this pilot project. NYSDEC regulated the installation, operation, and removal of these thrusters. Camp Stella Maris also worked with SUNY Brockport for testing/monitoring, the CLA for support on project implementation, and the LCDOH for compliance with regulatory beach protocol.

In the summer of 2025, during Phase 1, three horizontal thrusters were installed to evaluate if increased waterflow minimized or prevented HAB events at the bathing beach at Camp Stella Maris.

Phase 2, which involves baseline and regular testing conducted by SUNY Brockport, was still ongoing at the time that the CLWMP Update was being finalized. Test results are anticipated in late 2025 or early 2026. The Livingston County grant used a portion of the CLWC's funds to support this project, with endorsement from council representatives from the Towns of Conesus, Geneseo, Groveland, and Livonia.

Figure 2-35
Old Outlet Reconfiguration Grant for Replacement of the Dam Gate



Photograph credit: LCPD

Dense populations of picocyanobacteria have been observed in the Lake, including a persistent bloom in 2023 (Bosch and Chislock 2024). Research concluded that increasing temperatures and nutrient availability may stimulate these blooms, though the exact mechanisms are unclear (Bosch and Chislock 2024). Future research is needed to better understand these dynamics.

Dr. Bosch from SUNY Geneseo noted a spike in turbidity and corresponding decrease in SDT in July (Bosch 2025). Dr. Bosch compiled Secchi disk and turbidity measurements from SUNY Brockport and SUNY Geneseo research reports; Dr. Bosch noted that these events were first prominent in 2011 and appear to primarily be due to the onset of whiting events associated with single cell cyanobacteria (Bosch 2025). Warming waters are believed to play a role in these whiting events. The turbidity spike is primarily found in the upper 4 to 5 meters of the water column, so it is unlikely to impact public drinking water intakes (Bosch 2025).

2.7.1.2 Excessive Macrophyte Growth

While macrophytes and filamentous algae are beneficial in many ways, high nutrient levels in the Lake can create conditions suitable for excessive growth of macrophytes and filamentous algae. Excessive growth of aquatic plants and algae creates problems for shoreline residents and recreational users of the Lake. Aquatic plants, especially invasive species, interfere with access to the Lake and become even more problematic as they die. Decay within the Lake can deplete oxygen, while decay onshore can give rise to unpleasant odors and create favorable habitat for bacteria and insects. Growth of macrophytes in nearshore areas near tributary inflows also degrade recreational access and aesthetics (Makarewicz et al. 2007).

A study of macrophytes in the Lake in 2020 (Bosch et al. 2021) identified the most abundant macrophytes in the northern basin of the Lake as the following:

- Eurasian watermilfoil (*Myriophyllum spicatum*)
- Coontail (*Ceratophyllum demersum*)
- Wild celery/eelgrass (*Vallisneria americana*)
- Slender naiad (*Najas flexilis*)
- Water stargrass (*Heteranthera dubia*)
- Water bulrush (*Scirpus subterminalis*)
- Ditch grass (*Ruppia* sp.)

Figure 2-36 shows Professor Bosch, from SUNY Geneseo, doing macrophyte surveys during summer monitoring and Eurasian watermilfoil plants growing in shallow water. The species with the highest biomass were Eurasian watermilfoil, coontail, and eelgrass. The study concluded that Eurasian watermilfoil is declining relative to historical values from 1968 and 2012 (Bosch et al. 2021). In the summer of 2025, Professor Bosch observed high Eurasian watermilfoil and filamentous algal cover in the nearshore areas.

Figure 2-36

Summer Macrophyte Bed Survey Completed by Dr. Bosch from SUNY Geneseo (Left) and Eurasian Watermilfoil Plants in Shallow Water (Right)



Photograph credits: K. Hanafin (left) and S. Bosch (right)

2.7.2 *Invasive Species*

Invasive species are non-native plants, animals, or microorganisms that can negatively affect the environment, human health, and/or the economy. Invasive species are introduced accidentally or intentionally into a new ecosystem where they do not naturally occur. Invasive species often lack natural predators or other population controls in these new environments, so invasive species can proliferate rapidly and outcompete native species for resources, such as food, water, and habitat. Not all non-native species become invasive in the systems where they are introduced. Some native species can become aggressive in their native habitats, such as Eurasian watermilfoil.

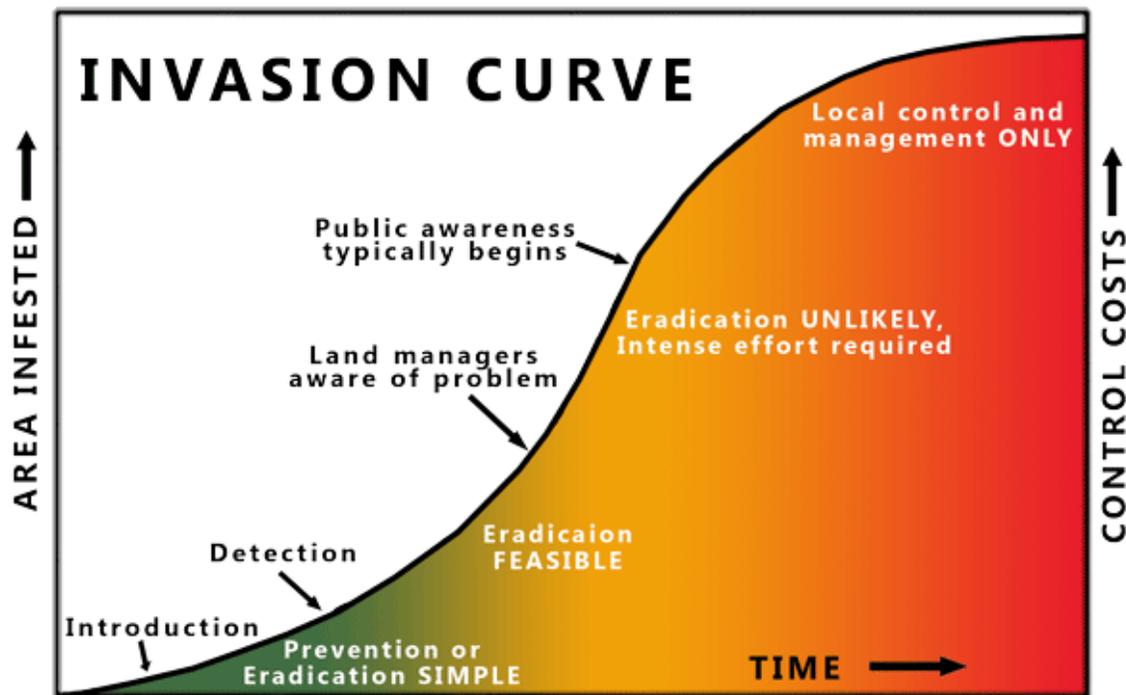
Invasive species can cause ecosystem-level changes that impact biodiversity, ecosystem parameters, changes in the food web structure, oxygen or nutrient levels, and increase in aquatic plant productivity, to name a few. Such impacts can negatively affect sport fish populations, recreational activities (such as boating and swimming), and aesthetic enjoyment of the Lake. Invasive species can damage agriculture (e.g., spotted lanternfly [*Lycorma delicatula*]), forestry (e.g., emerald ash borer [*Agrilus planipennis*] and hemlock woolly adelgid [*Adelges tsugae*]), and fisheries (e.g., alewife). Through these effects, invasive species often have an economic impact on the community. Controlling invasive species is challenging and costly, often requiring coordinated efforts across regions to prevent further spread and to protect ecosystems and biodiversity, and provide for community economic stability (Randall 2025).

Figure 2-37 depicts the Invasion Curve. Prevention is the simplest and most effective way to deal with invasive species. When identified soon after an introduction, a species is typically found in small areas and can generally be controlled relatively easily. As time goes on, the species distribution and

abundance increases, and eradication becomes increasingly difficult. Once a species is widespread, eradication becomes impossible and local control and management are the most feasible options.

The CLWC established the Invasive Species Subcommittee, a subcommittee under the CLWC Technical Committee, in 2012. This subcommittee prepares comprehensive and cooperative invasive species programming, such as the *Conesus Lake Invasive Species Management Plan* and the *Conesus Lake Boat Launch Invasive Species Prevention and Feasibility Study*, which were completed in 2013. The CLWC *Invasive Species Prevention and Response Plan* (CLWC 2013b) is currently being updated. Figure 2-38 provides an example of the most recent invasive species assessment that is included annually in the CLWC Annual Report for Conesus Lake and the watershed.

Figure 2-37
Invasive Species Invasion Curve



Source: Montana Science Partnership (www.sciencepartners.info/module-7-plants-pollinators/the-hierarchy-of-plants/weeds/)

The Conesus State Boat Launch is one of the most frequently used launches in the Finger Lakes. One of the main vectors for aquatic invasive species to reach inland waterways like the Lake is by hitchhiking on recreational boats or equipment. The CLWC has supported a Watercraft Steward Program at the State Boat Launch since 2013. This program provides boaters with boat inspections and decontaminations, and education on invasive species prevention practices (i.e., Clean, Drain, and Dry).

Currently, the program is contracted through and fully funded by NYS Office of Parks, Recreation, and Historic Preservation (NYSOPRHP) and supported by SUNY ESF and the CLA. Since its inception, over 57,000 boats have been inspected, more than 400 watercraft have been decontaminated, and no new invasive species to the Lake have been retrieved during inspections. The program has seen a fairly consistent reduction of approximately 30% in number of watercraft inspected (5,398 boats inspected in 2013 to 3,797 boats inspected in 2024). Coverage can be impacted by staff availability. The number of stewards assigned to the Lake has fluctuated over the years, affecting the number of inspections, and making it a challenge to compare annual data. In 2024 and 2025, ESF made some positive program changes, including adding a half time steward shared between Conesus and Hemlock Lakes, which led to an increase in boats inspected and decontaminated. Changes in required staffing to operate the decontamination unit have also led to an increase in boat decontaminations. Program partners have identified that flexible schedules to increase coverage during peak use times and coverage of fishing tournaments are important for program success.

The Lake is a popular destination and continues to attract boaters from well over 40 different waterbodies around NYS, surrounding states, and as far as Alaska and Canada. Figure 2-39 shows the last waterbody visited prior to launching into the Lake in 2018. This reinforces the need for the Watercraft Steward Program and the importance of inspecting boats before they launch into the Lake.

Ten aquatic invasive species were confirmed present in the Lake. A number of species of concern that are present in the region but not yet identified in the Lake are listed in Table 2-28.

Table 2-28
Aquatic Invasive Species of Concern for Conesus Lake

Species Confirmed Present in Conesus Lake	Species to Watch—Not Yet Present in Conesus Lake
Alewife (<i>Alosa pseudoharengus</i>)	Asian clam (<i>Corbicula fluminea</i>)
Brittle naiad (<i>Najas minor</i>)	European frog-bit (<i>Hydrocharis morsus-ranae</i>)
Chinese mystery snail (<i>Cipangopaludina chinensis</i>)	Fishhook waterflea (<i>Cercopagis pengoi</i>)
Common carp (<i>Cyprinus carpio</i>)	Hydrilla (<i>Hydrilla verticillate</i>)
Curly-leaf pondweed (<i>Potamogeton crispus</i>)	Quagga mussels (<i>Dreissena rostriformis bugensis</i>)
Eurasian watermilfoil (<i>Myriophyllum spicatum</i>)	Rock snot (<i>Didymosphenia germinate</i>)
European rudd (<i>Scardinius erythrophthalmus</i>)	Round goby (<i>Neogobius melanostamus</i>)
Starry stonewort (<i>Nitellopsis obtuse</i>)	Spiny waterflea (<i>Bythotrephes longimanus</i>)
Waterlettuce (<i>Pistia stratiotes</i>)	Water chestnut (<i>Trapa natans</i>)
Water lily (<i>Nymphaea spp.</i>)	
Zebra mussels (<i>Dreissena polymorpha</i>)	

Sources: CLWC Invasive Species Prevention and Response Plan; NY iMapInvasives online mapping tool; and FL-PRISM Priority Invasives- NYS Invasive Species Tiers; Randall 2025

Figure 2-38
CLWC Annual Report Card Includes Information on Invasive Species in Conesus Lake

INVASIVES SPOTLIGHT

CONFIRMED IN CONESUS LAKE/WATERSHED

 MILE-A-MINUTE VINE <i>(Persicaria perfoliata)</i>	 RUDD <i>(Scardinius erythrophthalmus)</i>	 STARRY STONEWORT <i>(Nitellopsis obtusa)</i>
 SPOTTED LANTERNFLY <i>(Lycorma delicatula)</i>		

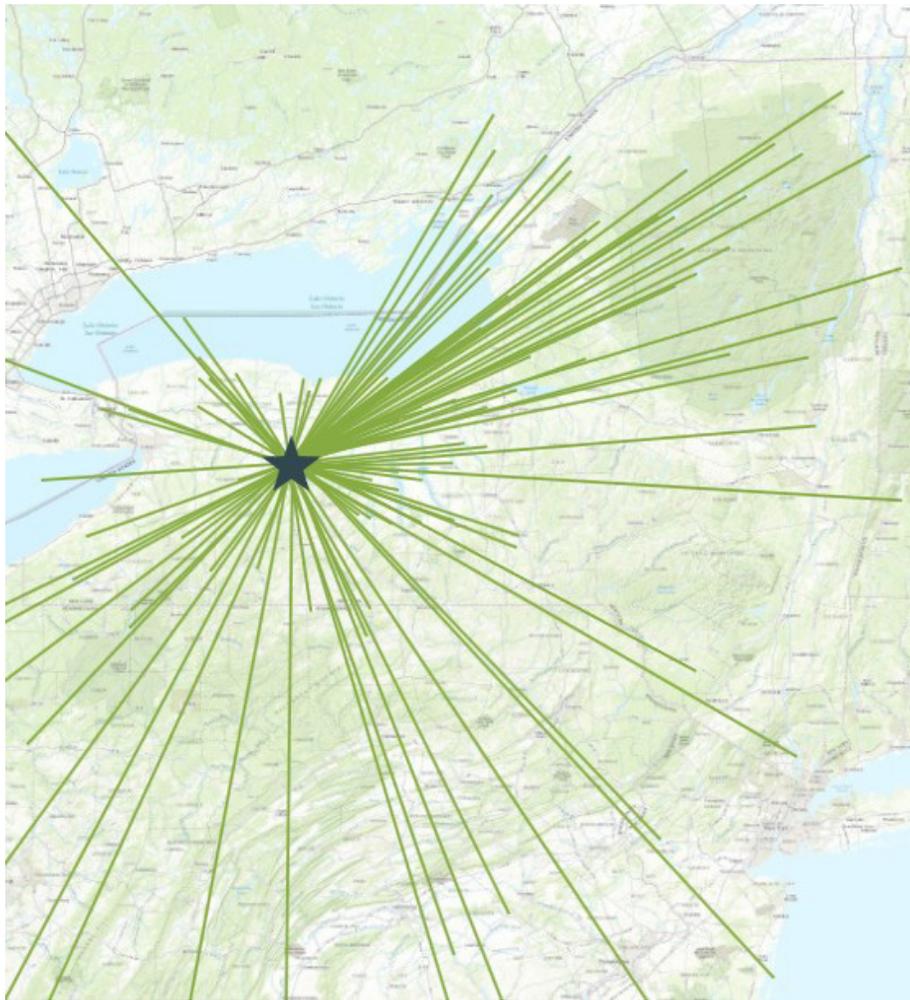
WATCH LIST FOR CONESUS LAKE

 HYDRILLA <i>(Hydrilla verticillata)</i>	 SPINY WATERFLEA <i>(Bythotrephes cederstromani)</i>	 ASIAN CLAM <i>(Corbicula fluminea)</i>
 QUAGGA MUSSELS <i>(Dreissena rostriformis bugensis)</i>	 ROUND GOBY <i>(Neogobius melanostomus)</i>	 WATER CHESTNUT <i>(Trapa hatans)</i>

Visit www.fingerlakesinvasives.org to read more.

Source: CLWC 2024

Figure 2-39
Boats Traveling to Conesus Lake From Across the Continent in 2018



Source: CLWC 2022

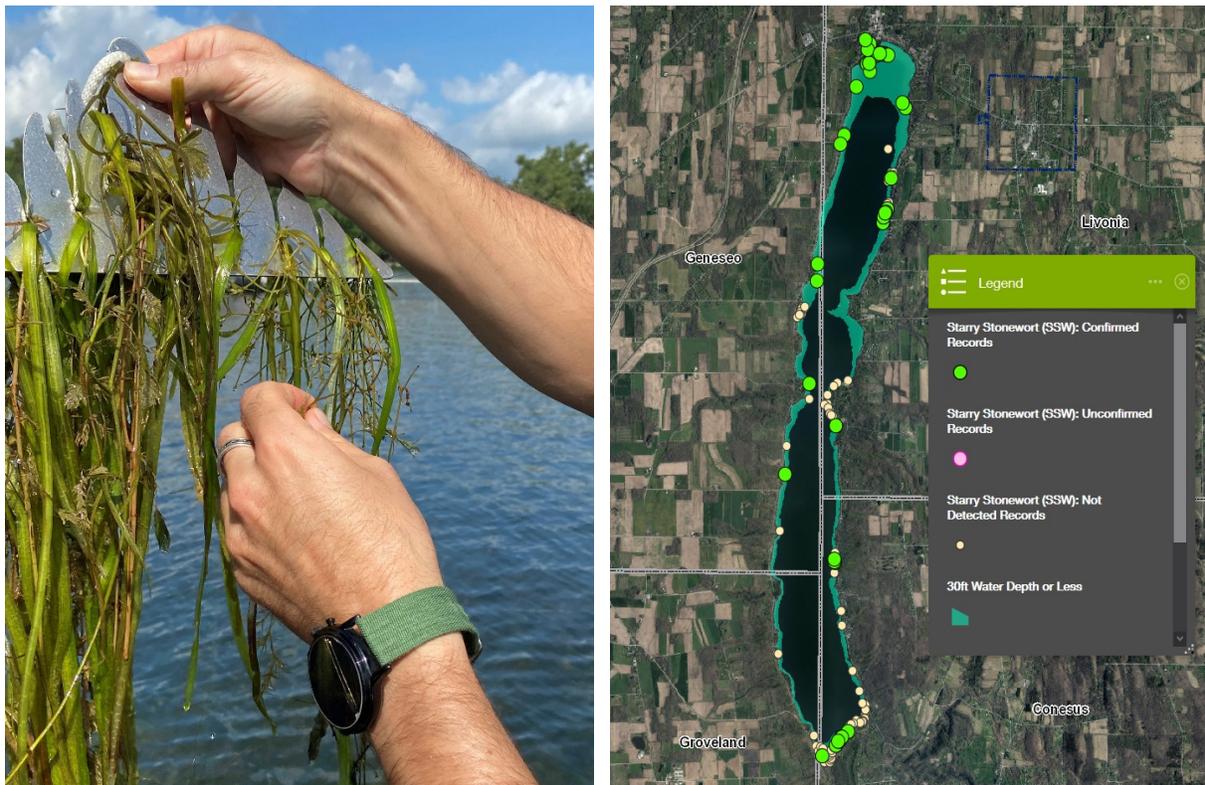
Starry stonewort was detected in the Lake in 2021 by the Watercraft Stewards at the State Boat Launch. In response, the CLWC *Invasive Species Prevention and Response Plan* was activated. The Livingston County Planning Department coordinated starry stonewort (SSW) monitoring with their partners, including the CLA, the iMapInvasives team, SUNY Geneseo, and the FLI. LCPD and the iMapInvasives team created a coordinated “live” mapping service to record data. The Planning Department, with support from the FLI, created an Adopt-a-Grid map for volunteers to sign up for survey locations. In 2021, over 40 volunteers, mostly CLA members, surveyed and collected data points strategically around the Lake. The results were 51 locations of SSW detected, and 109 locations where this species was not detected. Figure 2-40 shows starry stonewort pulled from the north end of the Lake and the map created using the data collected by volunteers.

Based on the prevalence of SSW around the Lake, the Invasive Species Subcommittee, upon consultation with invasive species experts, determined that eradication of SSW in the Lake was unlikely. Based on the experimental nature of control methods being utilized in other Finger Lakes to address SSW at that time, it was determined that further assessment and monitoring of SSW was needed. SSW continues to be monitored by the FLI Macrophyte team and watershed partners. The Invasive Species Subcommittee will continue to assess any changes in population, evaluate the effectiveness of control methods, and forward recommendations to the CLWC for their consideration, as needed.

Figure 2-40

Invasive Species in Conesus Lake

Starry Stonewort Discovery at the North End of Vitale Park (Left) and the Conesus Lake Starry Stonewort Grid Map and Locator (Right)



Photograph credits: FL-PRISM (left), LCPD (right)

Table 2-29 lists the terrestrial invasive species present in the watershed, including agricultural pests. Several major forest pests, including emerald ash borer and hemlock woolly adelgid, are present in the county and are shown in Figure 2-41. The loss of Eastern hemlock and ash from the forests, including steep slopes, could have a multitude of impacts on wildlife, slope stability and erosion,

forestry and land management, and water quality within the region. Invasive species management plans and strategies should be comprehensive and include prevention, early detection, rapid response, and long-term strategies to prepare for species that are likely to become widespread in the area in the absence of appropriate interventions. Existing tools and approaches to eradicate or manage invasive species have produced varied success. Realistic, achievable goals should be determined based on the unique circumstances associated with each species and their position on the invasion curve, and strategies should be implemented to prioritize water quality protection.

**Table 2-29
Terrestrial Invasive Species of Concern in the Conesus Lake Watershed**

Invasive Species Confirmed Present in the Watershed	Invasive Species to Watch—Not Yet Present in the Watershed
Beech leaf disease (<i>Litylenchus crenatae mccannii</i>)	Asian longhorned beetle (<i>Anoplophora glabripennis</i>)
Emerald ash borer (<i>Agrilus planipennis</i>)	Eurasian wild boar (<i>Sus scrofa</i>)
Flowering rush (<i>Butomus umbellatus</i>)	Kudzu (<i>Pueraria montana var. lobata</i>)
Giant hogweed (<i>Heracleum mantegazzianum</i>)	Jumping worm (<i>Amyntas sp., Metaphire sp.</i>)
Hemlock woolly adelgid (<i>Adelges tsugae</i>)	
Japanese knotweed (<i>Polygonum cuspidatum</i>)	
Japanese stiltgrass (<i>Microstegium vimineum</i>)	
Mile-a-minute vine (<i>Persicaria perfoliata</i>)	
Oak wilt (<i>Bretziella fagacearum</i>)	
Pale and black & pale swallow-wort (<i>Cynanchum sp.</i>)	
Porcelain berry (<i>Ampelopsis brevipedunculata</i>)	
Purple loosestrife (<i>Lythrum salicaria</i>)	
Slender false brome (<i>Brachypodium sylvaticum</i>)	
Spotted lanternfly (<i>Lycorma delicatula</i>)	
Spongy moth (<i>Lymantria dispar dispar</i>)	
Tree of Heaven (<i>Ailanthus altissima</i>)	

Sources: CLWC Invasive Species Prevention and Response Plan; NY iMapInvasives online mapping tool; and FL-PRISM Priority Invasives- NYS Invasive Species Tiers; Randall, 2025

Figure 2-41
Terrestrial Invasive Species that Are Forest Pests



EAB adult beetle feeding on host ash tree. Photo by Debbie Miller, USDA Forest Service. Bugwood.org

Ash tree mortality caused by EAB infestation. Photo by Bill McNee, Wisc Dept of Natural Resources. Bugwood.org



Developing adelgids feeding on host hemlock tree. Photo by Elizabeth Willhite, USDA Forest Service. Bugwood.org

Hemlock tree mortality caused by HWA infestation. Photo by William M. Ciesla, Forest Heath Management International. Bugwood.org.



Spotted Lanternfly adult. Photo by Lawrence Barringer, Penn Dept of Agriculture. Bugwood.org.

SLF egg masses on host tree. Photo by Emelie Swackhamer, Penn State U. Bugwood.org.

Since 2018, SUNY Brockport has led a coordinated response, with the support of the Finger Lakes PRISM and NYSDEC, to remove the highly invasive terrestrial species, mile-a-minute (MAM). A

photograph of the participants is shown in Figure 2-42. The Invasion Curve in Figure 2-37 depicts the feasibility that an invasive species can be eradicated, based on the time the species is introduced. It is believed that MAM was detected in the Town of Geneseo early on the invasion curve and, therefore, the goal of this site is eradication.

Figure 2-42
Mile-a-Minute Invasive Species Removal Event in the Town of Geneseo



Photograph credit: BenBeagle_LCN

2.7.3 *Salinity*

Upstate New York is known for its harsh winters. To combat the slippery conditions, road salt is often used to keep roads and walkways safe for navigation. Unfortunately, road salt applications can pose significant impacts to public health and the environment through contamination of surface water (i.e., lakes, ponds, rivers, and streams) used for recreation and as sources of drinking water (NYSDEC and NYSDOT 2023). The environmental and public health impacts of road salt have received increasing attention throughout NYS in recent years. Figure 2-43 summarizes the salinity issue for the Lake.

Road salt applied during the winter can elicit wide-ranging impacts on both aquatic and terrestrial ecosystems and sources of drinking water, both in the short and long term. After road salt dissolves in water, it can run off into surface waters through snow melt and stormwater or find its way onto surfaces where, even later in the year, it can continue to leach further into groundwater (NYSDEC and NYSDOT 2023).

Figure 2-43
Water Quality Concerns Related to Road Salt Usage

Water Quality Concerns - Salinity

What is the problem?

- Elevated Na and Cl
- Human and environmental health

What are the sources?

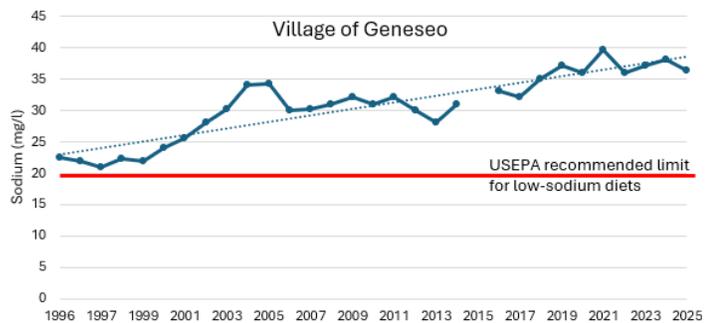
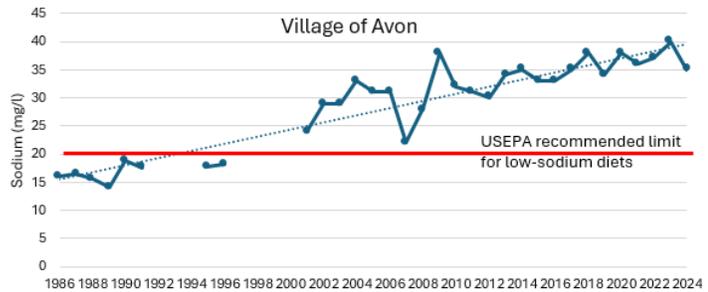
- Road salt application runoff
- Property salt application runoff

Current trends

- Increasing Na, Cl levels in lake waters

What can be done?

- Efficient use of de-icing salts
- Other BMPs
- Monitoring/Assessment
- New technologies
- User Education



Graphic source: Anchor QEA and EDR 2025

Data sources: Village of Avon Data 2024; Village of Geneseo 2024

The road salt most commonly applied is sodium chloride (NaCl), and the environmental impacts are mostly associated with chloride (Cl). Elevated levels of sodium (Na) are known to be harmful to people on certain health-protective diets. According to the LCDOH, there are currently no regulatory limits for sodium in public water supplies. However, state and federal agencies recommend that water containing more than 20 milligrams per liter (mg/l) of sodium should not be consumed by humans on highly restricted sodium diets, and water containing more than 270 mg/l of sodium should not be consumed by those on moderately restricted sodium diets. Criteria for protection of aquatic life require levels of less than 600 mg/l for chronic (long-term) exposure and 1,200 mg/l for acute (short-term) exposure (LCDOH 2017).

The 2013 WCR Update reported that monitoring data from 2012 showed Na and Cl concentrations in the Lake continued to increase, despite completion of salt storage facilities within the watershed (Ecologic and LCPD 2013). In 2012, Na levels were above the 20 mg/l concentration that USEPA established as a guideline for individuals on a highly restricted Na diet. Concentrations ranged from approximately 24 to 31 mg/l (Makarewicz et al. 2012).

Sodium and Cl monitoring data for the Villages of Avon and Geneseo drinking water show that both Na and Cl concentrations have continued to increase since the mid-1980s. The *2024 Annual Drinking Quality Reports* filed by the Villages of Avon (Village of Avon 2024) and Geneseo (Village of Geneseo 2024) list Na concentrations at 35 and 38 mg/l, respectively. Note that the increase in Na does not alter the public health warning that has been in place for decades; persons on severely restricted Na diets should avoid consuming water from the Lake. The presumptive sources of Na are listed as “naturally occurring, road salt, water softeners, and animal waste.” The *2024 Annual Drinking Water Reports* (Village of Avon 2024, Village of Geneseo 2024) list Cl concentrations at 66 mg/l (Village of Avon) and 62 mg/l (Village of Geneseo). Figure 2-44 shows the Na concentrations in the Villages of Avon and Geneseo public water supply. Figure 2-45 shows the Cl concentrations in the Villages of Avon and Geneseo public water supply. Presumptive sources of Cl in the water supply are listed as “naturally occurring or indicative of road salt contamination.” The annual CSLAP reports for the Lake also report an increasing trend for Cl in the Lake’s upper waters.

Locally, there are more than 175 miles of roads in the watershed, including several roads close to the Lake, as shown in Table 2-30 and Figure 2-46. The Lake is surrounded by heavily traveled commuter roads close to the shoreline; salt application on these roads has a high potential to runoff into the Lake. North McMillan, South McMillan, Conesus Inlet, and Wilkins Creek subwatersheds contain the most road miles. The 2002 WCR noted that Na and Cl concentrations in the Lake water had steadily increased as the watershed became more developed (Ecologic and LCPD 2002).

Table 2-30
Miles of Road in the Conesus Lake Watershed

Road Type	Miles
Interstate	4.1
U.S. Route	4.1
State	27.2
County	38.4
Other*	101.5
Total	175.2

Notes:

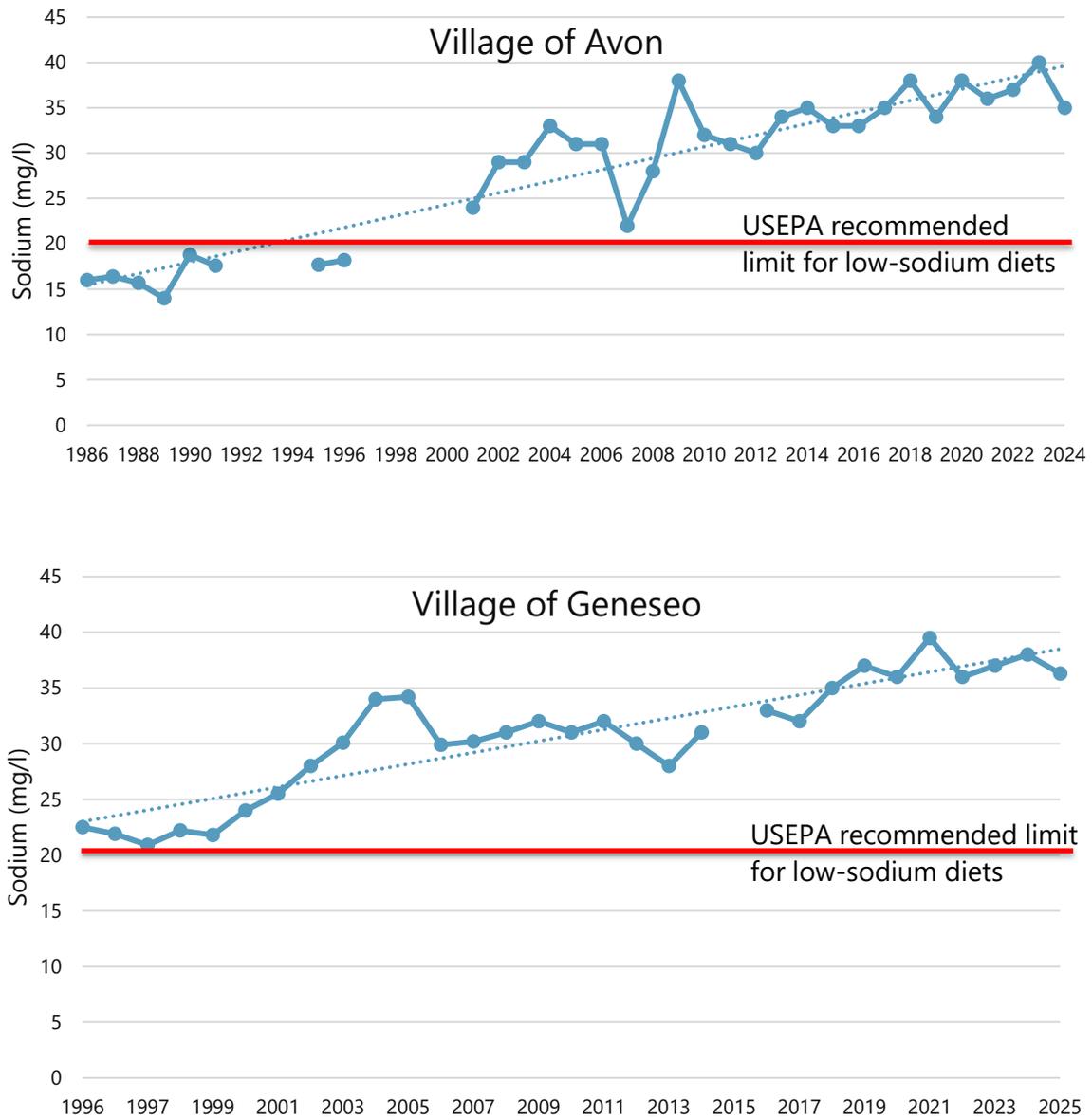
* Other includes unpaved roads and roads which may not be salted in the winter.

Source: NYS GIS Clearinghouse 2024

It is important to work with the watershed partners and researchers to examine what factors are leading to the steady increase in sodium and chloride concentrations in the Lake waters. Given the suspected source is road salt, a key component will be to assess the current road salt BMPs in place for road salt use by state, county, and local municipalities to understand what additional protections

can be put into place to protect stream and Lake water quality. Current municipal actions to reduce the use of road salt include live edge snowplows and covered salt storage facilities.

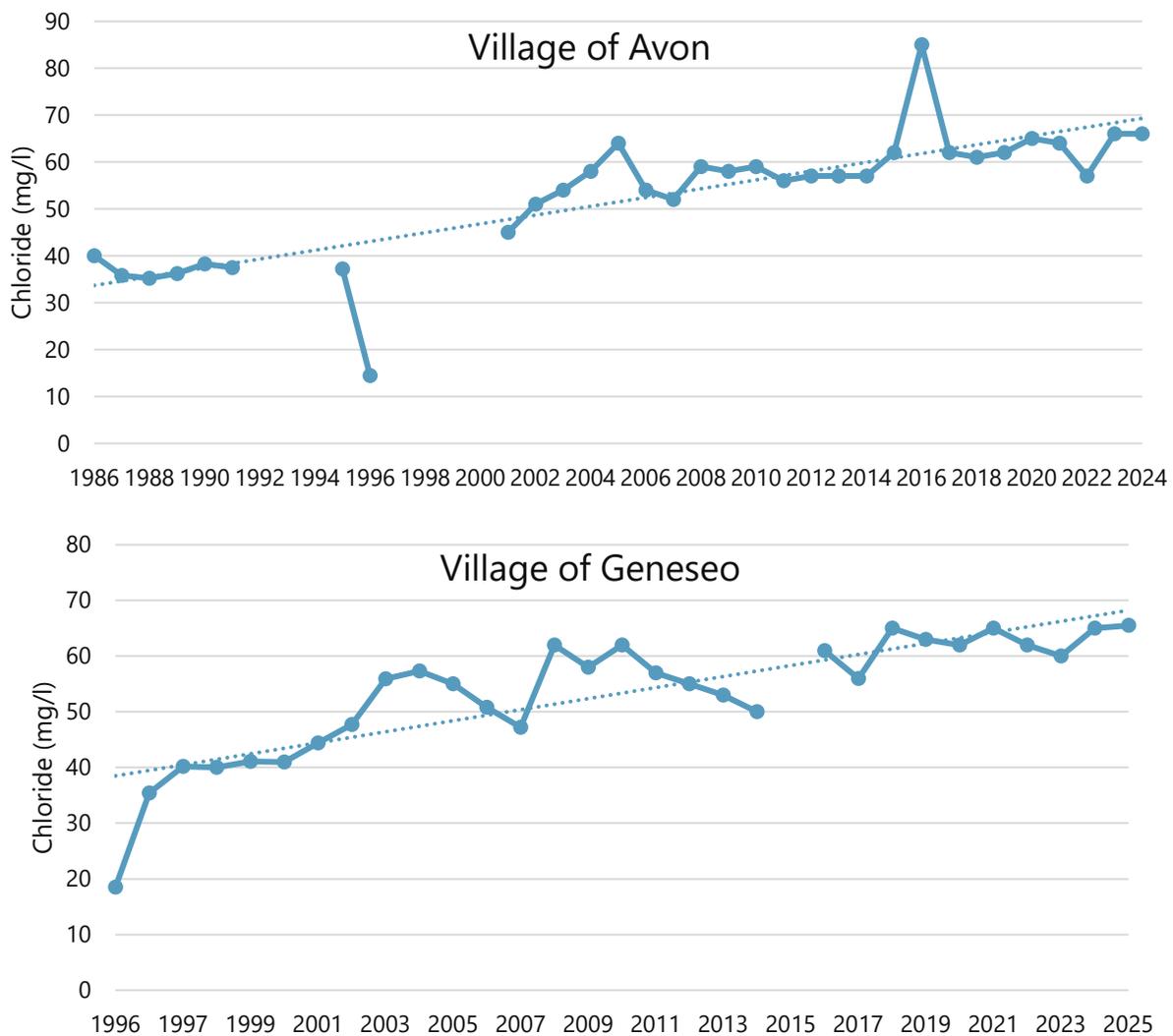
Figure 2-44
Sodium Concentrations in the Drinking Water Supply for the Village of Avon (Top) and
Village of Geneseo (Bottom)



Data Sources: Village of Avon 2024, Village of Geneseo 2024

The [Adirondack Road Salt Reduction Task Force](#)²⁰ completed a comprehensive review of road salt contamination and road salt application practices within the Adirondack Park and recently published a final report that contained recommendations to reduce the negative impacts of road salt use through various BMPs designed to limit salt impact on the environment and public health (NYSDEC and NYSDOT 2023). Several of the road salt recommendations presented in Section 3 are based on this report. Municipalities are currently exploring new techniques and technologies that are now available to minimize the impact of road salt use on water quality.

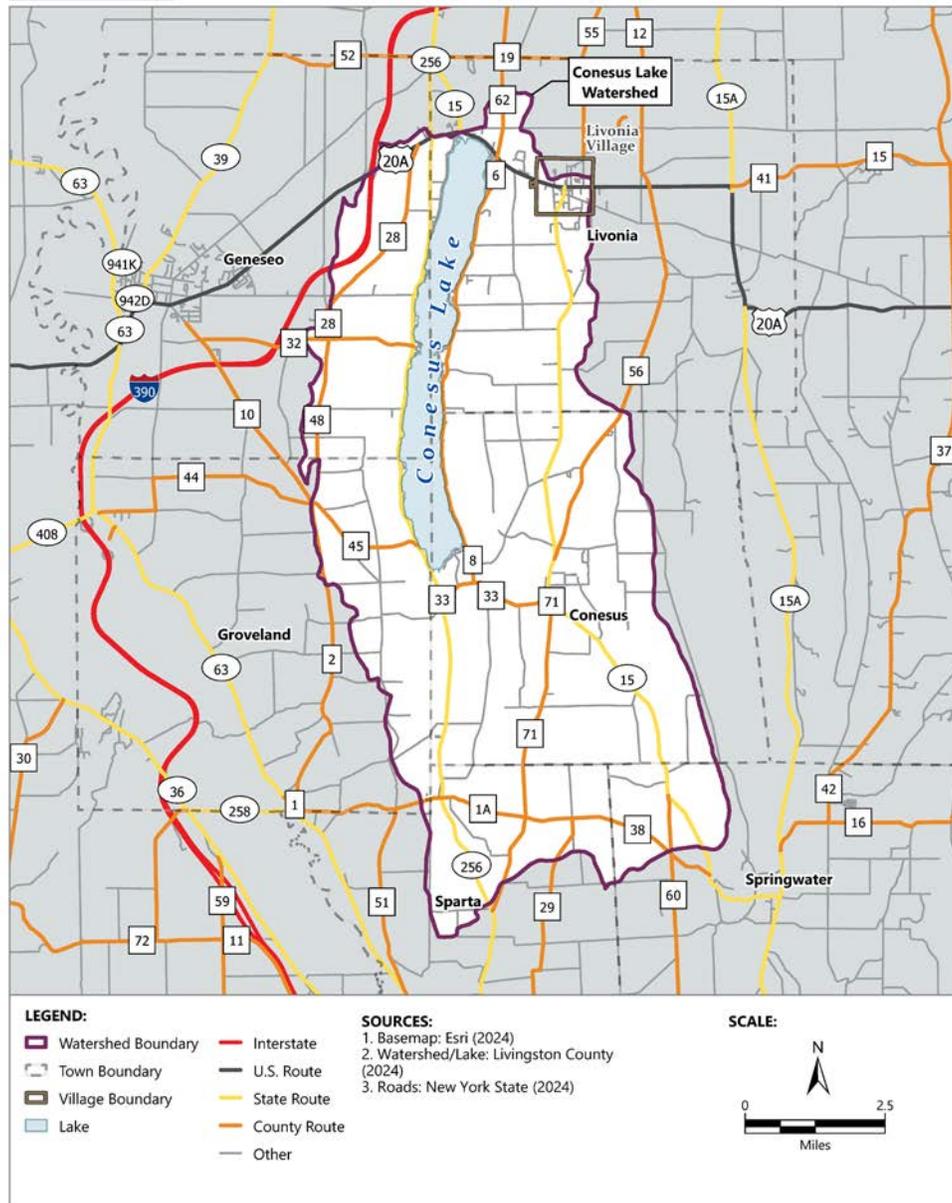
Figure 2-45
Chloride Concentrations in the Drinking Water Supply for the Village of Avon (top) and Village of Geneseo (bottom)



Data Sources: Village of Avon 2024, Village of Geneseo 2024

²⁰ Document is accessible from: <https://dec.ny.gov/environmental-protection/water/rock-salt-reduction>

**Figure 2-46
Roads Within the Conesus Lake Watershed**



2.7.4 Changing Climate

2.7.4.1 Temperature

From 1901 to 2022, average air temperatures in NYS increased by almost 2.6°F, and the warmest 10-year periods in recorded history have occurred since 2000 (Stevens and Lamie 2024). Figure 2-47 depicts the average mean temperature from the 1960s to present, which shows a clear increasing

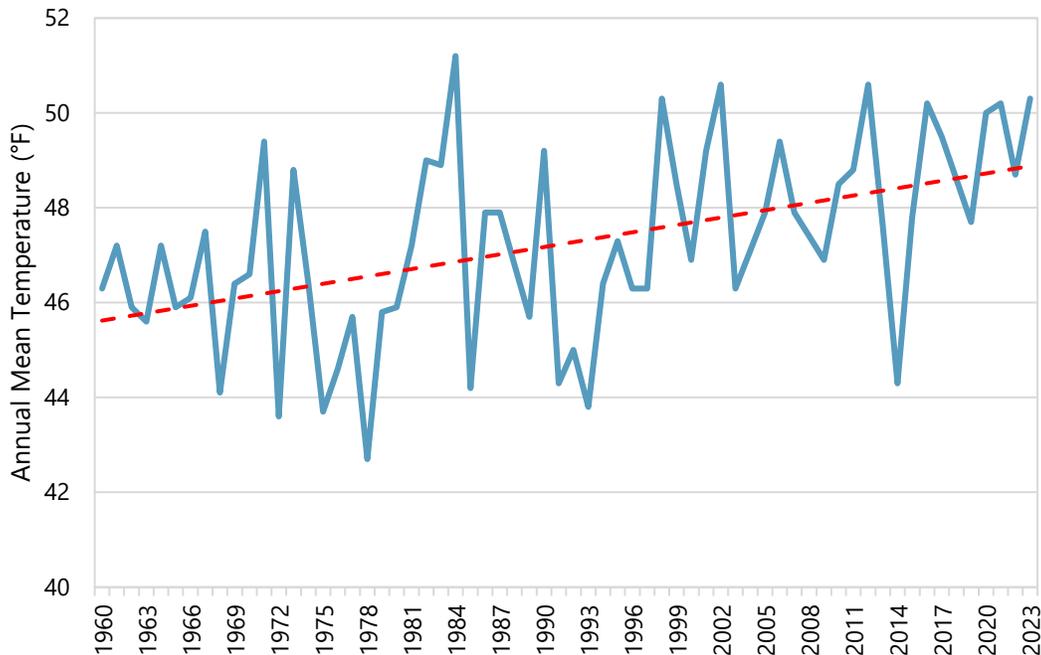
trend despite year-to-year variability. The mean annual temperature has risen almost 2°F from 1960 to 1999 to 2000 to 2023, as shown in Figure 2-47 and Table 2-31 (NRCC 2024). As shown in Table 2-31, the greatest seasonal increase has been in the winter months, where the average annual winter temperature since 2000 has increased by 8% (NRCC 2024).

Table 2-31
Air Temperature Trends Using Monthly Mean Data from Hemlock Station, New York

Season	Mean Temperature (°F) 1960 to 1999	Mean Temperature (°F) 2000 to 2023	Percent Increase
Annual	46.5	48.4	4%
Winter	26.2	28.3	8%
Spring	55.1	56.4	2%
Summer	66.2	67.6	2%
Fall	39.5	41.3	5%

Source: Northeast Regional Climate Center 2024

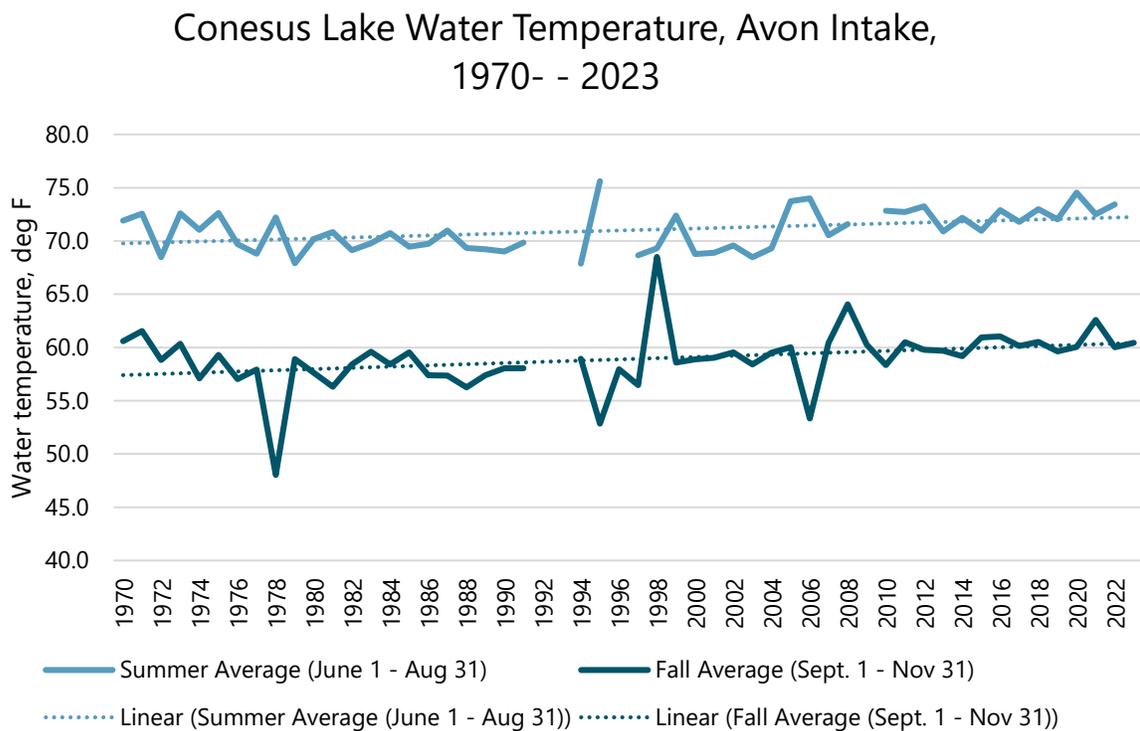
Figure 2-47
Annual Mean Air Temperature Trends Using Data from Hemlock Weather Station, New York from 1960 to 2023



Note: The red dotted line represents a linear trendline for the data.
 Data Source: NRCC 2024

Daily measurements of water temperature are recorded at the Village of Avon water treatment plant. Lake water is drawn from the upper mixed layer; the water intake is placed at a water depth of approximately 20 feet at mean water levels. Volunteers from the CLA transcribed Lake water temperature data from water treatment plant files. As displayed in Figure 2-48, there is a trend of warmer Lake water during summer (averaged daily measurements between June 1 and August 31) and fall (averaged daily measurements from September 1 through November 31).

Figure 2-48
Water Temperature at the Avon Intake



Data Source: Village of Avon, NY Water Treatment Plant records

2.7.4.2 Precipitation

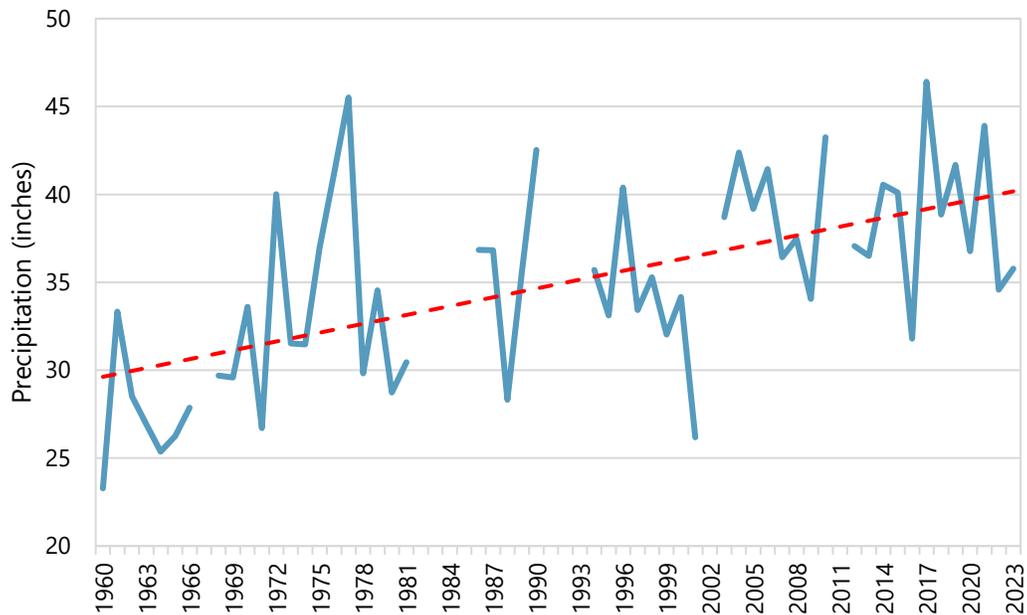
Locally, precipitation comparisons between 1960 to 1999 and 2000 to 2023 indicate mean annual precipitation has increased 16%, with an almost 20% increase in precipitation during the winter and fall months, as shown in Table 2-32 and Figure 2-49 (NRCC 2024). Increases in temperature will also impact precipitation patterns. For example, higher winter temperatures will result in more winter precipitation falling as rain instead of snow.

Table 2-32
Precipitation Trends Using Monthly Mean Average Precipitation Data from Hemlock Weather Station, New York

Season	Mean Precipitation (inches) 1960 to 1999	Mean Precipitation (inches) 2000 to 2023	Percent Increase
Annual	32.9	38.1	16%
Winter	5.4	6.5	19%
Spring	9.6	10.4	8%
Summer	10.3	11.8	15%
Fall	7.8	9.3	19%

Data Source: NRCC 2024

Figure 2-49
Annual Precipitation Trends Using Precipitation Data from Hemlock Weather Station, New York from 1960 to 2023

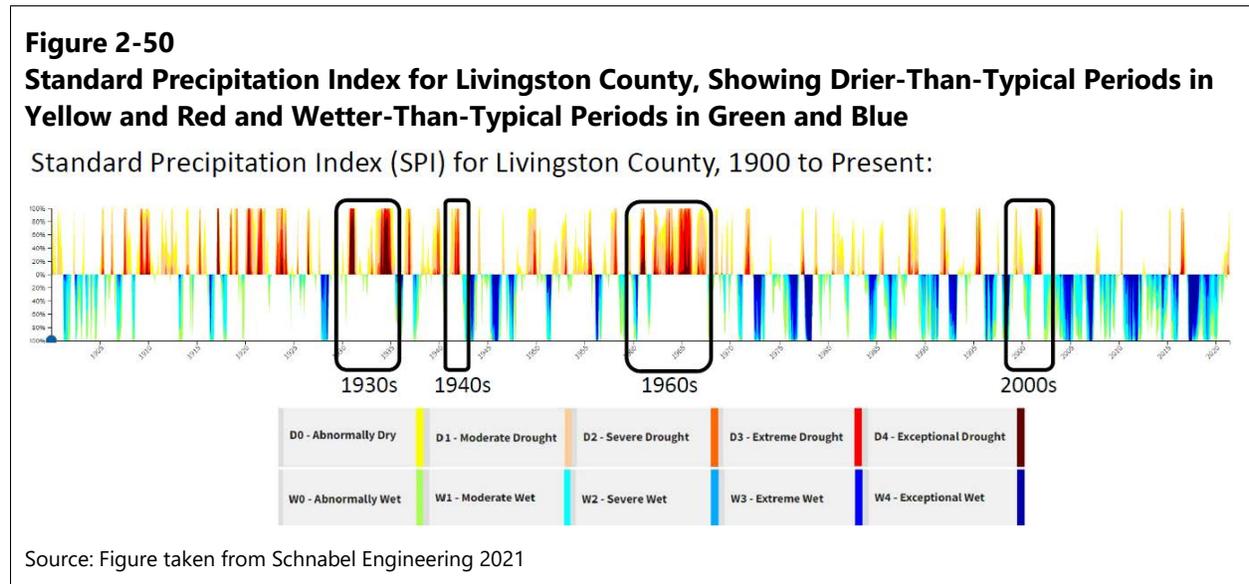


Note: The red dotted line represents a linear trendline for the data.

Data Source: NRCC 2024

Drought was examined by Schnabel Engineering (2021) as part of the *Safe Yield Analysis for Conesus Lake*. They examined historical droughts using Standard Precipitation Index (SPI) data for Livingston County, which is presented in Figure 2-50. SPI data is available from NOAA and the affiliated National Integrated Drought Information System. The SPI accounts for precipitation and temperature in a manner that creates a general indicator of regional drought potential. The dark red color represents

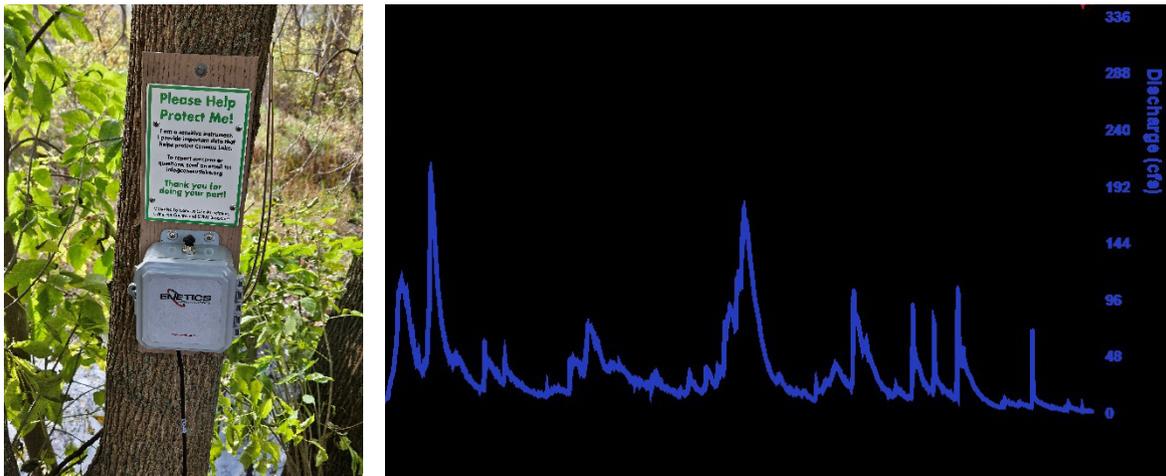
periods of exceptional drought, while the dark blue color indicates exceptionally wet periods. Data from last two decades indicates an overall wetter period compared to previous decades. There are at least three potentially significant droughts during the available period of record, which occurred during the 1930s, 1960s and 2000s. Numerous shorter droughts are shown to have occurred during the period of record, such as during the 1940s.



The 2021 *Safe Yield Analysis for Conesus Lake* (Schnabel Engineering 2001) was performed to support future water supply management decisions to ensure adequate water supplies to meet the needs of the community. The safe yield for a water supply is the volume of water that can be continuously withdrawn from the Lake during an extreme drought while still meeting regulatory and operational constraints. The engineering team developed a hydrologic model to project the volume of water available for public water supply from the Lake using information related to water inflows, outflows, storage, and evaporation. The report included recommendations for additional data to assist in making those management decisions. One recommendation of the *Safe Yield Analysis* (Schnabel Engineering 2021) was to install a streamgage within the Conesus Lake watershed to monitor the inflow into the Lake. Schnabel Engineering conducted a preliminary feasibility study that identified Conesus Inlet as the optimal site for a streamgage. This tributary channels 40% of the watershed inflow to the Lake. Due to the cost of a standard USGS streamgage system, it was determined that a community-led streamgage system would be most cost effective. In 2024, SUNY Brockport and the CLA began collaborating on a 2-year research project that involves the installation and monitoring of the streamgage and analysis of the stream inflow data. Figure 2-51 shows the streamgage and stream discharge data from 2024 to 2025. Note that the flow graph of the gage shows peak flow of 203 cubic feet per second occurring over March 8 and 9 due to the massive snow melt event. This

project was funded by FLOWPA and the CLA and was ongoing at the time of the adoption of the CLWMP Update. See Section 2.3.3.2 for more information on the *Safe Yield Analysis*.

Figure 2-51
Streamgage Installed in the Conesus Lake Inlet; Flow Graph (Right) Shows the Stream Discharge in 2024-2025



Photograph credits: G. Bolster (left) and B. Ceci (right)

2.7.4.3 Potential Impacts of Changing Temperature and Precipitation Trends in Conesus Lake and Watershed

The Conesus Lake watershed has experienced warming air and surface water temperatures over the past several decades. If that trend continues, higher air temperatures lead to increased surface water temperatures; this change has the potential to affect the Lake's physical, chemical, and biological conditions. Elevated water temperatures, combined with warmer winters, can lead to reduced ice cover on the Lake. These changes can negatively affect recreational use of the Lake and the tourism industry in the area.

Warmer waters in the spring have the potential to alter the annual cycle of thermal stratification (defined as the separation of water into distinct layers due to temperature-driven density gradients). As surface waters warm more quickly, density differences become stronger and the annual spring mixing period, which is when wind energy is strong enough to mix warming waters throughout the water column, is shortened. This physical change results in colder water deep in the Lake and a prolonged period of isolation of the deep waters.

The extended period of isolation of the deeper waters affects the Lake's water chemistry. The annual cycle of oxygen depletion and internal phosphorus loading is prolonged as oxygen is used by the microbial community to decompose the organic matter deposited on the sediment surface. The

interactions among phosphorus release in the lower waters, warmer fall temperatures, and shifting wind patterns is complex. During warm autumn days with low winds, phosphorus released from the sediments may not be entrained into the upper sunlit region of the Lake. When these conditions occur, the risk of late season HABs may be reduced. However, the pool of internal phosphorus will be higher in subsequent growing seasons.

In recent decades, the Lake's winter ice-cover conditions have become more variable, consistent with lakes across the Great Lakes basin. Remote sensing images available through NOAA and the National Ice Center document the trend of reduced winter ice cover (NOAA 2024b). These observations are confirmed by local records. Shoreline residents maintain "ice diaries," tracking dates of ice from their observation point; ice cover data from the northern basin are available since 1983 (Hanafin 2025). A lack of winter ice cover on the Lake was reported for winters from 2001 to 2002 and has recurred occasionally since. Reduced ice cover interferes with traditional winter activities, including ice fishing. In addition, lack of ice cover increases the risk of shoreline erosion during severe winter storm events, and it results in greater light penetration and higher water temperatures, which can affect aquatic plant growth and community composition, and potentially lead to earlier algal blooms or shifts in the dominant algal species present in algal blooms in the fall (Hampton et al. 2024, Thiem 2024).

Finally, warmer waters can affect the Lake's biological community in multiple ways, many of them synergistic. An underlying factor is that warmer conditions increase the rate of biochemical reactions. This results in more rapid growth of aquatic biota, including cyanobacteria. The aquatic community composition can shift to favor organisms better adapted to thrive at water temperatures. Climate impacts are a factor in expanding the range of invasive species, both plants and animals. The *Conesus Lake HABs Action Plan* (NYSDEC 2018) cites warming waters, elevated nutrients, and presence of benthic mussels as key factors affecting the risk of cyanobacterial blooms. Loss of DO in the deeper waters adversely impacts habitat for fish and macroinvertebrates.

If the current trend toward more high-intensity, short-duration rainfall events continues, it will increase the risk of flash-flooding and erosion within the Conesus Lake watershed, increasing inputs of sediment, nutrients, and other pollutants into streams and the Lake. Flooding and stormwater management is a major concern. Major storms can overwhelm stormwater collection and conveyance systems. Flooding can destroy homes and businesses, damage crops, and impact transportation infrastructure, all of which are costly to repair.

If the trends of warming air temperatures and increased intensity of storms observed over the past five decades in the Conesus Lake watershed persist, changes in precipitation and temperature patterns will have a direct impact on crops, livestock, and pests. Growing season length, variability in precipitation, warmer temperatures will impact crop growth, pests, and water needs. Increased summer droughts, more intense rainfall events, and hotter summer temperatures could all negatively

impact crop growth and livestock health. A longer growing season could increase agricultural production and shift the timing of harvests.

When warmer winters occur, there is often an increase in the winter survival and spring populations of some insect, weed, and disease pests that, in the past, only marginally overwintered in the New York region.

The focus of the CLWMP Update is to identify local actions designed to help mitigate the risk of diminished ecosystem services. Hydrologic resilience is a key focus area. Identifying and implementing measures to capture stormwater and retain nutrients and sediment on the landscape is essential to advance the community's vision for the future of the Lake and watershed. Continued monitoring and surveillance to identify HABs and communicating public health risks are essential as well. The next section of this report identifies management strategies and recommendations to protect and restore the resources of the Lake and its watershed.

3 Watershed Management Recommendations

The project team worked with watershed stakeholders to identify a series of recommendations to continue to advance toward realization of the community’s vision for the future of the Lake and watershed. The recommendations presented in this section update and expand the recommendations of the 2003 CLWMP based on new information, new partnerships, and effectiveness of accomplishments over the past decades.

The recommendations reflect an analysis of the watershed’s natural and built environment, current water quality conditions and trends, key sources of pollution, and the existing institutional framework for lake and watershed management. Some recommendations are focused on restoration—improving degraded land and water resources—while others are focused on protection.

These recommendations reflect priorities in 2025. They will continue to evolve as additional data and information become available, funding sources change, or as a result of regulatory changes. Not all recommendations can be implemented at once; while some could be addressed in the short term, others will need to be developed over the course of years. Implementation strategies were then identified to create a roadmap for making progress toward achieving the vision for the watershed.

Successful implementation of this CLWMP Update will require collaboration among a diverse range of agencies, institutions, and stakeholders working together as partners, pursuing funding, and contributing resources to support initiatives that will protect and restore the quality of the watershed. Section 4 assesses each watershed recommendation, providing critical information, including task leaders and partners, potential funding sources, approximate cost, and proposed timeframes.

The recommendations are grouped into broad categories that correspond to each of the eight goals for the CLWMP Update:

- **Goal 1.** Manage the Conesus Lake watershed in ways that control inputs of sediment and minimize entry of phosphorus, sodium and chloride, and other potential pollutants into the Lake.
- **Goal 2.** Maintain Conesus Lake as a dependable source of high-quality water that meets water supply needs and meets or exceeds public health standards for potable water and recreational uses.
- **Goal 3.** Continue efforts to detect, prevent, and mitigate cyanobacterial blooms (Harmful Algal Blooms or HABs) and their associated beneficial use impairments (e.g., beach closures, restrictions on drinking water).
- **Goal 4.** Improve and enhance recreational access to and use of Conesus Lake while managing for and maintaining a balance between multiple uses, without overcrowding the Lake.

- **Goal 5.** Continue and expand efforts focused on prevention, early detection, and rapid response to terrestrial and aquatic invasive species to protect the health of the Lake. Support management efforts to conserve and/or restore habitats for a diverse and resilient assemblage of native species.
- **Goal 6.** Maintain and strengthen the effective intermunicipal partnerships fostered through the Conesus Lake Watershed Council and continue to take actions that will increase resilience to changes in climate, population, and land use.
- **Goal 7.** Continue to work with the federal, state, regional, county, and local resources to make management decisions that reflect the best available information regarding Conesus Lake and watershed.
- **Goal 8.** Employ multiple approaches to outreach and education that enhance community awareness of how human activities affect water resources, opportunities for nature-based solutions, and the effectiveness of local actions.

3.1 Prioritization

As part of the development of the CLWMP Update, recommendations were gathered from the CLWC, CLW Tech, LCPD, state and local agency representatives, and from public comments at various stages in this plan's development. Recommendations from other plans and reports, including the *Phosphorus TMDL* (USEPA and NYSDEC 2019), *HABs Action Plan* (NYSDEC et al. 2018), *Wilkins Creek Subwatershed Stormwater Study* (B&L 2018a), *Conesus Lake Stormwater Toolkit* (B&L 2019), *Livingston County Comprehensive Water Supply Study Update* (LCPD and CPL 2020), and *Safe Yield Analysis* (Schnabel Engineering 2021) were also reviewed. There is no shortage of work to be done in the watershed; therefore, prioritization becomes a critical part of the implementation process. The project team evaluated the recommended actions with respect to the community's vision and goals and developed a priority list for implementation. Priority subwatersheds were identified when management actions would be particularly impactful and effective in achieving goals; however, opportunities to work with willing landowners and pursue funding will be considered throughout the watershed.

The priority list of recommendations was reviewed and commented on by the project team, CLWC, CLWC Technical Committee, CLA, state and local agency representatives, and the public. The first two public meetings were held to gather public feedback on the vision, goals, and priorities for the Lake and its watershed and included an open house style segment where participants engaged with the project team and provided feedback on message boards, as shown in Figure 3-1. This public input was incorporated into the final list of priority recommended management actions.

The recommendations presented in Chapter 3 are further detailed in Chapter 4, where implementation strategies are discussed. Chapter 4 focuses on implementation and analyzes potential partners and funding sources, timelines, and estimated costs. The priorities assigned in this

plan reflect conditions and opportunities in 2025; they may be refined in the future as additional data and information become available or in response to shifts in funding or regulatory changes.

**Figure 3-1
Public Engagement Activities to Gather Public Feedback on the Proposed Vision, Goals, and Priority Recommendations**

The figure consists of three panels. The left panel is a flyer for a public meeting on Monday, September 30th, from 5:30 to 7:30 pm at Camp Stella Maris, 4395 E Lake Rd, Livonia, NY 14487. The middle panel is the cover of the 'Conesus Lake Watershed Management Plan Update', which aims to protect water resources by addressing changes in climate, water quality, farming practices, development patterns, and more. The right panel is a table titled 'Goals and Recommendations' with a grid of red dots representing the status of various recommendations. A yellow box highlights a specific recommendation: 'This goal also addresses the Hazard Reduction Assessment and the Community Risk & Resilience Plan.' The table has four rows and two columns, with red dots indicating the status of each recommendation.

The recommendations focus on factors that can be managed by local actions. Some factors influencing the Lake, such as changes in climate patterns, are largely beyond local control. While important, the recommendations related to external drivers are focused on improving resilience to extreme weather, such as flooding and prolonged drought.

Other factors affecting the Lake’s water quality and habitat, such as the significant internal legacy phosphorus load and risk of invasive species, will need to be addressed through continued surveillance, monitoring, research, and partnerships across NYS and beyond. Sustaining the existing strong partnerships developed over the past decades through the commitment of the CLWC is a key recommendation that underlies the entire plan.

3.2 Recommendations

After careful review of existing documents, and with significant feedback from agencies and the public, this section includes management action recommendations for the Conesus Lake watershed.

Goal 1: Manage the Conesus Lake watershed in ways that control inputs of sediment and minimize entry of phosphorus, sodium and chloride, and other potential pollutants into the Lake.

The recommendations under Goal 1 were separated into subcategories: Agriculture, Built Environment, Wastewater Management, Managed Woodlands, Tributary Streambanks and Lake Shoreline, Conservation Lands, and Monitoring and Assessment. The recommendations are summarized below, followed by a table that describes each management recommendation for that subcategory. A summary of each recommendation is also provided in the implementation matrix provided in Section 4, Table 4-1.

Agriculture. Agriculture is a dominant land use in the Conesus Lake watershed; runoff from cultivated crops, pasture, and hayfields collectively represent about 15% of the Lake’s annual phosphorus budget. Agricultural lands offer a high rate of return for investment in BMPs; implementation of BMPs can impact a large fraction of the nutrient and sediment load from within the watershed. Recommended agricultural actions are presented in Table 3-1.

Agricultural recommendations focused on continued expansion of participation in the AEM program and the support and adoption of BMPs. Over the last 20 years, approximately \$2 million dollars have been invested in a range of BMPs designed to retain sediment and nutrients on the landscape. These efforts have been successful, but more participation in the program and adoption of BMPs are needed. While climate trends cannot be controlled at the local level, prioritizing climate resilience by evaluating how rainfall intensity impacts sediment and nutrient loading and designing BMPs accordingly is a priority recommendation.

Identifying and securing funding and supporting the LCSWCD efforts to assist farmers in implementing BMPs is extremely important. Without funding, willing landowners will be unable to enact some of the costlier BMPs.

Outreach and education to increase public understanding of and appreciation for local agricultural activities and their connection to the local community is another important agricultural recommendation.

Priority Subwatersheds. The subwatersheds that were identified as a high priority for implementing agricultural management actions were those subwatersheds with the largest land area classified as agricultural land use, as shown in Table 2-12. These subwatersheds include Cottonwood, Long Point, Sand Point, North End, No Name, Central, and Hanna’s Creek. While these subwatersheds are a high priority, opportunities to work with willing landowners will be explored anywhere within the watershed, especially areas that drain directly into streams or the Lake.

Table 3-1

Recommended Management Actions for Goal 1 – Agriculture

Recommended Actions	
1.1	<p>Encourage and support farmers’ participation in the tiered AEM program and progression through the implementation and evaluation phases. AEM supports cost-effective and science-based decisions to meet farm goals while protecting and conserving natural resources. The AEM program provides invaluable technical and financial support for farmers to implement BMPs to reduce nutrient, soil, and other pollutant loss from the landscape into streams and the Lake. Participating farmers can document their environmental stewardship and further advance their positive contributions to protecting the environment. The county and other partners will promote the program to farmers through various mediums (i.e., newsletters, mailings) and outreach methods to ensure accessibility and awareness of the benefits of the program to the watershed.</p> <p>This action is highly recommended for the Cottonwood, Long Point, Sand Point, North End, No Name, Central, and Hanna’s Creek subwatersheds, but opportunities will be explored watershed-wide.</p> <p>This action could be implemented immediately. Potential partners include the LCSWCD, NYSAGM, USDA, CLWC, and willing farmers. Funding to encourage farmer participation would come primarily from the County health department or local agency budgets and be less than \$10,000. Funding for implementation of BMPs could vary widely in their costs and might require grant funding. See Table 4-1 for additional details about partners, funding, and timelines.</p>
1.2	<p>Promote and support agricultural education events with the non-farming community to seek a renewed understanding of the local agricultural working landscape and connect the community. The important contributions of agriculture to the community are sometimes overlooked and the impacts of agricultural activities on complicated issues that contribute to water quality degradation within the watershed are sometimes misunderstood. Efforts to help the community feel connected to the working landscape and build awareness and understand how farmers are working to balance farming needs with environmental protection will foster trust and forge relationships within the community. This recommendation applies watershed-wide because the outreach and education component is important for the entire watershed.</p> <p>This action could be implemented immediately. Potential partners include the LCSWCD, NYSAGM, USDA, CLWC, and willing farmers. Funding to promote events would come primarily from County health department or local agency budgets and be less than \$1,000. See Table 4-1 for details about partners, funding, and timelines.</p>

Recommended Actions

1.3 Promote and support adoption of BMPs:

- a) to reduce loss of nutrients and sediments during the winter and early spring, such as planting winter cover crops on tilled lands.
- b) to establish natural systems such as Riparian Buffer Systems, with a focus on establishing native vegetation that supports site adaptability and species diversity, including pollinators.
- c) to reduce erosion from lands, including field terracing on slopes, stormwater management, and nutrient management actions.
- d) to reduce streambank erosion and sediment runoff (e.g., livestock access control and associated practices) as well as implementing buffers along riparian areas.

Agriculture is a dominant land use in the Conesus Lake watershed; runoff from cultivated crops, pasture, and hayfields collectively represent about 15% of the Lake's annual phosphorus budget. Agricultural lands offer a high rate of return for investment in BMPs; implementation of BMPs can reduce a large fraction of the nutrient and sediment load coming from within the watershed by keeping those nutrients, sediment, and other pollutants on the land and out of waterways. Efforts will be made to encourage, support, or provide accessibility to the resources that result in these BMPs being adopted. This action is recommended watershed-wide, and strongly encouraged in the Cottonwood, Long Point, Sand Point, North End, No Name, Central, and Hanna's Creek subwatersheds.

This action could be implemented immediately. Potential partners include the LCSWCD, NYSAGM, USDA, CLWC, and willing farmers. Funding to encourage farmers to adopt BMPs would come primarily from County department or local agency budgets and be less than \$10,000. Funding for implementation of BMPs could vary widely in their costs and might require grant funding. See Table 4-1 for details about partners, funding, and timelines.

- ### 1.4 Identify and pursue opportunities for BMP installation at the subwatershed scale for downstream capture and infiltration of stormwater runoff from agricultural lands.
- BMPs designed to keep soil, nutrients, and pollutants on the land are a high priority and can be very effective, but some amount of nutrients, sediments, and other pollutants will still enter our waterways. BMPs designed to help slow water movement and remove sediment, nutrients, and other pollutants once they have entered waterways are another important tool to reduce downstream water quality degradation. If needed, additional studies or research could be done to better identify any changes of BMPs and associated technologies to make them more effective.

This action is recommended watershed-wide, and strongly encouraged in the Cottonwood, Long Point, Sand Point, North End, No Name, Central, and Hanna's Creek subwatersheds.

This action could be implemented immediately. Potential partners include the LCSWCD, NYSAGM, USDA, CLWC, and willing farmers. Funding to identify resources would come primarily from County department or local agency budgets and be less than \$10,000. Funding for implementation of BMPs could vary widely in their costs and might require funding up to \$500,000. Funding could also be pursued to evaluate BMPs or technologies, or to perform feasibility studies for large-scale installations. See Table 4-1 for details about partners, funding, and timelines.

Recommended Actions

- 1.5 Support research and monitoring of the impact of rainfall intensity on BMP performance and incorporate findings into farm planning efforts and design considerations.** The trend of increasing variability and occurrence of extreme precipitation events is likely to continue. Understanding how extreme weather events may impact BMP performance is essential to the ability to adaptively plan and manage for future conditions to ensure that BMPs are designed and implemented in a manner that maximizes resilience to these precipitation events. This action is recommended watershed-wide, and strongly encouraged in the Cottonwood, Long Point, Sand Point, North End, No Name, Central, and Hanna's Creek subwatersheds. While this action could begin immediately, it will be a long-term process to research and monitor BMP performance. Potential partners include the LCSWCD, NYSAGM, USDA, CLWC, and willing farmers. Partner support could come from County department and/or local agency budgets and would likely be less than \$10,000. Funding for research and monitoring will vary depending on the type of project. See Table 4-1 for details about partners, funding, and timelines.
- 1.6 Provide additional resources to LCSWCD to support watershed farmers as they strive to reduce nutrient and sediment export to the waterways.** LCSWCD has long-standing relationships with the farming community and already provides technical and financial support for BMPs throughout the watershed. LCSWCD is ideally positioned to assist farmers but needs additional resources to offer more support. Funding and staffing resources are often the limiting factors in expanding BMP implementation. This action is recommended watershed-wide, and strongly encouraged in the Cottonwood, Long Point, Sand Point, North End, No Name, Central, and Hanna's Creek subwatersheds. This action could be implemented in the next 2-5 years. Potential partners include the LCSWCD, NYSAGM, USDA, CLWC, and willing farmers. Funding for LCSWCD to help implement BMPs could vary widely in their costs and might require funding of at least \$500,000. See Table 4-1 for details about partners, funding, and timelines.
- 1.7 Identify additional funding sources to help support agricultural BMP implementation.** The high costs associated with BMP implementation may limit farmer ability or willingness to participate. Finding funding sources to ease the financial burden on the farmers is key to adoption of BMPs. Partners can aid in the promotion of funding opportunities and resources that can address BMP implementation. This action is recommended watershed-wide. This action could be implemented immediately. Potential partners include the LCSWCD, NYSAGM, USDA, CLWC, and willing farmers. The costs to identify funding opportunities would come primarily from County department or local agency budgets and be less than \$10,000. See Table 4-1 for details about partners, funding, and timelines.

Built Environment. The built environment (homes, businesses, roads, etc.) is another source of sediments, nutrients, and other pollutants. Recommendations for management actions in the built environment focus primarily on the use of local laws, regulations, and education to protect aquatic resources, as shown in Table 3-2. The recommendations are intended to create consistency across watershed development activity. Consistent regulations and standards will set clear expectations for residents and developers, help ensure consistent development patterns, and increase the use of BMPs to control point and nonpoint source pollution. For example, recommendations include creating consistent definitions in each watershed municipality's zoning code for impervious cover to accurately calculate the amount of stormwater that can infiltrate into the ground on a given parcel. Continued training, outreach, and assistance to Code Enforcement Officers, highway department

staff, and other municipal staff and board/planning/zoning board members will ensure effective and consistent application and enforcement of regulations and requirements.

The recommendations also explain how green infrastructure and low-impact development measures can be incorporated into zoning codes and the County’s Erosion and Sediment Control Model Law. The NYSDEC Stormwater Management Design Manual is a resource referenced throughout the recommendations and can serve as a guide for applying green infrastructure and low-impact development tools. Using this manual as a guide will help municipalities save valuable time and resources on research, as it is continually updated by NYS with new tools and BMPs.

Priority Subwatersheds. The subwatershed priorities for management actions relating to the built environment were identified using a combination of local knowledge and those subwatersheds with the largest land area classified as moderate to high impervious cover, as shown in Table 2-9, and highest land area classified as land uses that represent the built environment (e.g., residential, commercial, industrial, etc.), as shown in Table 2-12. These subwatersheds include Wilkins Creek, North End, Hanna’s Creek, Central, and NW Creeks. Areas draining directly into streams or the Lake will be prioritized, regardless of subwatershed location. Opportunities to implement projects will be considered throughout the watershed.

**Table 3-2
Recommended Management Actions for Goal 1 – Built Environment**

Recommended Actions	
1.8	<p>Provide proactive training, outreach, and assistance to Code Enforcement Officers, highway department staff, and other municipal staff and board/planning/zoning board members to ensure effective and consistent application and enforcement of regulations and requirements. The success of the BMPs included in local laws and regulations hinges on effective implementation and enforcement. This recommendation is applicable watershed-wide and can be implemented over the next 2 to 5 years and beyond. Potential partners include Livingston County, watershed municipalities, CLWC, and the watershed inspector. Funding will likely come from County department, local agency, and municipal budgets, with potential support from NYSDOS. This is a high-priority recommendation. The cost of continued educational and outreach efforts would total less than \$10,000.</p>
1.9	<p>Encourage watershed municipalities to review the <i>Institutional Framework: Roles and Responsibilities and Nongovernmental Agencies (Appendix A)</i> and consider incorporating recommendations specific to their community to improve their resilience to extreme hydrologic events. Appendix A provides detailed, municipal-specific recommendations to strengthen local laws in ways that support their resilience. This recommendation applies watershed-wide. Potential partners include Livingston County and the watershed municipalities, which would initiate and lead these efforts, if desired. This recommendation is a high priority and can be implemented over the next 2 to 5 years, as the health of the Lake and watershed relies on the efforts of local municipalities. The cost of this effort is low, totaling less than \$10,000, and would likely be covered by County department and local agency budgets.</p>

Recommended Actions

- 1.10 Incorporate specific and enforceable stormwater management provisions into site plan review criteria, subdivision regulations, erosion and sediment control laws, and construction and design specifications to limit creation of impervious surfaces and support "low-impact development," consistent with the NYSDEC Stormwater Management Design Manual.** Stormwater management is a key effort to limit the transport of pollutants into nearby waterbodies. Municipalities can encourage stormwater management and provisions to limit impervious surfaces in a variety of ways through local laws and regulations. The NYSDEC Stormwater Management Design Manual provides guidance and best practices for implementing low-impact development techniques, which include stormwater management practices. This recommendation is applicable watershed-wide. Potential partners include Livingston County, the CLWC, and watershed municipalities. Efforts to incorporate provisions across a municipality's local laws and regulations would be costly and could reach up to \$500,000. There are several funding sources available to complete these efforts through EPF CFA NYSDOS and NYSDEC programs. If funding is awarded through these agencies, the contribution needed from County department and local municipal budgets would be minimal. This recommendation is a high priority and would take between 2 to 5 years to complete.
- 1.11 Minimize variances granted to sites requesting an increase in impervious area to maximize protection of floodplains, watershed properties, and other critical areas.** Limiting the amount of impervious surface in floodplains, along the lakeshore, and other waterbodies will help reduce the amount of pollutants and sediment that enter these resources. Towns should review area variance practices and consider reducing the number of area variances granted. While the number of area variances per municipality may seem inconsequential, the cumulative increase in impervious surface across the watershed can have a negative impact on water quality. This recommendation is applicable watershed-wide but is particularly important for properties adjacent to streams and/or the lake. Municipalities will be responsible for instituting this practice, with support from Livingston County. The cost of this effort is low, totaling less than \$10,000 and will be covered by County department and municipal budgets. This is a high-priority recommendation that can be implemented over the next 2 to 5 years.
- 1.12 Provide information to homeowners regarding measures to reduce the transport of sediment, nutrients, pesticides, and salt into the waterways, such as incorporating green infrastructure, implementing de-icing BMPs, and implementing fertilizer use BMPs.** Education and outreach efforts to residents are key to minimizing the impacts of the built environment on the lake and watershed. If residents understand the impacts that their actions have on their community, they may be more likely to support and implement BMPs. This recommendation is applicable watershed-wide. Potential partners include Livingston County, CLWC, CLA, NYSDOH, and NYSDEC. The cost of these efforts is relatively low, likely costing under \$1,000 from County department, local agency, and municipal budgets. This action is of medium priority and can happen immediately.
- 1.13 Engage with watershed municipalities to consider updating zoning laws and ordinances to reduce maximum lot coverage by 5% to 10% for zoning districts in the watershed.** Limiting the creation of impervious surface in the watershed can help limit the transport of pollutants and sediments into nearby waterways. The maximum lot coverage in residential districts in each town varies between 10% to 50%. Impervious surface cover, especially in lots adjacent to the Lake and connecting streams, negatively impacts water quality. This recommendation is applicable watershed-wide, with a priority for properties located adjacent to streams and/or the Lake. Livingston County, CLWC, and watershed municipalities are key partners to implement this recommendation. The cost of updating a municipality's zoning code to implement this recommendation would be under \$10,000; however, a complete zoning code rewrite to implement all relevant recommendations listed in this section would cost between \$100,000 and \$500,000. The NYSDOS has grant-funded programs to support zoning updates. These efforts will also require support from County department and municipal budgets. This is a medium priority recommendation and would require 2 to 5 years to implement.

Recommended Actions

- 1.14 Encourage watershed municipalities to update and make consistent the definitions of lot coverage, impervious surface, and green infrastructure among local regulations.** Each municipality's zoning regulations have some variability in the definitions for lot coverage and impervious surface. These are two key definitions that control how much stormwater infiltrates the ground. Furthermore, none of the zoning regulations include a reference to or definition for impervious surface, which should be included to align with the zoning regulations. Consistency in the definitions within each municipality's land use regulations and across zoning regulations could facilitate more regular development of and consideration for green infrastructure practices, or at least, less development of impervious surfaces. This recommendation is applicable watershed-wide and can be implemented by key partners, including municipalities, Livingston County, and CLWC. The cost of updating a municipality's zoning code to implement this recommendation would be under \$10,000; however, a complete zoning code rewrite to implement all relevant recommendations listed in this section would cost between \$100,000 and \$500,000. The NYSDOS has grant-funded programs to support zoning updates. These efforts will also require support from department and municipal budgets. This is a medium-priority recommendation that can be implemented immediately.
- 1.15 Incorporate specific and enforceable requirements for incorporating low-impact development and green infrastructure measures outlined in the NYSDEC Stormwater Management Design Manual into the County Erosion and Sediment Control Model Law. Encourage watershed municipalities to adopt the updated model law.** The County Model Erosion and Sediment Control Law has been adopted by three of the municipalities in the watershed and could be amended to require stricter stormwater management provisions. The law requires an erosion control permit for activity disturbing over 500 square feet of soil and an erosion control plan for activity disturbing over 10,000 square feet of soil. Obtaining an erosion control permit requires a meeting with the Code Enforcement Officer and the Conesus Lake Watershed Inspector. Receiving approval for an erosion control plan requires review by the municipality's planning board, so long as the plan meets the performance standards as outlined by the law. Livingston County can use the NYSDEC Stormwater Management Design Manual to incorporate BMPs into the Erosion and Sediment Control Model law, then educate and encourage municipalities to adopt the updated model law. This recommendation is applicable watershed-wide. Partners include Livingston County, CLWC, municipalities, and NYSDEC. The potential cost of this effort is between \$10,000 and \$100,000. The NYSEFC GIGP has available funding programs to cover these costs, with support from County department, local agency, and municipal budgets. This is a high priority recommendation, as the erosion and sediment control law determines how development is carried out. This recommendation can be implemented over the next 2 to 5 years.
- 1.16 Encourage watershed municipalities to update their comprehensive plans to include goals and strategies that guide land use decisions and enhance the protection of water resources.** Comprehensive plans are long-term planning documents that define a community's vision and goals for future growth and development. Comprehensive plans are created through a collaborative process involving public officials, planners, community members, and other stakeholders. They provide a framework for decision-making on land use, infrastructure, housing, transportation, and environmental protection. Zoning ordinances and other regulatory tools must be consistent with a community's comprehensive plan. While not regulatory documents themselves, comprehensive plans inform the creation and amendment of zoning laws, subdivision regulations, and other local policies. By providing a clear vision and set of priorities, they guide decision-makers in shaping the future development of the community in a way that aligns with residents' goals and long-term sustainability. This recommendation is applicable watershed-wide and would be implemented by municipalities with support from Livingston County and CLWC. The cost of developing or updating a comprehensive plan can be over \$100,000, however, the NYSDOS has grant programs available to support this effort. This is a high priority recommendation and would likely take between 2 to 5 years to accomplish.

Recommended Actions

- 1.17 Encourage lakefront municipalities to consider increasing the minimum shoreline setback requirements, where feasible.** Four municipalities in the watershed directly border the Lake, including the Town of Conesus, Town of Livonia, Town of Geneseo, and Town of Groveland. Due to the nature of the development along the lakefront, the rear setback from the water is minimal. For example, Conesus requires a 10-foot setback and Groveland requires a 5-foot setback in each of the Lake Shore Districts (Table A-2). While there is limited space in single parcels along the Lake, Towns could consider increasing shoreline setbacks in the case of redevelopment. This recommendation is applicable watershed-wide, with a priority for properties located adjacent to streams and/or the Lake. Municipalities would lead this effort with support from Livingston County and CLWC. The cost of updating a municipality's zoning code to implement this recommendation would be under \$10,000; however, a complete zoning code rewrite to implement all relevant recommendations listed in this section would cost between \$100,000 and \$500,000. The NYSDOS has grant-funded programs to support zoning updates. These efforts will also require support from County department and municipal budgets. This is a high-priority recommendation and would require between 2 to 5 years to implement.
- 1.18 Encourage watershed municipalities to include cluster development (e.g., conservation subdivisions) in zoning regulations including incentives and specific requirements to identify open space conservation measures.** Protecting open space areas is the most effective way to support the health of the Lake and watershed. One way that municipalities can respond to development pressure, while also protecting open space, is to encourage conservation subdivisions in zoning regulations through requirements and/or incentives. This recommendation is applicable watershed-wide and would be implemented by municipalities, with support from Livingston County and CLWC. The cost of updating a municipality's zoning code to implement this recommendation would be under \$10,000; however, a complete zoning code rewrite to implement all relevant recommendations listed in this section would cost between \$100,000 and \$500,000. The NYSDOS has grant-funded programs to support zoning updates. These efforts will also require support from department and municipal budgets. This is a lower priority recommendation compared to others based on feedback received from the public and can be implemented over the next 2 to 5 years.
- 1.19 Encourage watershed municipalities to consider adding guidance in zoning regulations for incorporating green infrastructure (i.e., rain gardens, bioswales, porous pavers) when any new impervious surface is created for lots in the watershed (e.g., deck, stone patio, driveways, parking areas).** Green infrastructure measures offer natural or seminatural systems to capture and treat stormwater. This offers a solution to minimize the impacts of impervious surfaces. This recommendation is applicable watershed-wide, with a particular priority for properties located adjacent to streams and/or the Lake. Municipalities are primarily responsible for implementing this recommendation, with support from Livingston County and CLWC. The cost of updating a municipality's zoning code to implement this recommendation would be under \$10,000; however, a complete zoning code rewrite to implement all relevant recommendations listed in this section would cost between \$100,000 and \$500,000. The NYSDOS has grant-funded programs to support zoning updates. These efforts will also require support from County department and municipal budgets. This is a high priority recommendation and can be implemented over the next 2 to 5 years.

Recommended Actions

- 1.20 Encourage watershed municipalities to amend parking regulations in each zoning ordinance to require low-impact development and green infrastructure measures using guidance in the NYSDEC Stormwater Management Design Manual.** Parking lots create a significant amount of impervious surface cover and are typically exposed to pollutants that communities want to prevent from entering nearby waterways. There is an opportunity to amend the parking requirements in each municipality's zoning regulation to require low-impact development and green infrastructure, so long as the measures are feasible based on engineering and site conditions. Examples may include impervious surface reduction, vegetated swales, rain gardens, bioretention facilities, permeable pavers, porous pavements, infiltration facilities, or dry swales. The NYSDEC Stormwater Management Design Manual provides guidance for implementing the most appropriate measure based on site conditions, such as depth to the water table, the available area needed for implementation, and the preferred maximum slope of the area. This recommendation is applicable watershed-wide and would be implemented by municipalities with guidance from Livingston County and CLWC. The cost of updating a municipality's zoning code to implement this recommendation would be under \$10,000; however, a complete zoning code rewrite to implement all relevant recommendations listed in this section would cost between \$100,000 and \$500,000. NYSDOS has grant-funded programs to support zoning updates. These efforts will also require support from County department and municipal budgets. This is a high priority recommendation and can be implemented over the next 2 to 5 years.
- 1.21 Identify and pursue opportunities for regional BMP installations for downstream capture and infiltration of stormwater runoff from the built environment.** Capturing stormwater runoff within the watershed can help to limit the spread of pollutants and sediment, supporting the overall health of the Lake and watershed. This recommendation is applicable watershed-wide. Key partners in this effort include LCSWCD, NYSDEC, CLWC, municipalities, and Livingston County. The cost of implementing this recommendation is high, reaching upwards of \$500,000 and would require funding from County department, local agency, and municipal budgets. This is a high-priority recommendation that can be implemented over the next 2 to 5 years.
- 1.22 Encourage watershed municipalities to establish a transfer of development rights program that transfers development potential from environmentally sensitive areas, called sending zones, to specific areas designated for growth, called receiving zones.** A transfer of development rights program is a way to protect sensitive environmental areas while still encouraging development in locations that are appropriate for growth. This fosters a balance between a community's needs for economic development and the protection of its natural resources. This recommendation is applicable watershed-wide, and would be led by municipalities with support from Livingston County. The cost of implementing this program is between \$10,000 and \$100,000, which would be covered by County department and municipal budgets. This is a low-priority recommendation based on feedback received from the public and could be implemented in the next 5+ years.

Wastewater Management. Wastewater can be a source of nutrients to both groundwater and waterways. Recommendations related to wastewater management focus on septic systems and include recommendations to develop an enforceable septic inspection program for identifying systems in need of repair or replacement, as discussed in Table 3-3. Within the sewered area along the lakeshore, recommendations encompass measures to identify and eliminate illicit connections between the wastewater and stormwater collection infrastructure, thus reducing the risk of combined sewer overflow events that result in wastewater discharge to waterways. For eligible systems, participating in the NYSDEC Septic System Replacement Program should be encouraged. Septic repairs and upgrades are costly, so pursuing financial assistance for these programs is needed.

Priority Subwatersheds. Ensuring proper septic system function is important throughout the watershed. Septic system replacements and upgrades will be prioritized in areas adjacent to the Lake and streams within all of the subwatersheds, with consideration for landowner willingness and funding availability.

**Table 3-3
Recommended Management Actions for Goal 1 – Wastewater Management**

Recommended Actions	
1.23	<p>Encourage watershed municipalities to develop and implement a uniform septic system inspection program that requires inspection at realty transfer, at applying for a building permit that would result in increased residential capacity, as well as periodic inspections of all systems at defined intervals. Wastewater can be a source of nutrients to both groundwater and surface waters. Septic system inspections can identify outdated and improperly working systems that may be contributing excess nutrients into the Lake and tributaries. They can also ensure that septic systems are sized appropriately for a particular residential building.</p> <p>This would be applicable to all subwatersheds, with a higher priority for areas adjacent to streams and/or the Lake.</p> <p>As a home-rule state, municipalities would take the lead in developing and implementing the program. The CLWC could play a key role in encouraging the municipalities and providing recommendations and facilitating intermunicipal coordination. Partners include the LCDOH, NYSDEC, and the CLWC. It would take several years to develop the program and begin implementation. Costs associated with the development of the program would be relatively inexpensive and could come from municipal or local agency budgets. Implementation of the program, which may include the need to hire additional staff and other resources, could cost up to approximately \$100,000.</p>
1.24	<p>Encourage participation in NYSDEC septic system replacement program for qualifying systems. This program offers financial assistance for septic system replacement in priority geographic regions where a septic system has been identified as adversely impacting waterbodies. This includes several properties within the Conesus Lake watershed. The CLWC and LCDOH could reach out to qualifying homeowners, ensure they are aware of the program, and help facilitate their participation in the program.</p> <p>This action could be started immediately. LCDOH would be the lead on this action, with support from municipalities, NYSDEC, NYSDOH, and CLWC. The program is funded by the State, and the costs of reaching out to property owners to encourage and facilitate their participation would be less than \$1,000.</p>
1.25	<p>Implement an inspection program in areas served by sanitary sewers to identify and eliminate illicit storm sewer connections and reduce the risk of combined sewer overflow events. Illicit storm sewer connections can result in nutrients and other pollutants entering surface waters without being properly treated. Inspections for illicit storm sewer connections are a necessary step in eliminating them. This is a watershed-wide priority.</p> <p>It will likely take 5 or more years to develop, fund, and implement this program, which could largely be funded by County health department and local agency budgets. Municipalities would likely lead these efforts; partners include the LCDOH, NYSDEC, LCWSA, and the CLWC. Implementation costs for the program, which may include the need to hire additional staff and other resources, could be more than \$100,000. One potential source of implementation funding is the NYSDEC Nonpoint Source Pollution Grants.</p>

Recommended Actions

1.26 Seek funding for financial incentives to encourage septic system upgrades and use of alternative septic systems that achieve greater pollutant reduction. Septic system upgrades can be a financial burden for property owners. Finding financial support for these updates would likely garner additional participation in voluntary upgrades. This would be a watershed-wide priority, with a higher priority for areas adjacent to streams and/or the Lake.

Municipalities would likely lead these efforts; partners include the LCDOH, NYSDEC, and the CLWC. Identifying and pursuing funding sources could largely be completed using County health department or local agency budgets. The funding required for assisting with these upgrades and replacement could be several hundred thousand dollars or more, depending on the scale of the program. Such a program would likely take 5 or more years to develop.

1.27 Investigate feasibility and funding for a cost-sharing program to implement a septic system repair and replacement program for qualifying households, and a funding program to connect private systems to municipal sewer systems if they are located beyond the required connection distance.

Costs associated with septic system repair can be a significant burden on property owners, and extending sewer connections is also costly for communities. Investigating the feasibility of a cost-sharing program to implement such upgrades is the first step in addressing the financial burden facing property owners.

This would be a watershed-wide priority, with a higher priority for areas adjacent to streams and/or the Lake.

It would likely take several years to complete the feasibility study and develop a funding program. Municipalities would likely lead these efforts; partners include the LCDOH, NYSDEC, LCWSA, and the CLWC. Investigating the feasibility would likely cost less than \$10,000 and could be incorporated into agency and County department budgets.

Managed Woodlands. How woodlands are managed can impact sediment and nutrient loading, especially if areas with steep topography or adjacent to waterways are deforested. Table 3-4 lists the recommendations related to managed woodlands. Recommendations include surveying and proactively planning for invasive forest pests that could impact watershed stabilization and supporting reforestation efforts that would build resilience to both pest outbreaks and changing climate conditions. Another key recommendation is to consider developing a model local law requiring advance review and permitting of timber harvests, including site restoration plans, to minimize sediment and nutrient loss associated with timber harvesting activities. This model law would be developed in consultation with both NYSDEC and NYSAGM to avoid potential conflicts. Once developed, watershed municipalities should be encouraged to adopt the model local law.

Priority Subwatersheds. These actions are priorities for the entire watershed. Forested areas bordering the Lake or streams in all subwatersheds will be the highest priority for pest management and forest restoration efforts, but any opportunity to work with willing landowners will be explored.

Table 3-4

Recommended Management Actions for Goal 1 – Managed Woodlands

Recommended Actions	
1.28	<p>Survey for forest pests that affect hemlock, ash, spruce, and other tree species that are currently integral to watershed stabilization. Forest research and management should address identifying and controlling these and other pests. Strategic planting of species less susceptible to impacts of infestation, while prioritizing native species, should be undertaken in areas where canopy loss will result in significant system destabilization. Invasive forest pests, such as emerald ash borer and hemlock wooly adelgid, can cause widespread tree mortality. Such events can change forest ecosystem functions and lead to changes in nutrient and soil export from those systems. Surveys for the presence of these forest pests are important, as is understanding the best approaches and planning response actions once they have been identified. This is something that should begin immediately and be implemented watershed-wide. FL-PRISM is a key partner in this effort, along with the CLWC, NYSDEC, USFS, and university collaborators. Staff, technical expertise, and other resources may be needed for this action. County department or local agency budgets may cover some of the costs of this recommendation, with additional research funding potentially, particularly for implementation of forest management actions, coming from state and federal forest management and invasive species control programs.</p>
1.29	<p>Provide support for reforestation efforts, such as NYSDEC programs, and grant applications to conservation organizations. Forested lands have lower nutrient and sediment loading than agricultural lands or the built environment. The CLWC will encourage reforestation efforts throughout the watershed, with a priority for areas located adjacent to streams and the Lake, by promoting grant opportunities and facilitating conservation organization efforts. This is something that should begin immediately and be implemented watershed-wide.</p> <p>CLWC and NYSDEC are key partners in this effort, along with conservation organizations, FL-PRISM, and the USFS. County department or local agency budgets could cover the costs of this recommendation, which should be less than \$10,000. Implementation of forest restoration projects could be costly, depending on the size and scope of the projects. Grant funding opportunities can be identified and pursued to help fund those projects.</p>
1.30	<p>Consider developing a model local law requiring advance review and permitting of timber harvest and site restoration plans (certain agricultural activities exempted to prevent conflicts with NYS Ag and Markets regulations). Encourage watershed municipalities to adopt the model local law. A model law designed to set standards for timber harvest practices and site restoration requirements can ensure that timber harvesting is done in a manner to minimize erosion and sediment and nutrient loading into nearby waterways. Universal adoption results in clear, consistent standards throughout the watershed.</p> <p>This recommendation is a priority for the entire watershed.</p> <p>As a home-rule state, municipalities would take the lead in developing and implementing the program. The CLWC and LCPD could play a key role in encouraging the municipalities to develop the model law, providing technical support, and facilitating intermunicipal coordination. Other partners include NYSDEC, LCSWCD, and USFS. It would likely take five or more years to develop and adopt the model local law. The costs could be incurred by municipal and county budgets.</p>

Tributary Streambanks and Lake Shoreline. Streambank and shoreline erosion results in direct inputs of sediments and nutrients to waterways, and human activities near shorelines and streambanks can increase runoff and pollutant inputs to those waterways. Table 3-5 lists the recommendations related to streambanks and shorelines. Recommended actions include continuing stream inventories and pursuing funding for the implementation of stabilization projects along

priority stream segments. Public education is a key action; efforts to educate homeowners about best practices for preventing shoreline and streambank erosion, reducing nutrient and salt movement into waterways, and using buffers to trap sediments, nutrients, and other pollutants should be expanded.

Priority Subwatersheds. Previous studies have identified some priority areas for streambank stabilization (B&L 2018a, 2018b; Stantec 2007) that are still applicable to this update and continue to be recommended. The Wilkins Creek subwatershed is high priority. As discussed previously (see Section 2.6.3), the *Wilkins Creek Subwatershed Stormwater Study Report* (B&L 2018a) developed a priority list of projects for the subwatershed, which is reproduced below as Figure 3-2. North McMillan Creek subwatershed is also a high-priority area (see Section 2.6.3), with a reach of interest that has been evaluated for potential stabilization measures (B&L 2018b). In 2007, Stantec evaluated streambanks throughout the watershed and identified reaches that were high priority for stabilization measures (Stantec 2007). Prior work should be updated as additional tributary inventories and assessments are completed throughout the watershed, and additional stream segments may be identified as priorities. However, all subwatershed areas can implement the recommended actions.

**Figure 3-2
Wilkins Creek Subwatershed Stormwater Study Potential Project Locations Map (Taken from B&L 2018a)**

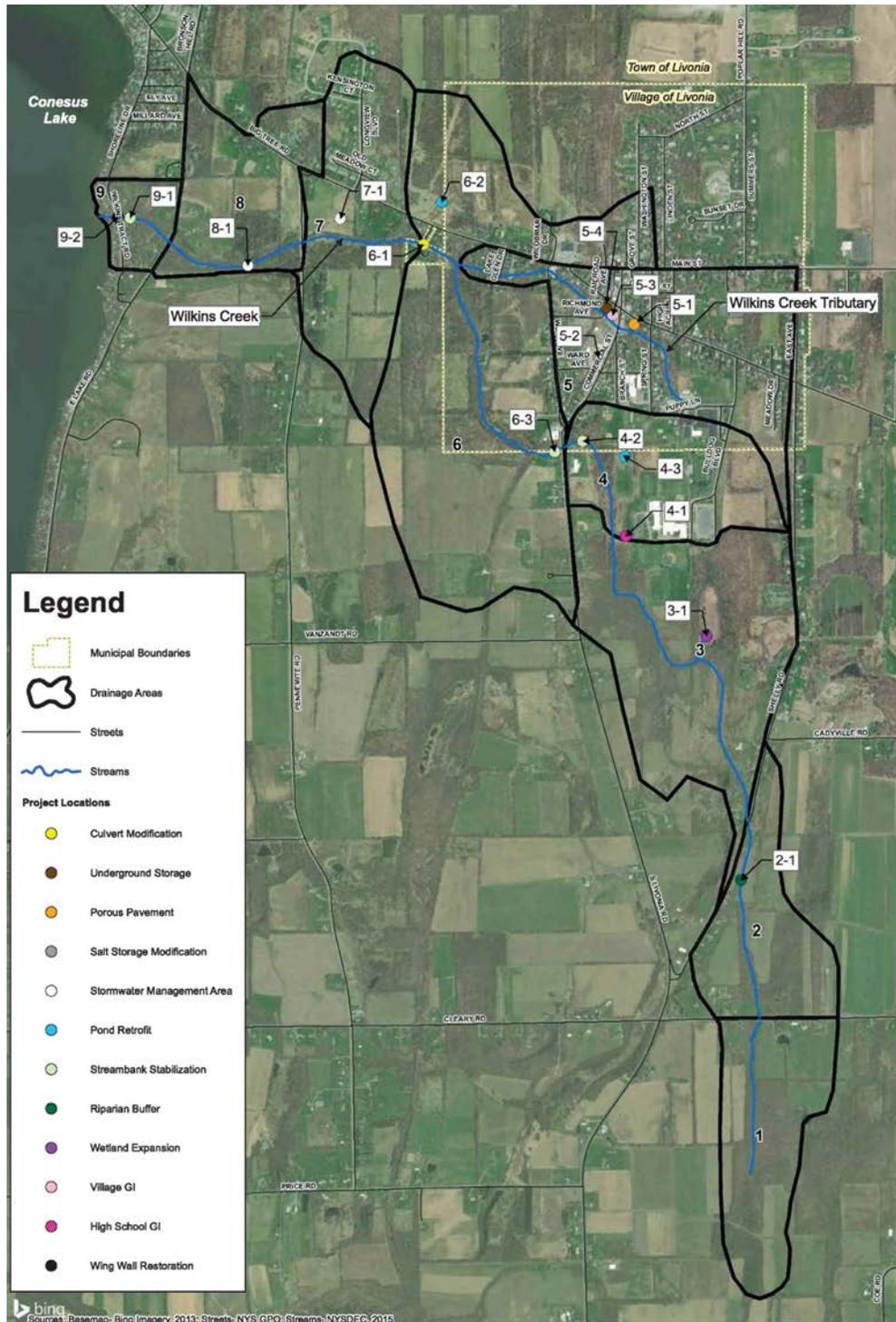


Table 3-5

Recommended Management Actions for Goal 1 – Streambanks and Shorelines

Recommended Actions	
1.31	<p>Continue to inventory the condition of streambanks and seek funding to create an engineered solution and implement stabilization methods along priority segments. Unstable, eroding streambanks can lead to the transport of sediment and nutrients downstream, especially during high flow events. Section 2.6.3 discusses many of the recently completed and in-progress streambank stabilization projects within the watershed. Additional monitoring and assessment of tributaries is needed to identify other sections that are unstable or are vulnerable to erosion during high flow events. This work is on-going and should be continued.</p> <p>Wilkins Creek and North McMillan Creek are high priority subwatersheds. Other priorities will be identified throughout the watershed as inventories are completed, conditions within a stream changes, or new opportunities arise.</p> <p>As priority segments are identified, funding opportunities should continue to be pursued to complete additional stabilization projects. The CLWC and LCPD would continue to lead these efforts, in collaboration with LCSWCD, USDA, and university research partners. The costs of inventorying streams and implementation of stabilization projects could cost several hundred thousand dollars or more, depending on the scope and scale of the project. Previous funding secured for stabilization projects include FLOWPA, EPF CFA, and WQIP; these sources, and any others identified by the partners, should continue to be pursued for future projects.</p>
1.32	<p>Seek funding opportunities that support streambank stabilization projects. Streambank stabilization projects can be expensive, upwards of several hundred thousand dollars or more. Therefore, funding is needed to help landowners, municipalities, and the County plan, design, and implement these projects.</p> <p>This is a high priority in all subwatersheds, but particularly in Wilkins Creek and North McMillan Creek subwatersheds. Other priorities will be identified throughout the watershed as inventories are completed, conditions within a stream changes, or new opportunities arise.</p> <p>This action should begin immediately, and the CLWC and LCPD are key leaders. Other partners include LCSWCD and university research collaborators. Previous funding secured for stabilization projects include FLOWPA, EPF CFA, and WQIP; these sources, and any others identified by the partners, should continue to be pursued for future projects.</p>
1.33	<p>Provide educational resources to homeowners along the Lake and tributaries regarding BMPs to reduce nutrient, sediment, and salt loading into the Lake and tributaries. Actions of property owners along the Lake and tributaries have the potential to directly impact water quality. Providing educational opportunities (such as printed and digital resources, educational signage, and public outreach events about how actions can impact water quality) is important to shifting behaviors from actions that may degrade water quality to those that protect it. There is a need for education and outreach on topics such as living shorelines as an alternative to hardening shorelines to provide important aquatic habitat, maintaining riparian and lakeshore buffers to reduce erosion and nutrient inputs, avoiding pesticide application near water bodies, and implementing de-icing BMPs to reduce salt loading into surface waters.</p> <p>These actions are important watershedwide, especially on properties adjacent to streams or the Lake. Some efforts are already underway and can be continued, while new efforts can begin immediately. The CLWC would likely lead the implementation of this recommendation, with key partners including the CLA, CCE, NYSDEC, and the municipalities. The costs associated with these efforts would likely be less than \$10,000 and could be funded through local agency and County department budgets or through FLOWPA.</p>

Recommended Actions

1.34 Increase education on and enforcement of safe boating practices and boat and personal watercraft laws to reduce shoreline erosion caused by boating activities. Many community members commented on the need for better public awareness about how boat wakes cause shoreline erosion and more enforcement of personal watercraft laws. This is a priority for all shoreline areas of the Lake.

The timeframe for beginning this action is within the next 2 to 5 years. The LC Sheriff Marine Patrol would be the lead for boating law enforcement. The CLA and CLWC could lead public education efforts. Other key partners include NYSDEC and the lakeshore municipalities. The costs associated with this recommended action is likely to cost less than \$10,000 and could be funded through County department and local agency budgets.

Conservation Lands. Wetlands and floodplains can slow the movement of water, enhance infiltration, and allow for sediment deposition and nutrient uptake as floodwaters and runoff reach surface waters. Seeking opportunities to acquire, enhance, restore, protect, or create wetland and floodplain habitat, especially in areas with a high potential to capture and filter runoff, is a priority management action on conservation lands, as shown in Table 3-6. Efforts to enhance, restore, protect, or create wetlands and floodplains will require knowledge of parcels and their potential to capture and allow runoff to infiltrate, funding sources, and landowners who would be willing to allow protections or enhancements on their properties. Thus, there are recommendations for identifying willing landowners and funding opportunities and creating a parcel inventory to identify priority areas for protection or enhancements. Another recommended action is for the CLWC and its partners to become actively engaged in open space planning efforts, such as the NYSDEC Open Space Conservation Planning efforts.

Priority Subwatersheds. All areas along the Lake and tributaries will be prioritized, regardless of subwatershed.

**Table 3-6
Recommended Management Actions for Goal 1 – Conservation Lands**

Recommended Actions

1.35 Explore opportunities to enhance, restore, protect, or create wetlands and floodplains within the watershed to reduce nutrient and sediment loads. Wetlands and floodplains can slow the movement of water, enhance infiltration, and allow for sediment deposition and nutrient uptake as floodwaters and runoff reach surface waters. Seeking opportunities to acquire, enhance, restore, protect, or create wetland and floodplain habitat will improve the water quality downstream of those areas. All areas along the Lake and tributaries will be prioritized throughout the watershed.

The timeframe for beginning to implement this recommendation is within the next 2 to 5 years. LCSWCD is a key leader in the implementation of this recommended action. Other important partners include the LCPD, CLWC, NYSDEC, and willing landowners. Costs for exploring opportunities are minimal and can be incorporated in local agency and County department budgets; implementation of projects would be highly variable, depending on the size and scope of the projects.

Recommended Actions

- 1.36 Identify cooperative landowners to facilitate acquisition of conservation easements to implement watershed protection strategies, building on available funding opportunities for land acquisition for water quality protection.** Landowner partnerships are needed to identify and implement land protection or enhancement activities. Building relationships and identifying willing landowners requires engagement by partners. Land trusts typically fill that role at the local level, and the CLWC can support their efforts by coordinating with partners to encourage landowner participation.
- Areas along the Lake and tributaries will be prioritized throughout the watershed, but any willing landowner in the watershed will be considered.
- The Genesee Valley Conservancy would likely be the lead organization in the implementation of this recommendation, along with key partners, including LCPD, CLWC, LCSWCD, and willing landowners. While engagement with landowners can begin immediately, this process can be lengthy and the approximate timing to implement this recommendation is approximately five years. Engagement activities are inexpensive and can likely be covered by County department or local agency budgets.
- 1.37 Inventory parcels for their potential to capture and infiltrate runoff and consider opportunities for their protection such as easements or acquisition by land trust.** A strategic approach to land protection is to identify and protect parcels that may be particularly effective at slowing runoff or filtering out nutrients, sediment, and other pollutants. For example, parcels located along streams, the lake shoreline, or that contain large wetlands might be a high priority for protection. CLWC can facilitate coordination of the various partners to assist in creating the inventory. All areas along the Lake and tributaries will be prioritized throughout the watershed.
- The Genesee Valley Conservancy would likely be the lead organization in the implementation of this recommendation, along with key partners, including LCPD, CLWC, LCSWCD, The Nature Conservancy (TNC), and willing landowners. The approximate timing to create this inventory and consider funding opportunities is approximately five years. Creation of the inventory and an evaluation of funding sources would likely cost around \$10,000. TNC and NYSDEC programs are potential sources of technical and financial support for developing the inventory.
- 1.38 Consider becoming actively engaged in the NYSDEC Open Space Conservation Planning efforts, or other similar planning efforts.** State and regional planning efforts present opportunities to provide technical and financial resources for projects within the watershed. Coordinating watershed goals with regional or state priorities may facilitate securing funding for high priority projects that are integrated into larger planning priorities. This is a watershed-wide priority.
- This recommended action can be implemented immediately. The LCPD would be the leader of this effort, with support from key partners such as NYSDEC and the Genesee Valley Conservancy. The cost of being involved with regional planning efforts would be small and could be absorbed into department budgets.

Monitoring and Assessment. There are many valuable data collection efforts underway throughout the watershed, as described in Section 2, including some focused on estimating tributary loading to the Lake. Continued data collection is, therefore, an important recommendation that will enable the CLWC to continue its adaptive management approach to managing the Lake and watershed, as included in Table 3-7. Monitoring water quality in tributaries and maintaining collaborations with academic partners and NYSDEC biologists to evaluate stream health is another high-priority recommendation.

Priority Subwatersheds. Priority subwatersheds include those identified above for tributaries: North McMillan and Wilkins Creek. In addition, subwatersheds with larger streams flowing in the Lake and

those with higher amounts of agricultural activity (Cottonwood, Long Point, Sand Point, North End, No Name, Central, and Hanna’s Creek) and/or impervious surfaces (North End, Hanna’s Creek, Central, and NW Creeks) are also a priority.

**Table 3-7
Recommended Management Actions for Goal 1 – Monitoring and Assessment**

Recommended Actions	
1.39	<p>Continue to monitor water quality conditions of the tributaries included in the USDA study of BMP effectiveness, along with other major tributaries. As described in Section 2.4.2.3, several tributary subwatersheds have been monitored since the early 2000s to evaluate the effectiveness of agricultural BMPs in reducing soil and nutrient runoff to the Lake. To date, monitoring efforts have shown that BMPs can improve water quality both within tributaries and in the Lake and near the tributary mouths. This monitoring helps to inform what BMPs are most effective and will also provide insight into how these systems may respond to future changes, such as increased intense precipitation events. It also helps to identify how specific subwatersheds are impacting the Lake, which can help to prioritize BMP implementation.</p> <p>This monitoring effort should be continued. The SUNY research partners lead this effort, with support from key partners, including the CLWC, CLA, NYSDEC, USDA, and LCSWCD. Costs associated with this program are estimated to be less than \$10,000 and could be funded through County department or local agency budgets.</p>
1.40	<p>Continue to collaborate with academic partners and NYSDEC biologists to evaluate stream health using a range of metrics, including the benthic macroinvertebrate community. The CLWC has a long-term collaborative relationship with their SUNY partners and NYSDEC biologists. This partnership has resulted in an increased understanding of stream health within subwatersheds, which is essential to understanding how individual subwatersheds are impacting water quality of the Lake.</p> <p>This monitoring effort should be continued. The SUNY research partners lead this effort, with support from key partners, including the CLWC, CLA, and NYSDEC. Costs associated with this program are estimated to be less than \$1,000 and could be funded through County department or local agency budgets.</p>
1.41	<p>Review and compile all tributary monitoring results to create a long-term dataset of nutrients, salts, sediment, and other water quality parameters. As described in Section 2, there is an abundance of data that has been collected on the tributaries over the last 25 years. Creating a long-term database of water quality parameters will facilitate the assessment of long-term trends in water quality and increase the ability to detect patterns in the data. The CLWC can provide support to the partners and help facilitate the gathering of available information.</p> <p>The timeline for this recommended action is 2 to 5 years. The SUNY research partners would likely lead this effort, with the support of key partners, including the CLWC, CLA, NYSDEC, USDA, and the LCSWCD. Costs associated with this action are estimated to be less than \$10,000 and could be funded through County department or local agency budgets.</p>

Goal 2: Maintain Conesus Lake as a dependable source of high-quality water that meets water supply needs and meets or exceeds public health standards for potable water and recreational uses.

The recommendations related to Goal 2 focus on protecting *Water Quantity* are listed in Table 3-8, and recommendations related to *Water Quality* are listed in Table 3-9.

Water Quantity. As discussed in Sections 2.3.3.2 and 2.7.4.2, previous studies, such as the *Livingston County Comprehensive Water Supply Study Update* (LCPD and CPL 2020) and the *Safe Yield Analysis* (Schnabel Engineering 2021), have provided valuable information for water supply planning. The *Safe Yield Analysis* concluded that maintaining the winter USACE target elevation of 816.5 feet for the Lake would not be achievable during an extreme drought if both water purveyors continually withdrew water at their maximum permitted rate. The *Water Supply Study* concluded that while the current demands on the Lake for water withdrawal can be met with no adverse impact on maintaining target Lake levels, future demand is a potential issue of concern as surface water resources in the Lake are currently over-allocated.

Based on the findings of these previous studies, several recommendations are focused on reducing water waste, including public outreach about water conservation at home, to businesses and institutions, as well as efforts to identify and repair pipeline leaks. Recommendations also focus on hydraulic modeling of the outlet channel and upgrading the outlet gates at the northern end of the Lake to improve control over the Lake levels. Given the conclusions of the *Safe Yield Analysis*, another important recommendation is to update the analyses when conditions change, such as increased water demand, hydrologic changes, or new regulations are implemented. The recent addition of a streamgauge on the Inlet will further the community’s ability to track trends and respond to changes in the Lake’s hydrologic budget.

Priority Subwatersheds. Water conservation efforts should be done watershed-wide. Outlet channel and gate recommendations do not have an applicable subwatershed priority. Priority subwatersheds for streamgages include those with larger streams flowing in the Lake. This includes Conesus Inlet, South McMillan Creek, North McMillan Creek, No Name Creek, Long Point Creek, Sand Point Gully, Hanna’s Creek, Wilkins Creek, North Gully, South Gully, Densmore Creek, and Southwest Creeks subwatersheds. Conesus Inlet, South McMillan, and North McMillan contribute as much as 70% of the total annual inflow to the Lake.

**Table 3-8
Recommended Management Actions for Goal 2 – Water Quantity**

Recommended Actions	
2.1	<p>Develop outreach materials related to water conservation. Public education about specific actions they can take to reduce water consumption and waste is important and effective. There is a vast amount of publicly available information on ways to identify leaks, increase water use efficiency, and modify water usage to save water. The CLWC and their partners can help promote these efforts and disseminate materials.</p> <p>This recommendation should be implemented watershed-wide and can begin immediately. The CLA would likely lead this effort, along with the CLWC, CCE, and local schools. The cost of the materials would be minimal and could come from the LCWSA.</p>

Recommended Actions

2.2 Survey the outlet channel and develop a hydraulic model of Conesus Creek. This will better define the relationship between Lake level and limit of gravity flow from the Lake into Conesus Creek, which will, in turn, help better understand how to manage the Lake's water levels.

The anticipated timeframe for this recommendation is five years or more. The CLWC would lead this effort, along with NYSDEC. The estimated cost of this effort would be up to \$100,000 and could be funded by LCWSA or grants such as EQIP.

2.3 Maintain the streamgage sited on Conesus Inlet to provide local data to support water and nutrient budgets. Consider additional streamgage sites on Lake tributaries. These data will provide insight into how subwatersheds are impacting the Lake water levels and water quality, which can help to prioritize BMP implementation and better understand how these systems may respond to future changes, such as increased intense precipitation events.

Priority subwatersheds would be those identified above as having larger tributaries (Conesus Inlet, South McMillan Creek, North McMillan Creek, No Name Creek, Long Point Creek, Sand Point Gully, Hanna's Creek, Wilkins Creek, North Gully, South Gully, Densmore Creek, and Southwest Creeks).

The anticipated timeframe for this recommendation is 2 to 5 years. The CLA would likely lead this effort, with support from the CLWC and SUNY research partners. The costs associated with maintaining and installing additional streamgages could cost up to \$10,000, depending on the number of new streamgages installed. These costs could be covered by FLOWPA or LCWSA funds.

2.4 Consider electrically actuating the outlet gates and implementing remote operations capabilities and/or a Supervisory Control and Data Acquisition system for real time gate control and improved ability to control Lake water levels. These upgrades would allow for greater control of Lake levels and responsiveness to changing conditions.

The anticipated timeframe for this recommendation is five or more years. This action would be led by LCWSA, in partnership with CLWC NYSDEC, and USACE. The costs associated with evaluating new technologies would be minimal, with additional costs to purchase and install upgrades. Funding could be provided by LCWSA.

2.5 Implement programs to detect and repair pipeline leaks. Water leakage can be a large source of wasted water. New technologies are available for leak detection.

This would be a watershed-wide priority that could be implemented within the next 5 years.

The anticipated timeframe for this recommendation is 5 or more years. This action would be led by the water purveyors, in partnership with CLWC and the municipalities. The costs associated with the leak detection and repair costs could be up to \$100,000, depending on the extent of the required repairs. The costs could be covered by the LCWSA.

2.6 Implement recommendations of the 2021 Safe Yield Analysis (Schnabel Engineering 2021), including discussions with the USACE to clarify meeting the Rule Curve targets and options to modify the Rule Curve during periods of extreme conditions (both flooding and drought) and updating the Safe Yield Analysis as the hydrologic record expands, demand for water changes, water systems are upgraded, or regulatory requirements are modified. As discussed in Sections 2.3.3.2 and 2.7.4.2, the 2021 report provides recommendations for ensuring adequate water supplies into the future. This would be a watershed-wide priority.

The anticipated timeframe for this recommendation is 5 or more years. This action would be led by LCPD, with key partners including NYSDEC and USACE. Depending on the specific actions being proposed, this could cost between \$10,000 and \$500,000. County department and local agency budgets, as well as USACE and NYSDEC funding, could be used to cover the costs associated with this recommendation.

Water Quality. Two priority recommendations are associated with maintaining high-quality drinking water. These recommendations are listed in Table 3-9, though many of the recommendations related to Goal 1 would also benefit Lake water quality.

As noted in Section 2.7.3, salinity levels in the drinking water drawn from the Lake are trending upward and sodium levels are above the recommended level for those on low-sodium diets. One high priority recommendation is that the CLWC continue to work with local government authorities to identify, seek funding, and implement BMPs for road salt. This may include actions and education efforts related to highway salting practices and technologies, homeowner de-icing practices, and de-icing practices on sidewalks and parking lots. The CLWC should evaluate what other communities are doing, as well as the recommendations in the Adirondack Road Salt Reduction Task Force Report (NYSDEC and NYSDOT 2023).

Another recommendation is to continue to monitor for emerging contaminants and organic compounds in the Lake and its drinking water, including cyanotoxins and broad-spectrum insecticides, and evaluate water treatment technologies that may enhance removal of or minimize the levels of these contaminants, if warranted. Emerging contaminants can include cyanotoxins, insecticides, pesticides, pharmaceuticals, industrial chemicals such as PFAS, and microplastics. While not currently a threat to the Lake's drinking water supply, the continued occurrence of HABs combined with organic matter levels in the Lake warrants periodic evaluation of the potential need for and benefit(s) of enhanced water treatment by public water purveyors would be prudent to ensure consistent removal of cyanotoxins and THM in the finished water.

Priority Subwatersheds. The subwatersheds identified above for the built environment category are also priority subwatersheds for water quality management actions (Wilkins Creek, North End, Hanna's Creek, Central, and NW Creeks). In addition, areas with road crossings and areas along the lakeshore will be prioritized.

**Table 3-9
Recommended Management Actions for Goal 2 – Water Quality**

Recommended Actions	
2.7	<p>Support research to investigate sources and effects of increasing levels of sodium and chloride in the Lake and its drinking water. Salinity levels in the drinking water drawn from the Lake are trending upward and sodium levels are above the recommended level for those on low-sodium diets. Tributary and Lake monitoring could be used to identify which subwatersheds are the dominant sources of road salt and direct further research into identifying specific areas where road salt use is causing elevated sodium and chloride concentrations.</p> <p>This is a watershed-wide priority for areas with road crossings, areas along the lakeshore, and in subwatersheds with higher amounts of impervious surfaces (Wilkins Creek, North End, Hanna’s Creek, Central, and NW Creeks).</p> <p>This recommendation can begin immediately. The CLWC will lead the effort, along with the CLA and SUNY partners. Implementation of this action is expected to cost less than \$10,000 and the funding could come from County department or local agency budgets.</p>
2.8	<p>Work with the Conesus Lake Watershed Council and local government authorities to identify, seek funding, and implement BMPs for road salt. This may include BMPs and education related to highway salting practices and utilizing more efficient technologies, homeowner de-icing practices, and de-icing practices on sidewalks and parking lots. The CLWC should evaluate what other communities are doing, as well as the recommendations for best practices from NYSDEC and NYSDOT.</p> <p>This is a watershed-wide priority, especially for areas with road crossings and where roads follow close to the lakeshore; it is also a high priority for subwatersheds with higher amounts of impervious surfaces (Wilkins Creek, North End, Hanna’s Creek, Central, and NW Creeks).</p> <p>The timeframe for this recommendation is within the next 2 to 5 years. The CLWC will lead the effort, along with the watershed municipalities, the highway departments, LCPD, LCSWCD, and LCDOH. Implementation of this action is expected to cost less than \$100,000, with higher amounts for new technologies like live-edge plows; the funding could come from County department or local agency budgets.</p>
2.9	<p>Continue to monitor for emerging contaminants and organic compounds in the Lake and its drinking water, including cyanotoxins and broad-spectrum insecticides, and evaluate water treatment technologies that may enhance removal of or minimize the levels of these contaminants. Emerging contaminants can include cyanotoxins, insecticides, pesticides, pharmaceuticals, industrial chemicals such as PFAS, and microplastics. These levels are not currently identified as a threat to water quality, but monitoring is needed to ensure the quality of Lake water. .</p> <p>The timeline for this recommended action is within the next five or more years. This is a medium-priority recommendation compared to the other recommendations in this section. The water purveyors would lead this effort, along with NYSDOH and industry groups. The costs of coordinating the monitoring and evaluating water treatment options would be minimal, though the analyses would be more expensive and depend on the scope of the analyses. Funding could come from County department and local agency budgets.</p>

Goal 3: Continue efforts to detect, prevent, and mitigate cyanobacterial blooms (HABs) and their associated beneficial use impairments in Conesus Lake.

The management recommendations associated with Goal 3 are focused on HABs detection, prevention, and mitigation. They are separated into three subcategories: *Research and Monitoring* recommendations are listed in Table 3-10, *Risk Communication* recommendations are listed in Table 3-11, and *Mitigation* recommendations are listed in Table 3-12.

Research and Monitoring. While HABs have been monitored and reported for years, there is still uncertainty about HAB dynamics. Researchers across the state are trying to understand why some waterbodies have blooms and others do not and how to predict when or where a HAB will occur. Agency staff, researchers, and community scientists have been monitoring trophic state indicators and HABs events for decades. A key recommendation is to continue this work, as well as to support additional research into the causes of HABs, the plankton species contributing to HABs, and how environmental changes will affect the frequency, duration, and toxicity of HABs.

Other recommendations relate to better understanding phosphorus dynamics in the Lake. As discussed in Section 2.4, the internal phosphorus load is large. One recommended action is to begin monitoring total phosphorus concentrations at the Lake outlet to improve understanding of the status and trends in internal, or legacy, phosphorus loading. As more research and monitoring results become available, additional parameters, conditions, and factors may need to be explored to better understand the relationships between HABs and environmental conditions. Research should be adaptive to new information and address emerging areas such as saxitoxins to better understand their dynamics and potential environmental impacts.

Priority Subwatersheds. These recommendations are applicable to all subwatersheds. However, specific actions to reduce nutrient inputs to the Lake would be prioritized in the subwatersheds with the largest land area classified as agricultural land uses (Cottonwood, Long Point, Sand Point, North End, No Name, Central, and Hanna’s Creek) and highest land area classified as land uses that represent the built environment (Wilkins Creek, North End, Hanna’s Creek, Central, and NW Creeks).

**Table 3-10
Recommended Management Actions for Goal 3 – Research and Monitoring**

Recommended Actions	
3.1	<p>Continue to deploy trained community scientists to survey Lake shoreline areas for potential HABs and report to County and NYHABS. Community scientists are an invaluable resource in monitoring and reporting HABs so that the public can be made aware of potential risks. The existing program should be continued, and the CLWC plays a vital role in maintaining collaboration among the partners.</p> <p>This is a watershed-wide priority. LCDOH would continue to lead these efforts, along with key partners, including the CLA, CLWC, NYSDEC, and SUNY researchers. The costs associated with this recommendation are estimated to be less than \$10,000 and could be funded through local agency and County department budgets.</p>

Recommended Actions

- 3.2 Continue monitoring Conesus Lake to track trophic state indicator parameters, the Lake's phytoplankton community, HABs, and attainment of beneficial uses.** The current Lake monitoring program, described in Section 2.4, provides a robust, long-term dataset on the Lake's water quality changes over time. It is a high priority to continue this monitoring to track progress toward meeting the goals of this plan and evaluating changes in water quality over time. The CLWC plays a vital role in facilitating collaboration among the partners. This is a Lake-wide priority.
- SUNY researchers would continue to lead these efforts, along with key partners, including the CLA, CLWC, and NYSDEC. The costs associated with this recommendation are estimated to be less than \$10,000 and could be funded through local agency and County department budgets.
- 3.3 Monitor TP concentrations in the Lake outlet to improve understanding of status and trends of internal (legacy) phosphorus load.** As discussed in Section 2.4, the internal phosphorus represents approximately 80% of the Lake phosphorus load. Monitoring TP concentrations at the Lake outlet would provide an estimate of phosphorus export from the watershed and improve the understanding and quantification of legacy phosphorus dynamics. The CLWC plays a vital role in facilitating collaboration among the partners. This recommended action could begin immediately.
- SUNY researchers would lead this monitoring effort, along with key partners, including the CLA, CLWC, NYSDEC, and UFI researchers. The costs associated with this recommendation are estimated to be less than \$10,000 and could be funded through local agency and County department budgets.
- 3.4 Supplement the understanding of the plankton species and toxins contributing to blooms through taxonomic analysis of samples collected during conditions favorable for HABs formation.** Factors that favor HABs formation include quiescent conditions, warm water, and recent nutrient inputs. Additional research on what plankton species are dominant during HABs and what toxins are present may help identify appropriate safety precautions, increase HAB predictive ability, or determine effective mitigation actions. The anticipated timeframe for this action is within the next 2 to 5 years. SUNY research partners would continue to lead these efforts, along with the CLA, CLWC, and NYSDEC. The costs associated with this recommendation are estimated to be between \$10,000 and \$100,000. Funding could be included in local agency and County department budgets, or through the pursuit of research grants.
- 3.5 Support research to investigate the role of environmental changes on Lake metabolism, primary production and phytoplankton dynamics, nutrient cycling, and carbon chemistry.** As more research and monitoring data become available, additional parameters, conditions, and factors may need to be explored to better understand the relationships between HABs and environmental conditions. Research should be adaptive to new information and address emerging areas such as saxitoxins to better understand their dynamics and potential environmental impacts. The CLWC, with their established technical committee and collaborator relationships, is ideally positioned to help assess and identify data gaps.
- This is a Lake-wide priority. University partners would likely lead the research effort, with key partners including the CLWC, CLA, and NYSDEC. The costs associated with supporting research would be minimal and could be incorporated into existing local agency and County department budgets. Research could also be funded through grant proposals.

Risk Communication. HABs are expected to continue, so efforts to improve and implement effective communications tools to notify the public of confirmed or suspected HABs are a high priority. The LCDOH Watershed Inspector should continue to manage public health advisories related to HABs. Equally important is the recommendation to collaborate with others, such as the CLA, to provide consistent information about HAB formations, how to reduce risk of exposure, and ways to live safely with HABs.

Priority Subwatersheds. These recommendations are applicable to all subwatersheds.

Table 3-11
Recommended Management Actions for Goal 3 – Risk Communication

Recommended Actions	
3.6	<p>Continue to build and deploy effective communication tools to alert recreational users regarding suspicious or confirmed HABs and appropriate response. As mentioned in Section 2.7.1, HABs are routine events each year, and so it is important for the public to be aware of HABs and know how to live safely during an event.</p> <p>This is a watershed-wide priority that should be continued. The CLWC would continue to lead this action, along with the CLA, LCDOH, and NYSDEC. Estimated costs would vary from tens of thousands of dollars upward, depending on the types of technology and tools selected. Funding could come from local agency or County department budgets.</p>
3.7	<p>Continue to have the LCDOH Conesus Lake Watershed Inspector manage advisories regarding water contact recreation. LCDOH has an established system that has worked well to report HABs and their impact on recreation activities. This is a watershed-wide priority that should be continued. The CLWC can assist the LCDOH with the dissemination of the information to the public.</p> <p>The LCDOH would continue lead this action, along with the CLA, CLWC, and NYSDEC. Funding would likely be less than \$10,000 and could come from local agency or County department budgets.</p>
3.8	<p>Collaborate with CLA and others to provide consistent information regarding the factors affecting HABs formation, recommended measures to reduce risk of exposure, strategies for living safely with HABs, and near-real time data on Lake conditions. Clear, consistent language and recommendations are important when educating the public about HABs. Collaboration and close coordination will ensure consistent messaging. The CLWC can assist in disseminating the information to the public. This is a watershed-wide priority that should begin as soon as possible.</p> <p>The LCDOH would continue lead this action, along with the CLA, CLWC, and NYSDEC. Funding would likely be less than \$10,000 and could come from local agency or County department budgets.</p>

Mitigation. Lakes throughout the region are trying to address the HAB issue. Researchers are trying to understand why some waterbodies have blooms and others do not, as well as how to predict when or where a HAB will occur. This plan recommends continuing to collaborate with NYSDEC, NYSDOH, USACE, and research institutions as they evaluate emerging technologies for predicting HABs and mitigating their persistence and toxicity in the Lake environment. Given that internal phosphorus loading is the major source of phosphorus to the Lake, it is essential to continue tracking efforts of NYSDEC and others to mitigate internal phosphorus load and evaluate the potential for rehabilitation of the Lake.

Priority Subwatersheds. These recommendations are applicable to all subwatersheds and Lake-wide.

**Table 3-12
Recommended Management Actions for Goal 3 – Mitigation**

Recommended Actions	
3.9	Continue to collaborate with NYSDEC, NYSDOH, USACE, and research institutions as they evaluate emerging technologies for predicting HABs and mitigating their persistence and toxicity in the Lake environment. Research is underway to better understand HABs. The CLWC can serve as the facilitator for bringing groups together to keep abreast of emerging technologies and pilot mitigation actions. This is a watershed-wide priority for the entire Lake. The CLWC would lead this effort, along with key partners including NYSDEC, USACE, NYSDOH, and university researchers. Funding for collaborative efforts would likely be less than \$10,000 and could be covered by local agency or County department budgets.
3.10	Continue to track efforts of NYSDEC and others to mitigate internal phosphorus load and evaluate the potential for rehabilitation of Conesus Lake. Phosphorus flux from Lake bottom sediments represents the major source of phosphorus to the Conesus Lake ecosystem, and technologies to remove this legacy phosphorus are limited. The CLWC can continue to network with state and regional groups to keep current on new and emerging technologies and approaches for mitigating internal phosphorus. This is a priority for the entire Lake. NYSDEC will lead these efforts, with partners including LCPD, LCDOH, and CLWC. Funding for collaborative efforts would likely be less than \$10,000 and could be covered by local agency or County department budgets.

Goal 4: Improve and enhance recreational access to and use of Conesus Lake while managing for and maintaining a balance between multiple uses, without overcrowding the Lake.

The recommendations for this goal focus on improving Lake access and reducing the potential for conflicting recreational uses, as listed in Table 3-13. The public clearly conveyed a desire for public swimming areas; the recommendation is to evaluate potential public beaches while considering access, safety, and water quality monitoring constraints. Another commonly expressed concern was how poor boating behavior impacts shorelines, the environment, and other recreational users on the Lake. Recommendations include enhanced education and outreach efforts regarding safe and courteous boating practices, and a review of “no wake” zones and speed limits to determine whether they are adequately protective of the shoreline and other recreational users. To prevent overcrowding and associated risks, boat traffic surveys should be undertaken and compared to public safety guidelines. Another recommendation is to develop a plan to monitor the public boat launch capacity and evaluate actions that can be taken to protect public safety when the boat launch nears full capacity.

Priority Subwatersheds. These recommendations are applicable to all subwatersheds; however, subwatersheds with existing parks and public access would be prioritized for providing a public swimming area or installing educational signage (e.g., Inlet, Long Point, North End, South Gully, and Hanna’s Creek).

**Table 3-13
Recommended Management Actions for Goal 4**

Recommended Actions	
4.1	<p>Provide for public swimming areas, considering access, safety, and water quality monitoring needs. The public expressed a desire for a public swimming area. Identification of a swimming area requires consideration of access, safety, and staffing needs. This could be anywhere within the watershed along the lakeshore, particularly subwatersheds with existing parks and public access, such as Inlet, Long Point, North End, South Gully, and Hanna’s Creek. The anticipated timeframe for this action is within the next 2 to 5 years. The municipalities would lead this management recommendation, along with the CLWC, LCDOH, LCPD, and CLA. Depending on the scope of the project, this could cost \$10,000 or more. Funding could come from County department or municipal budgets.</p>
4.2	<p>Review “no wake” zone guidelines and watercraft speed limits to evaluate whether they are adequately protective of Conesus Lake recreational users and shoreline erosion. Public feedback clearly identified a perceived need for a review of boating rules and regulations to ensure they are adequate. The CLWC would lead this effort, along with key partners, including CLA, LC Sheriff Marine Patrol, municipalities, and NYSDEC. A review of current rules and regulations would cost less than \$1,000 and could be covered by County department or agency budgets.</p>
4.3	<p>Enhance signage and public information regarding safe and courteous boating practices that minimize environmental impacts and conflicts among recreational uses. Many public comments were directed at the need for greater boating etiquette. Increased public education about how boating can impact other users and the lakeshore, along with boating best practices could help reduce conflict among users. This action should begin within a year.</p> <p>The CLWC would lead this effort, along with key partners, including CLA, LC Sheriff Marine Patrol, municipalities, and NYSOPRHP. Costs could range up to \$100,000, depending on the number and types of signs. Various funding sources could be used, including FLOWPA, NYSDEC, NYSDOS, and County department or local agency budgets.</p>
4.4	<p>Collect survey data from weekend and weekday boat traffic on Conesus Lake and compare with public safety guidelines for boat density. Another common public perception was that the Lake has too many boats on it. To determine whether boat density presents a public safety issue, boat traffic surveys should be undertaken. This action should begin within 2 to 5 years.</p> <p>The CLWC would lead this effort, along with key partners, including CLA, LC Sheriff Marine Patrol, municipalities, and NYSOPRHP. Costs are expected to be less than \$10,000 and could be funded through local agency and County department budgets.</p>
4.5	<p>Develop a plan to monitor public boat launch capacity and evaluate actions to protect public safety when launch is near capacity. During the peak of the summer boating season, the public boat launch gets very busy and trailer parking can become a challenge. Data is needed to ensure that public safety is adequately protected during these busy times. This action should begin within 2 to 5 years.</p> <p>The OPRPH would lead this effort, along with key partners, including CLWC, CLA, LC Sheriff Marine Patrol, and municipalities. Costs are expected to be less than \$10,000 and could be funded through local agency and County department budgets.</p>

Goal 5: Continue and expand efforts focused on prevention, early detection, and rapid response to terrestrial and aquatic invasive species to protect the health of the Lake. Support management efforts to conserve and/or restore habitats for a diverse and resilient assemblage of native species.

Invasive species are a continuing challenge across the region. As described in Section 2.7.2, preparation is essential to preventing and controlling the spread of invasive species. There are

several high priority recommendations for achieving this goal, which are listed in Table 3-14. Implementation of the Lake response plans, as well as state plans and other initiatives, to address invasive species and their potential impacts is a key priority. These plans should be periodically reviewed and updated as necessary to ensure they reflect the latest information and technology. The Watercraft Steward program is a highly effective program that should be expanded to increase the hours and inspections at Lake access points. Efforts to educate and raise awareness of the importance of decontamination services in preventing invasive species spread should be expanded to increase public participation in those services.

Collaborations and partnerships, especially those focused on monitoring and public education, are essential to preventing the introduction and spread of invasive species. Important collaborations with the FL-PRISM and other groups should be maintained, as should educational partnerships with groups like CCE and local schools. Monitoring is another essential component. Efforts to enlist and train community scientists to conduct periodic surveillance and reporting of invasive species, especially high impact or priority species, like the non-native *Hydrilla*, should be a high priority. Many invasive species in the United States were originally introduced as ornamental landscape plantings, so another recommendation is to consider modifying local codes to encourage planting native species and discourage or prohibit the planting of invasive or aggressive species.

Priority Subwatersheds. These recommendations are applicable to all subwatersheds within the Conesus Lake watershed. The priority subwatersheds for the Watercraft Steward program recommendation include those with existing parks and public access (e.g., Inlet, Long Point, North End, South Gully, and Hanna’s Creek).

Table 3-14
Recommended Management Actions for Goal 5

Recommended Actions	
5.1	<p>Implement Conesus Lake response plans (update as needed) and other State plans/initiatives to address invasive species and associated impacts. As discussed in Section 2.7.2, existing invasive species response plans and initiatives are important planning documents to detect and respond to invasive species. They should be updated as needed to reflect current invasive species threats and new research and understanding about control efforts. This recommended action continues existing efforts and should continue to be implemented.</p> <p>The CLWC would lead this effort, along with key partners, including CLA, FL-PRISM, and NYSDEC. The CLWC will maintain their existing collaborations and information exchange networks. Costs are expected to be less than \$10,000 and could be funded through local agency and County department budgets, or through NYSDEC.</p>

Recommended Actions

- 5.2 Continue to support the Watercraft Steward program and increase hours of watercraft stewards and inspections at Lake access points. Promote and improve participation in boat decontamination services to reduce the introduction and dispersal of invasive species.** As discussed in Section 2.7.2, the Watercraft Steward program is a highly effective program that should be expanded to increase the hours and inspections at Lake access points. Efforts to educate and raise awareness of the importance of decontamination services in preventing invasive species spread should be expanded to increase public participation in those services. This is an ongoing effort that should be continued and expanded. The CLWC would lead this effort, along with key partners, including CLA, FL-PRISM, NYSOPRHP, SUNY ESF, and NYSDEC. Costs are expected to be between \$10,000 and \$100,000; funding could come from FLOWPA, EPF CFA NYSDOS programs, other EPF CFA grant programs, or County department and local agency budgets.
- 5.3 Continue to enlist and train community scientists to conduct periodic monitoring and surveillance, and report observations of invasive species to collaborative data management systems, including iMap Invasives.** This volunteer-based program, as described in Section 2.7.2, has been essential to efforts to detect and report invasive species. This is an ongoing effort that should be continued and expanded throughout the watershed. FL-PRISM would lead this effort, in partnership with CLWC, NYSDEC, and CLA. Costs are expected to be less than \$10,000 and could be funded through local agency and County department budgets.
- 5.4 Continue partnerships and collaboration with the FL-PRISM and other resources to remain on alert for spread of high impact or priority species, such as *Hydrilla*.** FL-PRISM is an effective regional group that is part of a statewide invasive species control program. FL-PRISM has a broad network and established infrastructure to facilitate invasive species prevention, detection, and control. This collaborative relationship should be continued throughout the watershed. CLWC would lead this effort, in partnership with FL-PRISM, NYSDEC, and CLA. Costs are expected to be less than \$10,000 and could be funded through local agency and County department budgets.
- 5.5 Collaborate with Cornell Cooperative Extension (CCE), local schools, and others to continue efforts to educate the watershed community on invasive species prevention.** Education is a key element in prevention and identification of invasive species. CCE and local schools are ideal partners to reach community members and share educational resources. This collaborative relationship should be continued throughout the watershed. CLWC would lead this effort, in partnership with FL-PRISM, NYSDEC, LCDOH, CLA, and CCE. Costs are expected to be less than \$10,000 and could be funded through local agency and County department budgets.
- 5.6 Modify local codes to encourage planting native species and discourage or prohibit planting of invasive or aggressive species.** Many invasive species in the US were originally introduced as ornamental landscape plantings, so modifying local codes to encourage planting native species, and discourage or prohibit the planting of invasive or aggressive species can be an effective tool in preventing the establishment or spread of invasive species. The anticipated timeframe for this recommendation is within the next 2 to 5 years. This effort would be led by the CLWC, in partnership with LCPD, FL-PRISM, and municipalities. The estimated costs would be less than \$10,000, which could be covered by County department and local agency budgets.

Goal 6: Maintain and strengthen the effective intermunicipal partnerships fostered through the Conesus Lake Watershed Council and continue to take actions that will increase resilience to changes in climate, population, and land use.

Continuing to support the CLWC, as well as the Watershed Inspector and Watershed Manager, are among the highest priorities listed in Table 3-15. The CLWC is an instrumental force driving the protection of the Lake and watershed. The CLWC oversees the Conesus Lake Watershed Management Program and the Conesus Lake Watershed Inspection Program. The Council also manages three standing committees: Agricultural, PE&O, and CLWC Technical Committee. The CLWC issues annual report cards and tracks progress through Work Plans on the implementation of recommended actions in the CLWMP; these important progress assessments should continue to be completed each year. The progress made over the last twenty years (LCPD 2024a) illustrates the value of these efforts.

The CLWC should continue to participate in state, regional, and local groups to facilitate the exchange of information to ensure the community is up to date on the latest tools, information, and best practices. Pursuing funding for planning and implementation of projects to advance the goals of this CLWMP is a high priority. Another high priority is advocating for funding of partners and programs, such as FLOWPA, FL-PRISM, Watercraft Stewards program, state watershed management programs, LCSWCD programs, and NYSAGM programs in the New York State budget each year. Participating in regional planning and implementation efforts is a high priority, including *New York's Great Lakes Action Agenda* (NYSDEC 2023) and the *Genesee River Basin Nine Key Element Watershed Plan for Phosphorus and Sediment* (NYSDEC 2015), and the [Genesee River Watershed Implementation Plan](#)²¹, which is currently being developed.

Priority Subwatersheds. These recommendations are watershed-wide priorities.

**Table 3-15
Recommended Management Actions for Goal 6**

Recommended Actions	
6.1	<p>Continue to support the Conesus Lake Watershed Council and the positions of Watershed Manager and Watershed Inspector. The CLWC is an instrumental force driving the protection of the Lake and watershed. The CLWC oversees the Conesus Lake Watershed Management Program and the Conesus Lake Watershed Inspection Program. The Council also manages three standing committees, sets annual goals and performs annual assessments for achieving the goals of the CLWMP. This is an ongoing action that should be continued. This is a watershed-wide priority.</p> <p>The LCPD leads this effort, with key partners that include the CLA, LCDOH, and the municipalities. The cost associated with this action is minimal (under \$1,000) and can be incorporated into local agency and County department budgets.</p>

²¹ Document is accessible from <https://engage.gflrpc.org/genesee-river-wip>

Recommended Actions

- 6.2 Continue active participation in state, regional and local groups to continue to build understanding of existing and emerging best practices and share the accomplishments of the CLWMP.** The CLWC and LCPD cannot achieve the goals of the CLWMP without partnerships and collaborations with agencies, departments, and organizations of all sizes. Over the last several decades, the CLWC has developed a strong network of entities working together to share information, expertise, and other resources to protect the Lake and its watershed. This ongoing work should be continued. This is a watershed-wide priority. The CLWC leads this effort, with key partners that include the CLA, LCPD, LCDOH, and the municipalities. The cost associated with this action is under \$10,000 and can be incorporated into local agency and County department budgets.
- 6.3 Continue to pursue funding opportunities to advance the goals of the updated CLWMP.** This CLWMP includes a variety of management actions that will require funding to be implemented. In the last 20 years, almost \$10 million in funding and grants have helped protect water resources in the watershed. Section 2.6 discusses some of the recent projects that have been implemented from a variety of funding sources. The CLWC has been instrumental in acquiring this funding and should continue to work with partners to pursue additional funding. This is a watershed-wide priority. The CLWC leads this effort, with key partners that include the CLA, LCPD, LCSWCD, LCDOH, and the municipalities. The cost associated with this action is under \$10,000 and can be incorporated into local agency and County department budgets.
- 6.4 Continue to prepare an annual report card of projects and progress, emerging issues, and new technologies toward meeting the goals of the CLWMP.** The CLWC develops an annual work plan to evaluate priorities, emerging issues, and direct available resources. They also issue annual report cards and track progress through work plans on the implementation of recommended actions in the CLWMP. This allows the CLWC to evaluate progress, identify emerging issues and opportunities, and adaptively manage the implementation of the CLWMP. This is an ongoing action that should be continued. This is a watershed-wide priority. The CLWC leads this effort, with key partners that include the CLA, LCPD, and the municipalities. The cost associated with this action is under \$10,000 and can be incorporated into local agency and County department budgets.
- 6.5 Advocate for support of FLOWPA and other watershed management funding programs in the New York State budget.** The CLWC and their partners should advocate for additional funding and other resources for watershed management programs each year during the budgeting process. This should include advocating with local representatives to request funding for high impact projects in the watershed. This is an ongoing action that should be expanded and continued. This is a watershed-wide priority. The CLWC leads this effort, with key partners that include the CLA, LCPD, and the municipalities. The cost associated with this action is minimal and can be incorporated into local agency and County department budgets.
- 6.6 Advocate for additional resources to support the LCSWCD and the NYSAGM in their key role protecting the lands and waters and the continued viability of agricultural enterprises.** As discussed in Section 2.3.2.4, LCSWCD and NYSAGM play an important role in working with the farming community to implement agricultural BMPs. The CLWC and their partners should advocate for additional funding and staffing of these two entities to provide additional capacity to expand their efforts. This is an ongoing action that should be expanded and continued. This is a watershed-wide priority. The CLWC leads this effort, with key partners that include the CLA, LCPD, LCDOH, NYSDEC, NYSOPRHP, LCSWCD, NYSAGM, and the municipalities. The cost associated with this action is under \$10,000 and can be incorporated into local agency and County department budgets.

Goal 7: Continue to work with the federal, state, regional, county, and local resources to make management decisions that reflect the best available information regarding Conesus Lake and watershed.

Recommendations related to Goal 7 focus on continuing to partner with organizations to further the goals of the CLWMP Update, as shown in Table 3-16. This includes partnering with the CLA and other groups on emerging technology to monitor environmental conditions affecting the Lake and watershed. Support for training is another high priority; recommendations include additional training on best practices related to roadside ditch management practices, winter road maintenance, emergency streamside intervention, and other topics. Training should be targeted to relevant groups, such as code enforcement, municipal decision makers, highway departments, etc. Another recommendation is to continue to support and explore opportunities to expand existing erosion and sediment control education opportunities and certification programs.

The CLA is an important partner in protecting Lake water quality. The CLWC should support the CLA efforts to develop a publicly accessible database of Conesus Lake water quality. In addition, the CLA Water Quality Committee's initiative to develop an integrated data management platform service for current and future data and resources such as meteorological data, Lake level data, information from federal and state agencies, and results of local monitoring would be an asset to management efforts. Data visualization tools would be included, along with capability for real-time alerts of extreme conditions.

Priority Subwatersheds. These recommendations are watershed-wide priorities.

**Table 3-16
Recommended Management Actions for Goal 7**

Recommended Actions	
7.1	<p>Continue to coordinate with local, regional, and state organizations and researchers to develop, pilot, implement, and evaluate emerging technologies designed to maintain and improve Conesus Lake water quality. New tools and technologies are being developed to deal with many of the challenges facing the Conesus Lake watershed, including HABs, invasive species, a changing climate, and a large internal phosphorus load. Keeping informed about new approaches and being willing to pilot new strategies is a high priority recommendation. This is an ongoing action that should be expanded and continued. This is a watershed-wide priority.</p> <p>The CLWC leads this effort, with key partners that include the CLA, NYSDEC, and university researchers. The cost associated with this action is minimal and can be incorporated into local agency and County department budgets.</p>

Recommended Actions

7.2 Continue to partner with CLA and other groups on emerging technology to monitor environmental conditions affecting the Lake and watershed. The long-term dataset for Conesus Lake has provided invaluable insights into the dynamics of the Lake and how actions within the watershed can impact Lake water quality. New technology enables additional data collection that will help guide future actions. This may include the use of weather stations, lake temperature profilers, drones, remote operated vehicles, underwater cameras, and streamgages. Artificial intelligence may also be an important technology to facilitate monitoring efforts. This is an ongoing action that should be expanded and continued. This is a watershed-wide priority.

The CLWC leads this effort, with key partners that include the CLA, NYSDEC, and university researchers. The cost associated with this action is minimal and can be incorporated into local agency and County department budgets.

7.3 Continue to support and provide targeted training to municipal decision makers, SWCDs, and personnel in order to underscore the importance of water quality protection as well as associated tools and strategies. Targeted training on topics, such as roadside ditch management, emergency stream intervention, erosion and sediment controls, winter road maintenance technologies, prescribed grazing, and conservation skills can be an important tool for water resource protection. To be most effective, training should be targeted to relevant groups, such as code enforcement, municipal decision makers, and highway departments.

This is an ongoing action that should be expanded and continued. This is a watershed-wide priority.

The CLWC leads this effort, with key partners that include the CLA and municipalities. The cost associated with this action is minimal and can be incorporated into local agency and County department budgets.

7.4 Provide support for existing erosion and sediment control education & certification programs to ensure proper implementation. Pursue opportunities to enhance existing programs and introduce new education opportunities. Maintaining up to date training and proper certifications will enable relevant practitioners are knowledgeable about best practices to reduce erosion and keep sediment, nutrients, and other pollutants out of our waterways. The anticipated timeframe for implementation of this recommendation is within the next 2 to 5 years. This is a watershed-wide priority.

The LCSWCD would likely lead this effort, with key partners that include the NYSDEC, NYSCDEA, CLWC, and municipalities. The cost associated with this action is under \$10,000 and can be incorporated into local agency and County department budgets.

7.5 Support the CLA in their efforts to develop a publicly accessible database to preserve, archive, and utilize Conesus Lake water quality data. The CLA is an important partner in protecting Lake water quality. The development of a long-term, accessible database would allow other organizations, groups, agencies, and the general public access to the data, which could facilitate research and monitoring collaborations and enable data sharing. The anticipated timeframe for implementation of this recommendation is more than 5 years. This is a watershed-wide priority.

The CLA would lead the effort to develop the database, with key partners that include the CLWC, LCPD, NYSDEC, municipalities, and universities. The cost associated with this action is minimal and can be incorporated into local agency and County department budgets.

7.6 Support the CLA Water Quality Committee's initiative to develop an integrated data management platform service for current and future data and resources such as meteorological data, Lake level data, information from federal and state agencies, and results of local monitoring. This technological upgrade would allow for better data visualization tools and enable real-time alerts of extreme conditions. This could be particularly useful in the event of a weather-related emergency. The anticipated timeframe for implementation of this recommendation is more than 5 years. This is a watershed-wide priority.

The CLA would lead this effort, with key partners that include the CLWC, LCPD, LCDOH, NYSDEC, municipalities, and university researchers. The cost associated with this action is minimal and can be incorporated into local agency and County department budgets.

Goal 8: Employ multiple approaches to outreach and education that enhance community awareness of how human activities affect water resources, opportunities for nature-based solutions, and the effectiveness of local actions.

Education and outreach are key to enhancing awareness of how human actions impact water resources and developing a sense of environmental stewardship. This goal is reflected in many of the recommended actions listed above for Goals 1 through 7. Table 3-17 lists the recommendations related to this goal that have not been listed previously in the other seven narratives and recommendation tables.

The WEC, Conesus Stewardship Initiative, and additional programming opportunities should be promoted as an important means of increasing watershed stewardship. Efforts to promote watershed stewardship include education and outreach about issues such as the use of zero phosphorus fertilizer, landscaping BMPs, invasive species spread prevention, green infrastructure practices, proper stormwater practice maintenance, shoreline restoration, winter salt use, and erosion control BMPs. In addition, continuing engagement with primary and secondary school students is a high priority. Continuing and expanding collaborations with other organizations that promote watershed education and stewardship is another high priority.

Priority Subwatersheds. These recommendations are watershed-wide priorities.

**Table 3-17
Recommended Management Actions for Goal 8**

Recommended Actions	
8.1	<p>Continue to promote watershed stewardship and the use of BMPs through the Watershed Education Center, Conesus Stewardship Initiative, and additional programming. Education is an essential tool for raising awareness and changing behaviors in ways that result in greater water quality protection. Topics may include the use of zero phosphorus fertilizer, landscaping BMPs, invasive species spread prevention, green infrastructure practices, proper stormwater practice maintenance, shoreline restoration, winter salt use, pesticide use near water bodies, and erosion control BMPs. This is an ongoing action that should be expanded and continued. This is a watershed-wide priority.</p> <p>The CLWC leads this effort, with key partners that include the CLA, local schools, CCE, LCSWCD, FL-PRISM, and NYSDEC. The cost associated with this action is under \$10,000 and can be incorporated into local agency and County department budgets.</p>
8.2	<p>Continue to promote watershed education of primary and secondary school students. Building awareness and environmental literacy among children can have a lifelong impact on their behavior and choices. The students can also share their knowledge with adults in their lives, helping to foster environmental stewardship. This is an ongoing action that should be expanded and continued. This is a watershed-wide priority.</p> <p>The CLWC leads this effort, with key partners that include the CCE, LCDOH, and local schools. The cost associated with this action is minimal and can be incorporated into local agency and County department budgets.</p>

Recommended Actions

- 8.3** Continue partnerships with groups promoting watershed stewardship throughout the community, including the CLA, FL-PRISM, WEC, and CCE. These groups, as well as others, have strong programming and community involvement opportunities that help build a community appreciation for the quality of water resources and sense of obligation to protect the environment. The CLWC should continue to foster these partnerships and work to expand their reach in the community. This is a watershed-wide priority. The CLWC leads this effort, with key partners that include the CLA, CCE, WEC, and PL-PRISM. The cost associated with this action is minimal and can be incorporated into local agency and County department budgets.

Summary

The Watershed Management Recommendations section has outlined many priority management recommendations for the Lake and its watershed. Not all can be implemented at once; while some could be addressed in the short term, others will need to be developed over several years. The next section (Section 4) focuses on implementation strategies to create a roadmap for making progress toward achieving the vision for the watershed. The implementation section includes a table matrix with potential project leaders, partners, funding sources, and broad cost estimates.

These recommendations reflect priorities in 2025. They will continue to evolve as additional data and information become available, funding sources change, or as a result of regulatory changes. The CLWC will continue their practice of developing an annual workplan and setting priorities for the following year.

4 Implementation

This chapter presents a strategy and schedule for implementing recommended actions to protect and improve conditions in the Lake and its watershed. Successful implementation of the CLWMP Update will require collaboration among a diverse range of agencies, institutions, and stakeholders working together as partners, pursuing funding, and contributing resources to support initiatives to protect and restore the ecosystem services the Lake and watershed provide. Their coordinated activities will support the overarching watershed goals and priorities established as part of updating the CLWMP.

To guide the strategic implementation of the recommendations, the CLWC worked with agencies, institutions, and community stakeholders to gather input, which was used to refine strategies and develop a matrix that identifies the factors needed to carry out the recommended management actions. Public engagement activities included three public meetings, presentations at local board meetings, tabling at local community events, both a general public survey and a student-focused survey, social media outreach, and a project website. Figure 4-1 shows some of the public engagement events to gather public input on the vision, goals, and priorities for the Lake and its watershed.

Figure 4-1
Public Participation Throughout the Process Helped to Inform Management Priorities



Autumn in the Village of Livonia

Public Meeting #1, Camp Stella Maris
Town of Livonia

CLA Arts and Crafts Festival
Town of Geneseo

Photographs credit: LCPD

The implementation matrix, shown in Table 4-1, considers each watershed recommendation and outlines task leaders and partners; this matrix reflects CLWC priorities from which their annual work plans will be developed and identifies potential leaders and partners that will be relied on for the implementation of some recommendations.

The implementation matrix table also lists potential funding sources, approximate cost, and proposed timeframe. Each priority recommendation is assigned a rank of High, Medium, or Low,

which reflects the importance and urgency of each recommendation with respect to meeting the goals for watershed protection and restoration, as well as institutional capacity, funding availability, and regulatory requirements. Approximate costs are categorized as follows: \$ = \$1,000 or less; \$\$ = \$1,001-\$10,000; \$\$\$ = \$10,001-\$100,000; \$\$\$\$ = \$100,001-\$500,000; \$\$\$\$\$ = more than \$500,000. These recommendations reflect priorities in 2025. They will continue to evolve as additional data and information become available, funding sources change, or as a result of regulatory changes. These implementation strategies serve as a roadmap for making progress toward achieving the vision for the watershed.

Not all recommendations can be implemented at once; while some could be addressed in the short term, others will need to be developed over the course of years. The estimated timetable for implementation considers when recommended actions will be initiated; these estimates may be revised as plans are refined and updated. Because the implementation matrix synthesizes a large amount of information, each recommendation is referenced in a succinct, abbreviated form. The broader context for each of the watershed recommendations is included in Chapter 3.

**Table 4-1
Implementation Strategies for the Management Recommendations**

LEADERS/PARTNERS/FUNDING SOURCES LIST, ABBREVIATIONS		CATEGORIES OF COST		
ACEP	Agricultural Conservation Easement Program	\$	=	\$1-\$1,000
AEM	Agricultural Environmental Management	\$\$	=	\$1,001-\$10,000
AGNPS	Agricultural Nonpoint Source Abatement and Control Program	\$\$\$	=	\$10,001-\$100,000
Bond Act	Clean Water, Clean Air and Green Jobs Environmental Bond Act	\$\$\$\$	=	\$100,001-\$500,000
CCE	Cornell University Cooperative Extension	\$\$\$\$\$	=	>\$500,000
CFA	Consolidated Funding Application			
CLA	Conesus Lake Association			
CLWC	Conesus Lake Watershed Council			
CREP	Conservation Reserve Enhancement Program			
CRF	Climate Resilient Farming Program			
CRP	Conservation Reserve Program			
CWSRF	Clean Water State Revolving Fund			
EPA	Environmental Protection Agency			
EPF	Environmental Protection Fund (administered by several NYS agencies)			
EQIP	Environmental Quality Incentives Program			
FEMA	Federal Emergency Management Agency			
FOLLOWPA	Finger Lakes - Lake Ontario Watershed Protection Alliance			
FL-PRISM	Finger Lakes Partnership for Regional Invasive Species Management			
FPIG	Farmland Protection Implementation Grants Program			
GIGP	NYSDEC Green Innovation Grant Program			
GLRI	Great Lakes Research Initiative			
Hwy Depts	Highway Departments			
ISGP	Invasive Species Grant Program			
LCDOH	Livingston County Department of Health			
LCPD	Livingston County Planning Department			
LCSWCD	Livingston County Soil and Water Conservation District			
LCWSA	Livingston County Water and Sewer Authority			
LWRP	Local Waterfront Revitalization Program			
NPG	Non-Agricultural Nonpoint Source Planning and MS4 Mapping			
NPSM	Nonpoint Source Management Program			
NRCS	Natural Resources Conservation Service			
NYSAGM	New York State Department of Agriculture and Markets			
NYSCDEA	New York State Conservation District Employees' Association			
NYSDEC	New York State Department of Environmental Conservation			
NYSDOH	New York State Department of Health			
NYSDOS	New York State Department of State			
NYSEFC	New York State Environmental Facilities Corporation			
NYSG	New York Sea Grant			
NYSOPRHP	New York State Office of Parks, Recreation, and Historic Preservation			
REDC	Regional Economic Development Council			
SGCP	Smart Growth Community Planning and Zoning Program			
TNC	The Nature Conservancy			
UFI	Upstate Freshwater Institute			
USACE	U.S. Army Corps of Engineers			
USDA	U.S. Department of Agriculture			
USFS	U.S. Forest Service			
WHIP	Wildlife Habitat Incentive Program			
WQIP	Water Quality Improvement Project Program			
		GOALS FOR THE WATERSHED		
		<p>1. Manage the Conesus Lake watershed in ways that control inputs of sediment and minimize entry of phosphorus, sodium and chloride, and other potential pollutants into the Lake.</p> <p>2. Maintain Conesus Lake as a dependable source of high-quality water that meets water supply needs and meets or exceeds public health standards for potable water and recreational uses.</p> <p>3. Continue efforts to detect, prevent, and mitigate harmful algal blooms (HABs) and their associated beneficial use impairments.</p> <p>4. Improve and enhance recreational access to and use of Conesus Lake while managing for and maintaining a balance between multiple uses, without overcrowding the Lake.</p> <p>5. Continue and expand efforts focused on prevention, early detection, and rapid response to terrestrial and aquatic invasive species to protect the health of the Lake. Support management efforts to conserve and/or restore habitats for a diverse and resilient assemblage of native species.</p> <p>6. Maintain and strengthen the effective intermunicipal partnerships fostered through the Conesus Lake Watershed Council and continue to take actions that will increase resilience to changes in climate, population, and land use.</p> <p>7. Continue to work with the federal, state, regional, county, and local resources to make management decisions that reflect the best available information regarding Conesus Lake and watershed.</p> <p>8. Employ multiple approaches to outreach and education that enhance community awareness of how human activities affect water resources, opportunities for nature-based solutions, and the effectiveness of local actions</p>		

Goals and Corresponding Management Recommendations		Priority Subwatershed(s)	Project Leader* and Potential Partners	Potential and Existing Funding Sources	Potential Cost	Priority (High, Medium, Low)	Implementation Timing (Years)		
							1	2-5	5+
Goal 1: Manage the Conesus Lake watershed in ways that control inputs of sediment and minimize entry of phosphorus, sodium and chloride, and other potential pollutants into the Lake.									
Recommended Actions - Agricultural Lands									
1.1	Encourage and support farmers' participation in the tiered AEM program and progression through the implementation and evaluation phases.	Applicable watershed-wide; highly suggested for Cottonwood, Long Point, Sand Point, North End, No Name, Central, and Hanna's Creek	LCSWCD*, NYSAGM, USDA NRCS, CLWC, Farmers	County Department and/or agency budgets; EPF NYSAGM & NYSDEC	\$\$	High	X		
1.2	Promote and support agricultural education events with the non-farming community to seek a renewed understanding of the local agricultural working landscape and connect the community.	Applicable watershed-wide	LCSWCD*, NYSAGM, USDA NRCS, CLWC, CCE, Farmers	County Department and/or agency budgets	\$	Medium	X		
1.3	Promote and support adoption of BMPs a) to reduce loss of nutrients and sediments during the winter and early spring, such as planting winter cover crops on tilled lands b) to establish natural systems such as Riparian Buffer Systems, with a focus on establishing native vegetation that supports site adaptability and species diversity, including pollinators. c) to reduce erosion from lands, including field terracing on slopes, stormwater management, and nutrient management actions. d) to reduce streambank erosion and sediment runoff (e.g., livestock access control and associated practices) as well as implementing buffers along riparian areas.	Applicable watershed-wide; highly suggested for Cottonwood, Long Point, Sand Point, North End, No Name, Central, and Hanna's Creek	LCSWCD*, NYSAGM, USDA NRCS, CLWC, Farmers	County Department and/or agency budgets; BOND Act; EPF NYSAGM AGNPS, CREP; NYSDEC WQIP; FLOWPA	\$\$	High	X		
1.4	Identify and pursue opportunities for BMP installation at the subwatershed scale for downstream capture and infiltration of stormwater runoff from agricultural lands.	Applicable watershed-wide; highly suggested for Cottonwood, Long Point, Sand Point, North End, No Name, Central, and Hanna's Creek	LCSWCD*, NYSAGM, USDA NRCS, CLWC, Farmers	County Department and/or agency budgets; BOND Act; EPF NYSAGM AGNPS & CREP; NYSDEC WQIP; FLOWPA	\$\$\$\$	High	X		
1.5	Support research and monitoring of the impact of rainfall intensity on BMP performance and incorporate findings into farm planning efforts and design considerations.	Applicable watershed-wide	LCSWCD*, NYSAGM, USDA NRCS, CLWC, Farmers	County Department and/or agency budgets; BOND Act; EPF NYSAGM AGNPS; NYSDEC WQIP; NYSAGM CRF	\$\$	Medium	X		
1.6	Provide additional resources to LCSWCD to support watershed farmers as they strive to reduce nutrient and sediment export to the waterways	Applicable watershed-wide	LCSWCD*, NYSAGM, USDA NRCS, CLWC, Farmers	NRCS ACEP, CRP, EQIP, WHIP, CSP; NYSDEC WQIP, NPG, GLRI; NYSAGM AGNPS, AEM, CRF, Source Water Buffer Program, Agricultural and Farmland Protection Implementation Grants	\$\$\$\$	High		X	
1.7	Identify additional funding sources to help support agricultural BMP implementation.	Applicable watershed-wide	LCSWCD*, NYSAGM, USDA NRCS, CLWC, Farmers	Finger Lakes Regional Economic Development Council, EPF FPIG, AGNPS; BOND Act	\$\$	High	X		
Recommended Actions - Built Environment (Refer to Appendix A details on local law recommendations)									
1.8	Provide proactive training, outreach, and assistance to Code Enforcement Officers, highway department staff, and other municipal staff and board/planning/zoning board members to ensure effective and consistent application and enforcement of regulations and requirements.	Applicable watershed-wide	County, Municipalities, CLWC*, Watershed Inspector	EPF NYSDOS; County department, agency, and municipal budgets	\$\$	High		X	
1.9	Encourage watershed municipalities to review the Institutional Framework: Roles and Responsibilities and Nongovernmental Agencies (Appendix A) and consider incorporating recommendations specific to their community to improve their resilience to extreme hydrologic events.	Applicable watershed-wide	County, Municipalities*	County Department, and municipal budgets; NYSDEC Resilient NY Program; FEMA Flood Mitigation Assistance; EPA CWSRF	\$	High		X	
1.10	Incorporate specific and enforceable stormwater management provisions into site plan review criteria, subdivision regulations, erosion and sediment control laws, and construction and design specifications to limit creation of impervious surfaces and support "low impact development," consistent with the NYSDEC Stormwater Management Design Manual.	Applicable watershed-wide	County, Municipalities*, CLWC	State, Federal and Regional grant programs via CFA; Community Risk & Resiliency Act; EPF NYSDOS programs; NYSDEC; County Department, and municipal budgets	\$\$\$\$	High		X	
1.11	Minimize variances granted to sites requesting an increase in impervious area to maximize protection for floodplains, watershed properties, and other critical areas.	Applicable watershed-wide, with a priority for properties located adjacent to streams and/or the Lake	Municipalities*, County	County Department and municipal budgets	\$	High		X	

Goals and Corresponding Management Recommendations		Priority Subwatershed(s)	Project Leader* and Potential Partners	Potential and Existing Funding Sources	Potential Cost	Priority (High, Medium, Low)	Implementation Timing (Years)		
							1	2-5	5+
1.12	Provide information to homeowners regarding measures to reduce the transport of sediment, nutrients, and salt into the waterways, such as incorporating green infrastructure, implementing de-icing BMPs, and implementing fertilizer use BMPs.	Applicable watershed-wide	County, CLWC*, CLA, NYSDOH, NYSDEC	County Department, agency, and municipal budgets; EPA Environmental Education Grants; FLOWPA	\$	Medium	X		
1.13	Engage with watershed municipalities to consider updating zoning laws and ordinances to reduce maximum lot coverage by 5-10% for zoning districts in the watershed.	Applicable watershed-wide, with a priority for properties located adjacent to streams and/or the Lake	County, CLWC, Municipalities*	EPF NYSDOS SGCP; County Department, and municipal budgets; NYSDEC Resilient NY Program, EPA CWSRF;	\$\$\$\$**	Medium		X	
1.14	Encourage watershed municipalities to consider updating and making consistent the definitions of lot coverage, impervious surface, and green infrastructure among local regulations.	Applicable watershed-wide	Municipalities*, County, CLWC	EPF NYSDOS SGCP; County Department, and municipal budgets; NYSDEC Resilient NY Program; EPA CWSRF	\$\$\$\$**	Medium	X		
1.15	Incorporate specific and enforceable requirements for incorporating low impact development and green infrastructure measures outlined in the NYSDEC Stormwater Management Design Manual into the County Erosion and Sediment Control Model Law. Encourage watershed municipalities to adopt the updated model law.	Applicable watershed-wide	Municipalities, County*, NYSDEC, CLWC	NYSEFC GIGP; County Department, agency, and municipal budgets; SGCP; EPF NYSDOS programs	\$\$\$	High		X	
1.16	Encourage watershed municipalities to consider updating comprehensive plans to include goals and strategies that guide land use decisions and enhance the protection of water resources.	Applicable watershed-wide	County, Municipalities*, CLWC	EPF NYSDOS SGCP; County Department and municipal budgets	\$\$\$\$	High		X	
1.17	Encourage lakefront municipalities to consider increasing the minimum shoreline setback requirements, where feasible.	Applicable watershed-wide, with a priority for properties located adjacent to streams and/or the Lake	County, Municipalities*, CLWC	EPF NYSDOS SGCP; County Department and municipal budgets	\$\$\$\$**	High		X	
1.18	Watershed municipalities to consider including cluster development (conservation subdivisions) in zoning regulations including incentives and specific requirements to identify open space conservation measures.	Applicable watershed-wide	Municipalities*, County, CLWC	EPF NYSDOS SGCP; County Department and municipal budgets	\$\$\$\$**	Low		X	
1.19	Encourage watershed municipalities to consider adding guidance in zoning regulations for incorporating green infrastructure (i.e., rain gardens, bioswales, porous pavers) when any new impervious surface is created for lots in the watershed (.g., deck, stone patio, driveways, parking areas).	Applicable watershed-wide, with a priority for properties located adjacent to streams and/or the Lake	Municipalities*, County, CLWC	EPF NYSDOS SGCP; County Department and municipal budgets	\$\$\$\$**	High		X	
1.20	Encourage watershed municipalities to consider amending parking regulations in each zoning ordinance to require low impact development and green infrastructure measures using guidance in the NYSDEC Stormwater Management Design Manual.	Applicable watershed-wide	County, Municipalities*, CLWC	EPF NYSDOS SGCP; NYSDEC GIGP; County Department and municipal budgets	\$\$\$\$**	High		X	
1.21	Identify and pursue opportunities for regional BMP installations for downstream capture and infiltration of stormwater runoff from the built environment.	Applicable watershed-wide	LCSWCD, NYSDEC, Municipalities*, County, CLWC	County Department, agency, and municipal budgets; NYSDEC WQIP	\$\$\$\$\$	High		X	
1.22	Encourage watershed municipalities to consider establishing a transfer of development rights (TDR) program that transfers development potential from environmentally sensitive areas, called sending zones, to specific areas designated for growth, called receiving zones.	Applicable watershed-wide	County, Municipalities*	County Department and municipal budgets; EPF NYSDEC; BOND Act	\$\$\$	Low			X
Recommended Actions - Wastewater Management									
1.23	Encourage watershed municipalities to develop and implement a uniform septic system inspection program that requires inspection at realty transfer, at applying for a building permit that would result in increased residential capacity, as well as periodic inspections of all systems at defined intervals.	Applicable watershed-wide, with a priority for properties located adjacent to streams and/or the Lake	Municipalities*, CLWC, LCDOH, NYSDEC	County Department, agency, and municipal budgets	\$\$\$	High		X	
1.24	Encourage participation in NYSDEC septic system replacement program for qualifying systems.	Applicable only to the specific properties that qualify for the program	Municipalities, CLWC, LCDOH*, NYSDEC, NYSDOH	NYSDEC NYSEFC Septic System Replacement Program and/or others	\$	Medium	X	X	X
1.25	Implement an inspection program in areas served by sanitary sewers to identify and eliminate illicit storm sewer connections and reduce the risk of combined sewer overflow events.	Applicable watershed-wide	Municipalities*, CLWC, LCWSA, LCDOH*, NYSDEC	County Department and/or agency budgets; NYSDEC NPG	\$\$\$	Medium			X
1.26	Seek funding for financial incentives to encourage septic system upgrades and use of alternative septic systems that achieve greater pollutant reduction.	Applicable watershed-wide	Municipalities*, CLWC, LCDOH*, NYSDEC	County Department and/or agency budgets	\$\$\$-\$\$\$\$	Medium			X
1.27	Investigate feasibility and funding for a cost-sharing program to implement a septic system repair and replacement program for qualifying households, and a funding program to connect private systems to municipal sewer systems if they are located beyond the required connection distance.	Applicable watershed-wide, with a priority for properties located adjacent to streams and/or the Lake	Municipalities*, CLWC, LCWSA, LCDOH*, NYSDEC	County Department and/or agency budgets	\$\$	Medium		X	

Goals and Corresponding Management Recommendations		Priority Subwatershed(s)	Project Leader* and Potential Partners	Potential and Existing Funding Sources	Potential Cost	Priority (High, Medium, Low)	Implementation Timing (Years)		
							1	2-5	5+
Recommended Actions - Managed Woodlands									
1.28	Survey for forest pests that affect hemlock, ash, spruce, and other tree species that are currently integral to watershed stabilization. Forest research and management should address identifying and controlling these and other pests. Strategic planting of species less susceptible to impacts of infestation, while prioritizing native species, should be undertaken in areas where canopy loss will result in significant system destabilization.	Applicable watershed-wide	FL-PRISM*, CLWC, Universities, NYSDEC, USFS	County Department and/or agency budgets, EPF NYSDEC Invasive Species grant; AGNPS; NRCS; BOND Act; USDA	\$\$\$	Medium	X		
1.29	Provide support for reforestation efforts, such as NYSDEC programs, and grant applications to conservation organizations.	Applicable watershed-wide, with a priority for properties located adjacent to streams and/or the Lake	CLWC, NYSDEC, FL-PRISM, USFS, conservation organizations	County Department and/or agency budgets; EPF NYSDEC Invasive Species grant; NYS AGNPS; NRCS; BOND Act; USDA	\$\$	Medium	X		
1.30	Consider developing a model local law requiring advance review and permitting of timber harvest and site restoration plans (certain agricultural activities exempted to prevent conflicts with NYS Ag and Markets regulations). Encourage watershed municipalities to adopt the model local law.	Applicable watershed-wide	Municipalities*, LCPD, NYSDEC, SWCD, USFS, CLWC	County Department and/or agency budgets	\$	Medium			X
Recommended Actions - Tributary Streambanks and Lake Shoreline									
1.31	Continue to inventory the condition of streambanks and seek funding to create an engineered solution and implement stabilization methods along priority segments.	Applicable watershed-wide. Wilkins Creek and North McMillan Creek are high priority subwatersheds.	CLWC*, LCPD*, USDA NRCS, LCSWCD, Universities	County Department and/or agency budgets; EPF NYSDEC WQIP; FLOWPA	\$\$\$	High	X		
1.32	Seek funding opportunities that support streambank stabilization projects.	Applicable watershed-wide. Wilkins Creek and North McMillan Creek are high priority subwatersheds.	CLWC*, LCPD, LCSWCD, Universities	EPF NYSDEC WQIP, Non-Ag Nonpoint Source Abatement Program, FLOWPA	\$\$\$\$	High	X		
1.33	Provide educational resources to homeowners along the Lake and tributaries regarding BMPs to reduce nutrient, sediment, and salt loading into the Lake and tributaries, such as living shorelines as an alternative to hardening shorelines, maintaining riparian and lakeshore buffers, and implementing de-icing BMPs.	Applicable watershed-wide, with a priority for properties located adjacent to streams and/or the Lake	CLA, CLWC*, Municipalities, NYSDEC, CCE	FLOWPA, County Department and/or agency budgets	\$\$	Medium	X		
1.34	Increase education on and enforcement of safe boating practices and boat and personal watercraft laws to reduce shoreline erosion caused by boating activities.	Priority for lakeshore areas, including boat launches and other public areas.	CLA, CLWC, NYSDEC, Municipalities, LC Sheriff Marine Patrol*	County Department and/or agency budgets	\$\$	Medium		X	
Recommended Actions - Conservation Lands									
1.35	Explore opportunities to enhance, restore, protect, or create wetlands and floodplains within the watershed to reduce nutrient and sediment loads.	Applicable watershed-wide, with a priority for properties located adjacent to streams and/or the Lake	LCPD, CLWC, Landowners, LCSWCD*, NYSDEC	County Department and/or agency budgets; EPF NYSDEC WQIP	\$	High		X	
1.36	Identify cooperative landowners to facilitate acquisition of conservation easements to implement watershed protection strategies, building on available funding opportunities for land acquisition for water quality protection.	Applicable watershed-wide, with a priority for properties located adjacent to streams and/or the Lake	Genesee Valley Conservancy*, LCPD, CLWC, LCSWCD, Landowners	County Department and/or agency budgets; NYSDEC WQIP; NYSAGM Source Water Buffer Program	\$	Medium			X
1.37	Inventory parcels for their potential to capture and infiltrate runoff and consider opportunities for their protection such as easements or acquisition by land trust.	Applicable watershed-wide, with a priority for properties located adjacent to streams and/or the Lake	Genesee Valley Conservancy*, LCPD, CLWC, LCSWCD, TNC, Landowners	TNC; NYSDEC	\$\$	High			X
1.38	Consider becoming actively engaged in the NYSDEC Open Space Conservation Planning efforts, or other similar planning efforts.	Applicable watershed-wide	NYSDEC, LCPD*, Genesee Valley Conservancy	County Department and/or agency budgets; NYSDEC	\$	Medium	X		
Recommended Actions - Monitoring and Assessment									
1.39	Continue to monitor water quality conditions of the tributaries included in the USDA study of BMP effectiveness, along with other major tributaries.	Applicable watershed-wide, particularly where monitoring is currently underway	Universities*, CLWC, CLA, NYSDEC, USDA NRCS, LCSWCD	County Department and/or agency budgets; NYSDEC FLOWPA	\$\$	High	X		
1.40	Continue to collaborate with academic partners and NYSDEC biologists to evaluate stream health using a range of metrics, including the benthic macroinvertebrate community.	Applicable watershed-wide, particularly where monitoring is currently underway	Universities*, CLWC, CLA, NYSDEC	County Department and/or agency budgets; NYSDEC FLOWPA	\$	High	X		
1.41	Review and compile all tributary monitoring results to create a long-term dataset of nutrients, salts, sediment, and other water quality parameters.	Applicable watershed-wide	Universities*, CLWC, CLA, NYSDEC, USDA NRCS, LCSWCD	County Department and/or agency budgets; NYSDEC FLOWPA	\$\$	High		X	

Goals and Corresponding Management Recommendations		Priority Subwatershed(s)	Project Leader* and Potential Partners	Potential and Existing Funding Sources	Potential Cost	Priority (High, Medium, Low)	Implementation Timing (Years)		
							1	2-5	5+
Goal 2: Maintain Conesus Lake as a dependable source of high-quality water that meets water supply needs and meets or exceeds public health standards for potable water and recreational uses.									
Recommended Actions - Water Quantity									
2.1	Develop outreach materials related to water conservation.	Applicable watershed-wide	CLA*, CLWC, CCE, Local schools	LCWSA; County Department budgets	\$	Medium	X		
2.2	Survey the outlet channel and develop a hydraulic model of Conesus Creek. This will better define the relationship between Lake level and limit of gravity flow from the Lake into Conesus Creek.	Not applicable	CLWC*, NYSDEC	LCWSA; NRCS EQIP	\$\$-\$\$\$	High			X
2.3	Maintain the streamgage sited on Conesus Inlet to provide local data to support water and nutrient budgets. Consider additional streamgage sites on Conesus Lake tributaries.	Conesus Inlet, South McMillan Creek, North McMillan Creek, No Name Creek, Long Point Creek, Sand Point Gully, Hanna's Creek, Wilkins Creek, North Gully, South Gully, Densmore Creek, and Southwest Creeks subwatersheds	CLWC, CLA*, Universities	FLOWPA; LCWSA	\$\$	High		X	
2.4	Consider electrically actuating the outlet gates and implementing remote operations capabilities and/or a Supervisory Control and Data Acquisition system for real time gate control and improved ability to control Lake water levels.	Not applicable	CLWC, NYSDEC, USACE, LCWSA*	LCWSA	\$	Medium			X
2.5	Implement programs to detect and repair pipeline leaks.	Applicable watershed-wide	Water purveyors*, CLWC, Municipalities	LCWSA	\$\$\$	High			X
2.6	Implement recommendations of the 2021 Safe Yield Analysis (Schnabel Engineering 2021), including discussions with the USACE to clarify meeting the Rule Curve targets and options to modify the Rule Curve during periods of extreme conditions (both flooding and drought) and update the Safe Yield Analysis as the hydrologic record expands, demand for water changes, water systems are upgraded, or regulatory requirements are modified.	Applicable watershed-wide	LCPD*, NYSDEC, USACE	County Department, agency, and municipal budgets; USACE; NYSDEC	\$\$\$-\$\$\$\$	Medium			X
Recommended Actions - Water Quality									
2.7	Support research to investigate sources and effects of increasing levels of sodium and chloride in Conesus Lake and its drinking water.	Watershed-wide, areas with road crossings and where roads follow close to the lakeshore; subwatersheds with higher amounts of impervious surfaces (Wilkins Creek, North End, Hanna's Creek, Central, and NW Creeks).	CLWC*, CLA, Universities	FLOWPA; LCWSA	\$\$	High	X		
2.8	Work with the Conesus Lake Watershed Council and local government authorities to identify, seek funding, and implement BMPs for road salt. This may include BMPs and education related to highway salting practices and technologies, homeowner de-icing practices, and de-icing practices on sidewalks and parking lots.	Watershed-wide, areas with road crossings and where roads follow close to the lakeshore; subwatersheds with higher amounts of impervious surfaces (Wilkins Creek, North End, Hanna's Creek, Central, and NW Creeks).	Municipalities, CLWC*, LCPD, LCSWCD, LCDOH, Hwy Depts	County Department, agency, State, and municipal budgets; EPF NYSDEC WQIP, NPG and NYSEFC	\$\$-\$\$\$	High		X	
2.9	Continue to monitor for emerging contaminants and organic compounds in Conesus Lake and its drinking water, including cyanotoxins and broad-spectrum insecticides, and evaluate water treatment technologies that may enhance removal of or minimize the levels of these contaminants.	Not applicable	Water purveyors*, NYSDOH, Industry groups	County Department, agency, State, and municipal budgets	\$	Medium			X
Goal 3: Continue efforts to detect, prevent, and mitigate cyanobacterial blooms (HABs) and their associated beneficial use impairments.									
Recommended Actions - Research and Monitoring									
3.1	Continue to deploy trained community scientists to survey Lake shoreline areas for potential HABs and report to County and NYHABS.	Applicable watershed-wide	NYSDEC, LCDOH*, CLA, CLWC	County Department and/or agency budgets	\$\$	High	X		
3.2	Continue monitoring Conesus Lake to track trophic state indicator parameters, the Lake's phytoplankton community, HABs, and attainment of beneficial uses.	Lake-wide	Universities*, CLWC, NYSDEC, CLA	County Department and/or agency budgets; research grants	\$\$	High	X		
3.3	Monitor TP concentrations in the lake outlet to improve understanding of status and trends of internal (legacy) phosphorus load.	Lake-wide	Universities*, NYSDEC, CLA, UFI, CLWC	County Department and/or agency budgets; research grants	\$\$	High	X		
3.4	Supplement the understanding of the plankton species and toxins contributing to blooms through taxonomic analysis of samples collected during conditions favorable for HABs formation (i.e., quiescent conditions, warm water, recent nutrient inputs).	Lake-wide	Universities*, CLA, CLWC, NYSDEC	County Department and/or agency budgets; research grants	\$\$\$	High		X	

Goals and Corresponding Management Recommendations		Priority Subwatershed(s)	Project Leader* and Potential Partners	Potential and Existing Funding Sources	Potential Cost	Priority (High, Medium, Low)	Implementation Timing (Years)		
							1	2-5	5+
3.5	Support research to investigate the role of environmental changes on Lake metabolism, primary production and phytoplankton dynamics, nutrient cycling, and carbon chemistry.	Applicable watershed-wide	Universities*, CLWC, NYSDEC, CLA	County Department and/or agency budgets; research grants	\$	High			X
Recommended Actions - Risk Communication									
3.6	Continue to build and deploy effective communication tools to alert recreational users regarding suspicious or confirmed HABs and appropriate response.	Applicable watershed-wide	CLA, CLWC*, NYSDEC, LCDOH	County Department and/or agency budgets	\$\$\$	High	X		
3.7	Continue to have the LCDOH Conesus Lake Watershed Inspector manage advisories regarding water contact recreation.	Applicable watershed-wide	LCDOH*, CLWC, CLA, NYSDEC	County Department, municipal, and/or agency budgets	\$\$	High	X		
3.8	Collaborate with CLA and others to provide consistent information regarding the factors affecting HABs formation, recommended measures to reduce risk of exposure, strategies for living safely with HABs, and near-real time data on Lake conditions.	Applicable watershed-wide	CLA, CLWC, NYSDEC, LCDOH*	County Department and/or agency budgets; NYSDEC FLOWPA	\$\$	High	X		
Recommended Actions - Mitigation									
3.9	Continue to collaborate with NYSDEC, NYSDOH, USACE, and research institutions as they evaluate emerging technologies for predicting HABs and mitigating their persistence and toxicity in the Lake environment.	Applicable watershed-wide	CLWC*, NYSDEC, USACE, NYSDOH, Universities	County Department and/or agency budgets; NYSDEC WQIP	\$\$	High	X		
3.10	Continue to track efforts of NYSDEC and others to mitigate internal phosphorus load and evaluate the potential for rehabilitation of Conesus Lake.	Lake-wide	NYSDEC*, LCPD, CLWC, LCDOH	County Department and/or agency budgets; NYSDEC WQIP	\$\$	Medium	X		
Goal 4: Improve and enhance recreational access to and use of Conesus Lake while managing for and maintaining a balance between multiple uses, without overcrowding the Lake.									
Recommended Actions									
4.1	Provide for public swimming areas, considering access, safety, and water quality monitoring needs.	Applicable watershed-wide; subwatersheds with existing parks and public access would be prioritized (e.g., Inlet, Long Point, North End, South Gully, and Hanna's Creek)	Municipalities*, CLWC, LCPD, LCDOH, CLA	County Department, municipal, and/or agency budgets	\$\$-\$\$\$	Medium		X	
4.2	Review "no wake" zone guidelines and watercraft speed limits to evaluate whether they are adequately protective of Conesus Lake recreational users and shoreline erosion.	Applicable watershed-wide	CLA, CLWC*, NYSDEC, LC Sheriff Marine Patrol, Municipalities	County Department and/or agency budgets	\$	High	X		
4.3	Enhance signage and public information regarding safe and courteous boating practices that minimize environmental impacts and conflicts among recreational uses.	Applicable watershed-wide	CLA, CLWC*, NYSOPRHP, LC Sheriff Marine Patrol, Municipalities	County Department and/or agency budgets; NYSDEC FLOWPA; NYSDOS NYSG	\$\$-\$\$\$	Medium	X		
4.4	Collect survey data from weekend and weekday boat traffic on Conesus Lake and compare with public safety guidelines for boat density.	Not applicable	CLA, CLWC*, NYSOPRHP, LC Sheriff Marine Patrol, Municipalities	County Department and/or agency budgets	\$\$	Medium		X	
4.5	Develop a plan to monitor public boat launch capacity and evaluate actions to protect public safety when launch is near capacity.	South Gully	NYSOPRHP*, CLA, CLWC, LC Sheriff Marine Patrol, Municipalities	County Department and/or agency budgets	\$\$	High		X	
Goal 5: Continue and expand efforts focused on prevention, early detection, and rapid response to terrestrial and aquatic invasive species to protect the health of the Lake. Support management efforts to conserve and/or restore habitats for a diverse and resilient assemblage of native species.									
Recommended Actions									
5.1	Implement Conesus Lake response plans (update as needed) and other State plans/initiatives to address invasive species and associated impacts.	Applicable watershed-wide	CLWC*, NYSDEC, FL-PRISM, CLA	County Department and/or agency budgets; NYSDEC NYSG, EPF, ISGP, FLOWPA	\$\$	High	X		
5.2	Continue to support the Watercraft Steward program and increase hours of watercraft stewards and inspections at Lake access points. Promote and improve participation in boat decontamination services to reduce the introduction and dispersal of invasive species.	The priority subwatersheds for the Watercraft Steward program recommendation include those with existing parks and public access (e.g., Inlet, Long Point, North End, South Gully, and Hanna's Creek).	CLWC*, NYSDEC, FL-PRISM, NYSOPRHP, SUNY ESF, CLA	County Department and/or agency budgets; EPF CFA, EPF NYSDOS LWRP; FLOWPA	\$\$-\$\$\$	High	X		
5.3	Continue to enlist and train community scientists to conduct periodic monitoring and surveillance, and report observations of invasive species to collaborative data management systems, including iMapInvasives.	Applicable watershed-wide	CLWC, NYSDEC, FL-PRISM*, CLA	County Department and/or agency budgets	\$\$	High	X		

Goals and Corresponding Management Recommendations		Priority Subwatershed(s)	Project Leader* and Potential Partners	Potential and Existing Funding Sources	Potential Cost	Priority (High, Medium, Low)	Implementation Timing (Years)		
							1	2-5	5+
5.4	Continue partnerships and collaboration with the FL-PRISM and other resources to remain on alert for spread of high impact or priority species, such as <i>Hydrilla</i> .	Applicable watershed-wide	CLWC*, NYSDEC, FL-PRISM, CLA	County Department and/or agency budgets; NYSG, EPF ISGP, WQIP, GLRI	\$\$	High	X		
5.5	Collaborate with Cornell Cooperative Extension, local schools, and others to continue efforts to educate the watershed community on invasive species prevention.	Applicable watershed-wide	CLWC*, NYSDEC, LCDOH, FL-PRISM, CCE, CLA	County Department and/or agency budgets; EPF ISGP, NYSDEC	\$\$	High	X		
5.6	Modify local codes to encourage planting native species and discourage or prohibit planting of invasive or aggressive species.	Applicable watershed-wide	CLWC*, LCPD, FL-PRISM, Municipalities	County Department and/or agency budgets; EPF ISGP, EQIP, CREP	\$\$	Medium		X	
Goal 6: Maintain and strengthen the effective intermunicipal partnerships fostered through the Conesus Lake Watershed Council and continue to take actions that will increase resilience to changes in climate, population, and land use.									
Recommended Actions									
6.1	Continue to support the Conesus Lake Watershed Council and the positions of Watershed Manager and Watershed Inspector.	Applicable watershed-wide	LCPD*, CLA, LCDOH, Municipalities	County Department, municipal, and/or agency budgets	\$	High	X		
6.2	Continue active participation in state, regional and local groups to continue to build understanding of existing and emerging best practices and share the accomplishments of the Conesus Lake Watershed Management Plan (CLWMP).	Applicable watershed-wide	CLWC*, CLA, LCPD, LCDOH, Municipalities	County Department and/or agency budgets; NYSDEC WQIP; EPF NYSDOS LWRP	\$\$	High	X		
6.3	Continue to pursue funding opportunities to advance the goals of the updated CLWMP.	Applicable watershed-wide	CLWC*, CLA, LCPD, LCDOH, LCSWCD, Municipalities	County Department and/or agency budgets; NYSDEC WQIP; EPF NYSDOS LWRP	\$\$	High	X		
6.4	Continue to prepare an annual report card of projects and progress, emerging issues, and new technologies toward meeting the goals of the CLWMP.	Applicable watershed-wide	CLWC*, CLA, LCPD, Municipalities	County Department, municipal, and/or agency budgets	\$\$	High	X		
6.5	Advocate for support of FLOWPA and other watershed management funding programs in the New York State budget.	Applicable watershed-wide	CLWC*, CLA, LCPD, Municipalities	County Department and/or agency budgets	\$	High	X		
6.6	Advocate for additional resources to support the Livingston County Soil & Water Conservation District (SWCD) and the NYS Department of Agriculture & Markets in their key role protecting the lands and waters and the continued viability of agricultural enterprises.	Applicable watershed-wide	CLWC*, CLA, LCPD, LCDOH, NYSDEC, NYSOPRHP, Municipalities, LCSWCD, NYSAGM	County Department and/or agency budgets	\$\$	High	X		
Goal 7: Continue to work with the federal, state, regional, county, and local resources to make management decisions that reflect the best available information regarding Conesus Lake and watershed.									
Recommended Actions									
7.1	Continue to coordinate with local, regional, and state organizations and researchers to develop, pilot, implement, and evaluate emerging technologies designed to maintain and improve Conesus Lake water quality.	Applicable watershed-wide	CLWC, CLA, NYSDEC, Universities*	County Department and/or agency budgets; NYSEFC REDC; EPF CFA agency grant programs	\$	High	X		
7.2	Continue to partner with CLA and other groups on emerging technology to monitor environmental conditions affecting the Lake and watershed.	Applicable watershed-wide	CLWC, CLA*, NYSDEC, Universities	County Department and/or agency budgets; NYSDEC – EPF and others	\$	High	X		
7.3	Continue to support and provide targeted training (e.g., roadside ditch management, emergency stream intervention, erosion and sediment controls, winter road maintenance technologies, prescribed grazing, conservation skills, etc.) to municipal decision makers, SWCDs, and personnel in order to underscore the importance of water quality protection as well as associated tools and strategies.	Applicable watershed-wide	CLWC*, CLA, Municipalities	County Department and/or agency budgets; EPA NPSM; NYSDEC – EPF and others	\$	High	X		
7.4	Provide support for existing erosion and sediment control education & certification programs to ensure proper implementation. Pursue opportunities to enhance existing programs and introduce new education opportunities.	Applicable watershed-wide	LCSWCD*, NYSCDEA, NYSDEC, CLWC, Municipalities	County Department and/or agency budgets; LCSWCD; FLOWPA	\$\$	Medium		X	
7.5	Support the Conesus Lake Association (CLA) in their efforts to develop a publicly accessible database to preserve, archive, and utilize Conesus Lake water quality data.	Applicable watershed-wide	CLA*, CLWC, LCPD, Municipalities, NYSDEC, Universities	County Department, municipal, and/or agency budgets; CLA	\$	Medium			X
7.6	Support the CLA Water Quality Committee's initiative to develop an integrated data management platform service for current and future data and resources such as meteorological data, Lake level data, information from federal and state agencies, and results of local monitoring. Data visualization tools would be included, along with capability for real-time alerts of extreme conditions.	Applicable watershed-wide	CLA*, CLWC, LCPD, LCDOH, Municipalities, NYSDEC, Universities	County Department, municipal, and/or agency budgets; CLA	\$	High			X

Goals and Corresponding Management Recommendations		Priority Subwatershed(s)	Project Leader* and Potential Partners	Potential and Existing Funding Sources	Potential Cost	Priority (High, Medium, Low)	Implementation Timing (Years)		
							1	2-5	5+
Goal 8: Employ multiple approaches to outreach and education that enhance community awareness of how human activities affect water resources, opportunities for nature-based solutions, and the effectiveness of local actions.									
Recommended Actions									
8.1	Continue to promote watershed stewardship and the use of BMPs through the Watershed Education Center, Conesus Stewardship Initiative, and additional programming. Topics may include the use of zero phosphorus fertilizer, landscaping BMPs, invasive species spread prevention, green infrastructure practices, proper stormwater practice maintenance, shoreline restoration, winter salt use, and erosion control BMPs.	Applicable watershed-wide	CLWC*, CLA, CCE, LCSWCD, FL-PRISM, NYSDEC, Local schools	County Department and/or agency budgets	\$\$	High	X		
8.2	Continue to promote watershed education of primary and secondary school students.	Applicable watershed-wide	CLWC*, CCE, Local schools, LCDOH	County Department and/or agency budgets	\$	High	X		
8.3	Continue partnerships with groups promoting watershed stewardship throughout the community, including the CLA, FL-PRISM, WEC, and CCE.	Applicable watershed-wide	CLWC*, CLA, CCE, FL-PRISM, WEC	County Department and/or agency budgets	\$	High	X		

Notes:

* Project Leader. While the recommendations represent CLWC priorities from which their Work Plans will be developed, they will rely on project partners for the implementation of some of these recommendations.

** Indicates the recommendations for zoning ordinance updates that could be combined into one zoning update per municipality, the cost of which would be categorized as \$\$\$\$\$. Individually the cost of each recommendation would be categorized as \$.\$.

5 Monitoring and Reporting

The 2025 Update to the CLWMP reflects data and information collected over decades of Lake and watershed monitoring by many organizations and individuals. Section 2.4 provides a summary of these efforts. Continued monitoring and assessment will enable community stakeholders to fully implement the principles of adaptive management. Each year, the CLWC formulates a Work Plan that lays out the priorities and projects for the upcoming year. At the end of each year, an Annual Report Card is completed, which evaluates progress and emerging issues within the watershed and Lake. The Annual Report Card has been extremely effective in tracking and reporting progress toward meeting the goals of CLWMP; continued preparation of an annual report to the CLWC is a key recommendation (see Section 5.4 for additional details about the Annual Report Card). This Chapter includes recommendations for monitoring and data collection activities, and other metrics that can be used to evaluate progress toward meeting the community goals for the Lake and its watershed.

5.1 Recommended Lake Monitoring

The Lake has a robust monitoring program, as described in Section 2.4 and briefly summarized below. NYS agency staff, university researchers, trained community volunteers, CLA members, Livingston County staff, and many others have contributed to this dataset. Details of the studies and their findings are archived on the [LCPD website](#).²² This monitoring helps identify trends in water quality parameters or shifts in biological communities over time and is used to guide management decisions and set community expectations. This monitoring should be continued without interruption.

Table 5-1 provides a summary of the recommended lake monitoring program for the Lake, focusing on Lake uses, including recreation, drinking water, protection of aquatic life, and ecosystem function. The recommended lake monitoring program will include the collection of data to ensure that the Lake is safe as a source of drinking water and safe for recreational activities, such as swimming. Monitoring would include collecting key metrics to evaluate the Lake's aquatic life and ecosystem function, including DO levels, phytoplankton and zooplankton community and population metrics, fish populations, and invasive species.

NYSDEC and water purveyors monitor water quality for public water supply. The water purveyors routinely monitor and report water quality to ensure finished water is safe for consumers. NYSDEC periodically monitors and assesses water resources, including assessing whether water quality and habitat conditions support the designated use. This includes monitoring finished water for total organic carbon, Na and Cl concentrations, disinfection by-products, and HABs toxin levels. Chl-a and TP levels are monitored to determine whether ambient water quality standards are being met for

²² Documents are accessible from <https://www.livingstoncountyny.gov/780/Reports-Publications-Educational-Resourc>.

class AA waters. These efforts should be continued to ensure waters meet the NYS water quality requirements and guidance values.

To ensure water quality conditions are safe for full contact recreation, monitoring should be continued for water clarity, HABs, and bacterial counts. A monitoring program is already in place and should be continued. The LCDOH Watershed Inspector works with trained CLA volunteers to conduct regular surveys of shoreline areas for the potential presence of HABs. LCDOH monitors public bathing beaches for the presence of fecal coliform bacteria and cyanobacteria while they are operational. The CLA runs the CSLAP program for the Lake, which trains CLA volunteers to conduct biweekly water quality monitoring from June through September. These community scientists monitor water quality conditions, including SDT, field profiles of water temperature, specific conductance, pH, TP, N, Chl-a, Ca, and Cl.

Researchers from SUNY Brockport and SUNY Geneseo have conducted numerous monitoring studies of the Lake and its watershed since 2003, including chemical, physical, and biological parameters that assess aquatic life protection and ecosystem functioning. Monitoring the Lake’s biological resources helps guide management alternatives. The in-lake monitoring program has provided a quantitative estimate of the magnitude of internal phosphorus loading that entered the Lake over time and continues to cycle from Lake sediments to the overlying water. Monitoring phytoplankton and zooplankton population and community dynamics informs an understanding of factors affecting ecosystem function, water clarity, and the potential for and risk of HABs. Long-term monitoring programs help track species composition and abundance over time and support early detection of and rapid response to invasive species. Tracking these elements of the food web also supports fisheries management decisions. This monitoring should be continued into the future.

**Table 5-1
Summary of Recommended Lake Monitoring Program**

Desired Use	Goal	Key Measurements or Indicators *	Metrics for Reporting	
			Compliance	Trends
Public water supply	<ul style="list-style-type: none"> Finished water is safe for consumers of all ages and health conditions 	<ul style="list-style-type: none"> Subpart 5 of NYS Sanitary Code list for public water supply 	<ul style="list-style-type: none"> Meets requirements of Subpart 5 of NYS Sanitary Code 	<ul style="list-style-type: none"> Total organic carbon Na and Cl Disinfection byproducts HABs toxin levels
	<ul style="list-style-type: none"> Lake waters meet NYSDEC ambient water quality standards and criteria for Class AA waters 	<ul style="list-style-type: none"> Chl-a TP (June-Sept. average, upper waters) 	<ul style="list-style-type: none"> Meets NYSDEC ambient water quality guidance values for Class AA waters 	<ul style="list-style-type: none"> Summer average concentrations Percent of samples over bloom threshold for Chl-a Nitrogen: Phosphorus ratio

Desired Use	Goal	Key Measurements or Indicators *	Metrics for Reporting	
			Compliance	Trends
Recreation	<ul style="list-style-type: none"> Water quality conditions are safe for full contact recreation 	<ul style="list-style-type: none"> Indicator bacteria at bathing beaches (summer) Visual evidence of HABs HAB toxin levels Days of beach closures SDT 	<ul style="list-style-type: none"> Meets requirements of Subpart 6-2 of the NYS Sanitary Code and NYSDEC requirements Absence of HABs SDT > 2 m 	<ul style="list-style-type: none"> Percent of measurements in compliance at defined monitoring locations Days of beach closure
Aquatic life protection	<ul style="list-style-type: none"> Water quality and habitat conditions support a diverse assemblage of native species 	<ul style="list-style-type: none"> DO profiles during late summer at deepest station (annual) 	<ul style="list-style-type: none"> DO profiles and depth of anoxia 	<ul style="list-style-type: none"> Water column depth at which DO is < 6 mg/l Calculated volume-days of anoxia
Ecosystem functioning	<ul style="list-style-type: none"> Phytoplankton community is composed of a mix of species typical of a mesotrophic lake 	<ul style="list-style-type: none"> Plankton counts, identify to major taxa (monthly May–Sept.); every 3 years 	<ul style="list-style-type: none"> Not applicable – no regulatory standards for compliance 	<ul style="list-style-type: none"> Community composition (percent of major taxa)
	<ul style="list-style-type: none"> Zooplankton community is composed of a mix of species typical of a mesotrophic lake 	<ul style="list-style-type: none"> Plankton counts, length measurements, and identify to major taxa (monthly May to Sept.); every 3 years 	<ul style="list-style-type: none"> Not applicable – no regulatory standards for compliance 	<ul style="list-style-type: none"> Average size of zooplankton Community composition (percent of major taxa)
	<ul style="list-style-type: none"> Lake supports a diverse assemblage of native species typical of a mesotrophic lake 	<ul style="list-style-type: none"> Monitor for aquatic invasive species (annual); Evaluate fish community (NYSDEC-periodic) 	<ul style="list-style-type: none"> Not applicable – no regulatory standards for compliance 	<ul style="list-style-type: none"> Species composition

5.2 Recommended Tributary Monitoring

There has been substantial data collection in the Lake tributaries over the last two decades, as described in Section 2.4.2.3. As discussed in Section 2.4.2, internal P loading is the largest source of P in the Lake. While agriculture is only 15% of the total P load, it comprises 75% of the nonpoint load, making agricultural BMPs a high priority for reducing sources of nonpoint source P. The tributary monitoring program has been instrumental in understanding how individual tributaries are contributing to the sediment and nutrient load into the Lake, as well as evaluating how effective agricultural BMPs are at reducing that loading rate. Table 5-2 includes recommendations for tributary monitoring that have emerged from the watershed characterization and analysis. Data generated through the watershed monitoring program guide management decisions. Stream sampling, which includes water quality and biological parameters, supports estimates of nutrient and sediment input to the Lake, evaluations of the effectiveness of BMPs, identification of stream segments with eroding banks and beds, and assessments stream habitat quality. This information helps designate priority areas for protection and remediation.

Each recommended monitoring element shown in Table 5-2 is related to a specific objective, such as assessing external sediment and nutrient loading from major streams, evaluating stream habitat quality using benthic macroinvertebrate community metrics, and monitoring stream conditions after the implementation of BMPs to assess the impact of those practices on water quality parameters.

Researchers from SUNY Brockport and SUNY Geneseo have conducted numerous monitoring studies in the Conesus Lake watershed since 2003 including tributary studies, assessment of the effectiveness of BMPs, and streambank stabilization. In the early 2000s, several small tributary subwatersheds were selected to evaluate the effectiveness of agricultural BMPs in reducing soil and nutrient runoff to Conesus Lake; monitoring began prior to BMP implementation and continues through to present day. The recommendations for continued tributary monitoring in Table 5-2 were developed with feedback from SUNY research partners and other technical advisors. Recommendations include: continued monitoring for sediment and nutrient parameters, the need for collection of stream discharge data throughout the year, and the collection of discharge and chemical parameters during high flow events. These data will allow for more refined calculations of loading from tributaries. When this monitoring is done before and after BMP implementation, it allows for the evaluation of the effectiveness of those BMPs, which could inform priorities for future BMP projects.

In addition, periodic evaluation of habitat quality of streams can help identify changes in conditions and assess the overall ability of streams to support diverse biological communities.

Macroinvertebrates are key indicators of water quality and are an important part of the stream food web. Macroinvertebrate data is commonly used in stream assessments, including overall taxa richness and the presence of sensitive groups like Ephemeroptera-Plecoptera-Trichoptera (EPT) taxa. EPT taxa are pollution intolerant species that can be used as indicators of water quality; a large percentage of EPT taxa in a stream is indicative of clean water and good aquatic habitat.

**Table 5-2
Summary of Recommended Tributary Monitoring Program**

Objective	Locations	Parameters	Frequency	Metrics
Assess annual external loads from major streams	<ul style="list-style-type: none"> • Tributaries at locations near stream mouth 	<ul style="list-style-type: none"> • TP • Total dissolved phosphorus • Total nitrogen • Suspended sediment • Discharge 	<ul style="list-style-type: none"> • Annual: March-November, strive to sample during high flow conditions 	<ul style="list-style-type: none"> • Annual load (calculated using FLUX) • Annual flow-weighted average concentration
Monitor response to agricultural impacts and BMP implementation	<ul style="list-style-type: none"> • Upstream and downstream during spring runoff 	<ul style="list-style-type: none"> • TP • Total dissolved phosphorus • Total nitrogen • Suspended sediment • Discharge 	<ul style="list-style-type: none"> • Before and after improvement 	<ul style="list-style-type: none"> • Flow-weighted average concentration

Objective	Locations	Parameters	Frequency	Metrics
Evaluate quality of stream habitat using benthic macro-invertebrates	<ul style="list-style-type: none"> Downstream sites in streams that meet habitat requirements (sites can be monitored on a rotating basis) 	<ul style="list-style-type: none"> Macro-invertebrate community (counts and species identification) 	<ul style="list-style-type: none"> One event every 3 to 5 years for each stream, during low flow conditions 	<ul style="list-style-type: none"> Family biotic index Percent model affinity Percent of dominant family Taxa richness EPT index

5.3 Other Measures of the Plan’s Success

The recommendations included in Chapter 3 are designed to restore and protect the Lake and its watershed for future generations. The Lake and tributary monitoring programs outlined above will track environmental quality in response to the recommended actions. However, other measures are needed to evaluate progress with other elements of the CLWMP Update, such as more robust local laws for pollution prevention, a deeper community understanding and appreciation of water resources, success in securing outside funding, enhanced recreational usage, and a resilient local economy. To that end, the project team developed a list of metrics that could be used to help inform and assess these additional objectives. Examples of the types of metrics that could be measured are listed in Table 5-3.

**Table 5-3
Factors to Measure Progress Toward Plan Recommendations**

Objective	Measured By
Improve the capacity of local government to reduce nonpoint sources of pollution	Number of municipalities with sediment and erosion control local laws
	Number of soil and erosion complaints inspected by LCDOH
	Number of municipal Departments of Public Works or Highways using sediment and erosion control best practices
	Number of highway personnel attending environmentally related training
	Amount of salt applied to roadways for winter de-icing
	Number of BMPs implemented by highway departments to reduce road salt loading into waterways
	Number of grant applications for implementing BMPs and stream restoration projects.
Improve outreach and education on watershed issues	Number of press releases regarding the Conesus Lake watershed
	Number of educational & outreach materials developed
	Number of educational & outreach materials distributed
	Number of contacts with educational institutions
	Number of participants attending WEC programs or other educational/training events
	Tabling at annual community events
	Visits to LCPD Conesus Lake web pages

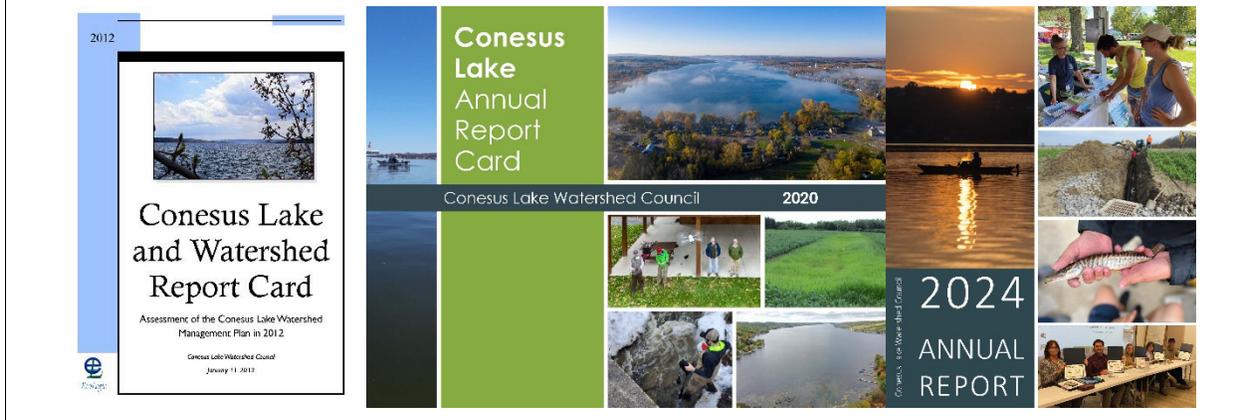
Objective	Measured By
Expand recreational access and use	Number of canoe and kayak rentals
	Attendance at local parks
	Number of beach closures
	Number of boat launches
HABs	Number of confirmed HABs
	Number of beach closure days due to HABs
	Number of individuals trained for HABs detections
Prevent introductions of invasive species	Labor hours of boat launch stewards
	Number of vessel inspections completed
	Number of vessel decontaminations completed
	Number of invasive species removal events
	Number of individuals trained for invasive species detections
Develop enduring partnerships and collaborations	Number of activities/events performed with partners
	Land area under conservation easement or other protection
Acquire funds from multiple sources to support remedial measures	Number of grant applications submitted
	Total amount of non-municipal/non-County funds received
Identify and reduce adverse water quality impacts from agricultural operations	Percent acres on which agricultural BMPs are implemented, number of farms adopting BMPs, or number of BMPs.
	Number of farms participating in AEM program (at each Tier)
	Number of grants applied for to implement BMPs
Monitor septic systems	Number of complaints inspected by LCDOH
	Number of new and repaired septic systems
Improve public perception of Lake conditions	Periodic surveys of public opinion
	Number of people attending meetings that are open to the public

5.4 Annual Report Card

The LCPD has produced a CLWMP Annual Report Card every year since 2003 to document projects and progress. Examples of past Report Cards are shown in Figure 5-1. These documents are available on the Livingston County website under [Reports, Publications & Educational Resources](#).²³ The Report Cards track specific recommendations of the 2003 CLWMP and documents initiatives underway to accomplish these actions. An annual work plan is developed to evaluate priorities, emerging issues, and direct available resources. The CLWC should continue this adaptive management approach to document progress toward accomplishing the 2025 updated list of recommended actions.

²³ Documents are accessible from <https://www.livingstoncountyny.gov/780/Reports-Publications-Educational-Resourc>

Figure 5-1
Conesus Lake Annual Report Cards



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Appendix A

Local Laws Assessment

Appendix A

Local Laws Assessment

1. Institutional Framework: Roles and Responsibilities of Governmental and Nongovernmental Agencies

The Conesus Lake watershed is affected by regulations, plans, and programs at the federal, state, regional, county, and local level, as well as by collaborations involving nonprofit organizations and academic institutions. This chapter presents an overview of the broad institutional framework that guides decision making and activities in the watershed.

1.1 Federal Agencies and Watershed-Related Resources

The federal government offers a range of programs associated with the conservation and protection of water and natural resources. These programs offer a wealth of information on water quality, habitat inventories, soil information, and much more. Federal agencies can also provide both technical and financial assistance. In addition to the federal resources listed below, the online System for Award Management (www.sam.gov) gives access to a database of all federal programs available to state and local governments; domestic public, quasi-public, private profit, and nonprofit organizations; and institutions, specialized groups, and individuals. You can search this database to find grant and funding opportunities meeting the requirements for your project.

1.1.1 U.S. Environmental Protection Agency (USEPA)

Website: www.epa.gov

Description: The USEPA protects environmental quality through a variety of air, water, pollution, and toxins and chemicals management programs, primarily through its Office of Water. USEPA provides information on water quality programs and assistance with planning and managing watersheds, water quality, wetlands (water.epa.gov/), groundwater and surface water supplies, and wastewater treatment (<https://www.epa.gov/ground-water-and-drinking-water>). The agency's watershed-related responsibilities include defining and ensuring compliance with basic water programs; developing national standards and tools; funding; and conducting national assessments of status and progress.

Relevant programs:

- Clean Water Act Section 319 Nonpoint Source Management Program
- Environmental Monitoring and Assessment Program (EMAP)

- Great Lakes National Program Office
- Great Lakes Restoration Initiative (GLRI) Forest Restoration (with USFS)
- GLRI Cooperative Weed Management (with USFS)
- Lake Ontario Lakewide Management Plan Acid Rain Program
- Office of Standards (supports Clean Water Act and Safe Drinking Water Act)
- Office of Research and Development

1.1.2 U.S. Fish and Wildlife Service (USFWS)

Website: www.fws.gov

Description: The USFWS administers most of the nation’s fish and wildlife management programs, including terrestrial and freshwater endangered species protection and migratory bird management. USFWS manages public lands and outdoor recreation (www.recreation.gov) as part of the National Wildlife Refuge system.

Relevant funding programs:

- Partners for Fish and Wildlife
- National Fish Passage Program
- Wildlife and Sport Fish Restoration Programs
- North American Wetlands Conservation Act (NAWCA) grants
- Great Lakes Restoration Initiative grants

1.1.3 U.S. Geological Survey (USGS)

Website: water.usgs.gov

Description: The USGS can provide watershed-related information on stream flow, water quality, water quantity, maps, and application software. The agency has real-time data, surface water data, and groundwater information. USGS also provides historic topographic maps that can be helpful in delineating watersheds. The USGS New York office (www.usgs.gov/centers/new-york-water-science-center), in partnership with collaborating agencies, has conducted assessments of streams in several of New York’s physiographic regions to develop regional stream curves, which illustrate the relationship between watershed size, stream form, and discharge. These relationships are useful in guiding stream restoration activities. USGS publications, including site-specific investigations and circulars, are useful in building an understanding of watershed processes.

Relevant programs:

- Groundwater quality research and monitoring
- Resource mapping and GIS
- Streamflow monitoring

- Surface water quality research and monitoring

1.1.4 U.S. Army Corps of Engineers (USACE)

Website: www.usace.army.mil

Description: The USACE's Civil Works programs focus on water resource development activities including flood risk management, navigation, recreation, and infrastructure and environmental stewardship. USACE sets the guidelines for maintaining water levels in Conesus Lake.

Relevant laws, programs:

- Section 10 of the Rivers & Harbors Act of 1899 (33 U.S.C. 403)
- Section 404 of the Clean Water Act (33 U.S.C. 1344)
- Flood Risk Management Program

1.1.5 U.S. Department of Agriculture: Natural Resources Conservation Service (NRCS), Forest Service

Website: www.usda.gov; www.nrcs.usda.gov; www.fs.fed.us

Description: The U.S. Department of Agriculture can provide assistance with rural development and help communities with natural resource concerns, such as erosion control, watershed protection, and forestry. The USDA's Natural Resources Conservation Service has responsibilities for addressing nonpoint sources of pollution. Its county-based Soil and Water Conservation Districts provide conservation planning and technical assistance to landowners and managers to benefit the soil, water, and related natural resources for productive lands and healthy ecosystems.

Relevant programs:

- Agricultural Conservation Easement Program (ACEP)
- Agricultural Environmental Management (AEM) Plans
- Conservation Technical Assistance (CTA)
- Conservation Reserve Program (CRP)
- Environmental Quality Incentives Program (EQIP)
- National Conservation Practice Standards
- Conservation Stewardship Program (CSP)
- Conservation Innovation Grants
- Wildlife Habitat Incentive Program (WHIP)

1.2 State Agencies and Watershed-Related Resources

Many New York State agencies provide an array of technical and financial assistance that can support the watershed planning process.

1.2.1 NYS Department of State (NYSDOS)

Website: www.dos.ny.gov

Description: The NYSDOS (www.dos.ny.gov) increases resilience and sustainable growth of communities by advancing progressive land use solutions, community-based development, and building standards and codes. NYSDOS also provides technical and financial assistance to help communities integrate watershed planning with efforts to expand public access, reinvigorate urban waterfronts, restore habitats, protect scenic resources, preserve historic resources, manage water uses, improve water quality, protect against flooding and erosion, plan for storm resiliency, and strengthen local economies. NYSDOS Local Waterfront Revitalization Program provides financial assistance to eligible waterfront communities on a competitive basis, through Title 11 of the Environmental Protection Fund-Local Waterfront Revitalization Program, as well as guidance and training for the revitalization of communities, protecting and improving the environment, and strengthening local economies.

The NYSDOS provides training and technical assistance to local governments and community organizations throughout the state, helping local officials solve problems involving basic powers and duties, public works, municipal organization, planning, land use and regulatory controls, and community development (<https://dos.ny.gov/training-assistance>). It also provides training assistance to municipalities related to zoning procedures, identifying opportunities for cost savings and other practical legal and technical advice.

Relevant programs:

- Local Waterfront Revitalization Program (LWRP): funds planning and implementation projects to create more sustainable, accessible, and resilient waterfront communities as well as providing technical assistance for those communities
- Local Government Efficiency Program (LGE): works with municipal leaders on support and to reduce the cost of operations and modernize the delivery of local services.
- Brownfield Area Opportunity Program (BAO): applies a neighborhood-wide approach for planning in the assessment and redevelopment of known/suspected brownfields and other vacant/abandoned properties.
- Smart Growth Community Planning and Zoning Program (SGCP): assists communities in preparing land use plans and zoning regulations that integrate smart growth principles
- Local Planning
- Ocean and Great Lakes Program
- State Coastal Management Program
- Water Resource Planning

1.2.2 NYS Department of Environmental Conservation (NYSDEC)

Website: www.dec.ny.gov

Description: The NYSDEC's Division of Water uses a watershed management approach to guide many of its programs. Water quality protection is central to the mission of NYSDEC, which regulates wastewater and thermal discharges and has responsibilities for monitoring waterbodies, controlling surface runoff, managing water availability, preventing flood damage and beach erosion, and promoting stewardship and education. A variety of funds are available for municipal wastewater treatment improvement, pollution prevention, and agricultural and nonagricultural nonpoint source abatement and control. Support is available to acquire open space that protects water resources, and to acquire public parklands and protect farmland.

Relevant laws, programs:

- Priority Waterbodies List (PWL)
- List of Impaired Waters, NYS Section 303(d)
- Rotating Intensive Basin Surveys (RIBS)
- Citizens Statewide Lake Assessment Program (CSLAP)
- Climate Smart Communities (CSC) Grants: Provides 50/50 matching grants to municipalities for eligible climate mitigation and adaptation projects.
- Community Forest Conservation Grant Program: Funds municipal land acquisition to establish community forests.
- Invasive Species Grant Program: Assist with planning and research projects that target both aquatic and terrestrial invasive species.
- Trees for Tribs and Buffer in a Bag: Works to restore streamside plant communities on public and private lands. Landowners and public entities such as schools, municipalities, and conservation organizations can qualify for free trees and shrubs.
- NYS Conservation Partnership Program
- Non-Agricultural Nonpoint Source Planning and MS4 Mapping (NPG): funds planning reports for nonpoint source water quality improvement projects and mapping of Municipal Separate Storm Sewer Systems
- Water Quality Improvement Project Program (WQIP): funds projects that reduce runoff, improve water quality, and restore habitat; these include Wastewater Treatment Improvement, Land Acquisition for Source Water Protection, and Aquatic Connectivity Restoration projects
- Water Quality Management Planning Programs: Clean Water Act, Section 604(b) Funding to NYSDEC, NY Sea Grant
- NY Great Lakes Basin Small Grants
- Drinking Water Source Protection Program (DWSP2)

- New York Natural Heritage Program: A partnership between the NYSDEC and the State University of New York College of Environmental Science and Forestry. The program is committed to the conservation of rare animals, rare plants and natural ecosystems/communities. The program utilizes field inventories, scientific analysis, expert interpretation, and comprehensive databases on New York’s flora and fauna to inform compatible management activities to have significant and lasting effects on the preservation of New York’s biodiversity.
- Nonpoint Source Management Program, NYS Section 319
- Protection of Waters Program (implements Article 15 of Environmental Conservation Law): Geared toward the preservation and protection of water resources that are necessary for drinking and bathing; agricultural, commercial and industrial uses; and fish and wildlife habitat. The Program establishes and enforces regulations that are compatible with protection of water resources, protection of public health, and consistent with economic and social development. While regulations and permit requirements differ for each, there are 5 main categories under which a permit may be necessary: (1) Disturbance of the bed or banks of a protected stream or other watercourse; (2) Construction, reconstructions or repair of dunes and other impoundment structures; (3) Construction, reconstruction or expansion of docking and mooring facilities; (4) Excavation or placement of fill in navigable water and their adjacent and contiguous wetlands; (5) Water Quality Certification of place fill or undertaking activities resulting in a discharge to water of the United States.
- Phase II Program: This program requires permits for stormwater discharges from Municipal Separate Storm Sewer Systems (MS4s) in urbanized areas and for construction activities disturbing one or more acres. Related resources available from NYSDEC include a [“Stormwater Design Manual”](#) and [“Stormwater Model Local Law.”](#)
- Environmental Conservation Laws:
 - State Environmental Quality Review Act (Article 8): SEQR requires investigation into alternative actions and the mitigation of harmful effects of proposed development. Potential nonpoint source pollution can be remediated through revised design or other measures.
 - Water Resources Law: Water withdrawals; permit (§ 15-0501)
 - State Pollution Discharge Elimination System (SPDES) (Article 17). This water pollution control law is modeled after the National Pollution Discharge Elimination System approved by the Environmental Protection Agency for the control of wastewater and stormwater discharges in accordance with the Clean Water Act. Through SPDES, NYSDEC reviews permit applications to develop the limits for types and quantities of pollutants in the effluent. The permit also includes the schedules and conditions under which discharges are allowed. Owners or operators of facilities must treat wastewater in order to meet the limits listed in their SPDES permit.

- Prohibition against pollution (§ 17-0501)
 - Prohibition against certain acts without permit (§ 17-0505)
 - Concentrated Animal Feeding Operations (CAFOs) Permitting (§ 17-0105) 6: The NYSDEC created and enforces regulations regarding CAFOs, which apply to dairy farms and other farms where animals are stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period. CAFOs are categorized as either “large” or “medium” based on the numbers of animals confined. The federal Clean Water Act (33 USC 1251) is the overarching authority governing discharges to waterways, and each state adopts its own related laws regarding permits required for operations that might discharge to waterways within that state.
 - Stormwater permitting (§ 17-0808)
 - Discharge of sewage into waters (§§ 17-1701, 1704, 1710,)
 - Nutrient runoff, phosphorus fertilizer (§§ 17-2101-2105)
- Freshwater Wetlands Act (Article 24): Preserves, protects and conserves freshwater wetlands and their benefits, consistent with the general welfare and beneficial economic, social and agricultural development of the state. Protected under the Freshwater Wetlands Act are wetlands 12.4 acres or larger (or greater than 7.4 acres after December 31, 2027) and wetlands of unusual local importance, regardless of size. Around every wetland is a “Wetland Adjacent Area” of 100 feet that is also regulated to provide protection for the wetland. A permit is required to conduct any regulated activity in a protected wetland or its adjacent area; however, certain activities are exempt from regulation. The permit standards in the regulations require that impacts to wetlands be avoided and minimized. Compensatory mitigation often is required for significant impacts to wetlands. This may include creating or restoring wetlands to replace the benefits lost by the proposed project.

1.2.3 NYS Department of Health (NYSDOH)

Website: www.health.state.ny.us

Description: The NYSDOH provides information and technical assistance related to financing mechanisms, preventing drinking water contamination, and additional public health related water protection programs including publications outlining the regulatory framework. NYSDOH’s Bureau of Public Water Supply Protection is responsible for ensuring that source water assessments are completed for all of New York’s public water systems. These assessments are available to the public. New York’s Final Source Water Assessment Program (SWAP) Plan and a list of contacts by county can be viewed at the link below. At the time of this CLWMP Update, the Bureau is encouraging systems to update to a relatively new program, the Drinking Water Source Protection Program (DWSP2). See link below. The DWSP2 is an initiative that is locally led and state-supported by NYSDOH and

NYSDEC which provides free technical assistance to municipalities to develop and implement drinking water source protection plans. GFLRPC is one of the technical assistance providers for Livingston County communities and can assist municipalities with DWSP2 program inquiries, applications, and program requirements.

SWAP: www.health.ny.gov/environmental/water/drinking/swap.htm

DWSP2: www.dec.ny.gov/environmental-protection/water/water-quality/dwsp2

Relevant programs:

- Contaminant monitoring and fish advisories
- Drinking Water Source Protection Program (DWSP2)
- Drinking Water Protection Program: testing, permitting, wellhead protection
- Septic System Standards
- Bathing Beach rules and regulations (10 NYCRR 6-2)
- Watershed rules and regulations

1.2.4 NYS Department of Agriculture and Markets (NYSAGM)

Website: <https://agriculture.ny.gov/>

Description: The Department of Agriculture and Markets administers funding programs including the Agricultural and Farmland Protection Implementation Grant, the Farmland Protection Planning Grant, and Land Trust Grant programs. The Soil and Water Conservation Committee of New York’s Department of Agriculture and Markets develops and oversees implementation of Soil and Water Conservation District programs and AEM programs, which provide technical assistance, including comprehensive nutrient management planning, streamside conservation, and community conservation. Financial assistance is also provided through the New York State Agricultural Nonpoint Source Abatement and Control Program (ANSACP). The NYS Conservation Reserve Enhancement Program (NYS CREP) also aims to reduce pollution in streams by helping agricultural landowners to voluntarily plant trees, shrubs, and grasses on streambanks to trap sediment, pesticides, and fertilizers in runoff. In addition, New York’s Agricultural Districts law states that the Agriculture and Markets Commissioner can intervene when local governments enact laws that unreasonably restrict farm operations in Agricultural Districts; this places limits on the municipalities to regulate land uses in Agricultural Districts.

Relevant laws, programs:

- Agricultural Nonpoint Source Abatement and Control Program (ANSACP): Financial assistance program for projects led by SWCDs that involve planning, designing, and implementing priority BMPs.

- Agricultural Environmental Management (AEM) Program: SWCDs engage local partners such as Cooperative Extension, NRCS, AEM Certified Planners to assist farmers in farm planning to reduce runoff and erosion.
- Climate Resiliency Farming (CRF) Program: Assistance to reduce the impact of agriculture on climate change and increase climate resiliency of NYS farms.
- Community Resiliency Training Program: Provides community/municipality training to increase resiliency to flooding and Harmful Algal Bloom (HAB) outbreaks in high-risk waterbodies.
- County Agricultural and Farmland Protection Planning Grants: Financial assistance for the development and implementation of County Agricultural and Farmland Protection Plans.
- Source Water Buffer Program: Funding to support, expand or enhance water quality protection through the purchase of conservation easements on agriculture lands that preserve or establish buffers for surface or ground waters.

1.2.5 NYS Environmental Facilities Corporation (NYSEFC)

Website: www.nysefc.org

Description: The NYSEFC's mission is to promote environmental quality by providing low-cost capital and expert technical assistance to municipalities, businesses, and State agencies for environmental projects in New York State. Its purpose is to help public and private entities comply with federal and State environmental requirements. NYSEFC's primary activities are the State Revolving Funds (SRF), the Industrial Finance Program (IFP), and Technical Advisory Services (TAS).

Relevant program:

- NYSEFC Green Innovation Grant Program funds projects that will implement green practices such as green stormwater infrastructure, energy efficiency, water efficiency, environmental innovation
- Green Resiliency Grant Program
- Septic System Replacement Fund
- Water Infrastructure Improvement and Intermunicipal Grants
- Drinking Water State Revolving Fund
- Clean Water Infrastructure Act (CWIA) Grants
- Clean Vessel Assistance Program

1.2.6 NYS Department of Transportation (NYSDOT)

Website: www.nysdot.gov

Description: The NYSDOT provides design and guidance documents, standard specifications, and procedural manuals (Highway Design Manual, Environmental Procedures Manual, Maintenance Guidelines, etc.) that can be incorporated into local laws and highway department operating

procedures. The NYSDOT also funds and implements environmental benefit projects that improve water quality, restore wetlands, promote eco-tourism, protect fish and wildlife, and enhance transportation corridors through its Environmental Initiative. Various other programs through the department provide substantial environmental benefits, including GreenLITES, roadside vegetation management, Transportation Alternatives Program, and others.

1.3 Regional Agencies and Initiatives

1.3.1 Finger Lakes Lake Ontario Watershed Protection Alliance (FOLLOWPA)

Website: www.followpa.org

Description: FOLLOWPA is a coalition of all 25 counties in New York's Lake Ontario drainage basin that fosters coordinated watershed management programs across the basin based on local needs. Livingston County receives funding for water quality projects from FOLLOWPA which is provided through the New York State Environmental Protection Fund (EPF), through the support of a committed delegation of State Legislators representing the 25-county region.

Relevant programs:

- Aquatic Vegetation Control Program
- Septic System Inspection Program
- Invasive Species Education, Surveying, Harvesting and Control
- Sampling and Monitoring of Water Quality
- Erosion and Sediment Control

1.3.2 Livingston County Planning Board (LCPB)

Website: www.livingstoncountyny.gov/105/County-Planning-Board

Description: The LCPB serves as an advisory board, created under General Municipal Law (GML), that has a primary responsibility to review zoning and land use referrals from local municipalities. Reviews ensure that proposed developments or policy changes consider regional, county-wide or inter-municipal impacts before municipalities take final action. The LCPB supports the protection of Conesus Lake's watershed and water quality while reviewing proposals for watershed impacts and promoting consistency with the CLWMP.

1.3.3 Partnership for Regional Invasive Species Management (PRISM)

Website: <https://fingerlakesinvasives.org/>

Description: New York State's eight PRISMs were formed in response to a recommendation of the 2005 NYS Invasive Species Task Force, with a goal of preventing or minimizing harm caused by invasive species on the environment, economy and the health and well-being of citizens. PRISM

functions include coordinating partner efforts, recruiting and training citizen volunteers, identifying and delivering education and outreach, establishing early detection monitoring networks, and implementing direct eradication and control efforts. The Finger Lakes PRISM (FL-PRISM) covers 17 counties in central NYS, including Livingston County. The FL-PRISM supports the CLWC with the Macrophyte Survey program on Conesus Lake and invasive species management projects in the watershed.

Relevant programs:

- Macrophyte Survey Program
- Trail Survey Program

1.4 Academic institutions

1.4.1 State University of New York at Brockport (SUNY Brockport)

University Website: www.brockport.edu

Relevant SUNY Reports/Research: <https://www.livingstoncountyny.gov/780/Reports-Publications-Educational-Resourc>

Description: SUNY Brockport, a public liberal arts college and part of the SUNY system, is located in the Village of Brockport in Monroe County. SUNY Brockport, together with fellow partner SUNY Geneseo, has been a long-term contributor to research and monitoring efforts on Conesus Lake to ensure lake water quality, with a focus on nutrient loading, agricultural best management practices, and food web analysis. Partnerships with SUNY Brockport, SUNY Geneseo, USDA, NYSDEC, CLA, and FLOWPA have been effective in establishing an ecosystem-based management approach for Conesus Lake and the watershed that helps guide the CLWC in setting management strategies and priorities. For close to 40 years, SUNY Brockport's Department of Environmental Science and Ecology Limnology Laboratory has been instrumental in providing critical data that supports the CLWMP implementation and a robust water quality monitoring and research program. SUNY Brockport provides a special concentration on Conesus Lake tributary monitoring.

Relevant programs:

- Water Quality Monitoring Programs

1.4.2 State University of New York at Geneseo (SUNY Geneseo)

University Website: www.geneseo.edu

Relevant SUNY Reports/Research: <https://www.livingstoncountyny.gov/780/Reports-Publications-Educational-Resourc>

Description: SUNY Geneseo, a public liberal arts college and part of the SUNY system, is located in the Village of Geneseo in Livingston County, which sources its drinking water from Conesus Lake. SUNY Geneseo, together with fellow partner SUNY Brockport, has been a long-term contributor to research and monitoring efforts on Conesus Lake to ensure lake water quality, with a focus on nutrient loading, agricultural best management practices, and food web analysis. Partnerships with SUNY Geneseo, SUNY Brockport, USDA, NYSDEC, CLA, and FLOWPA have been effective in establishing an ecosystem-based management approach for Conesus Lake and the watershed that helps guide the CLWC in setting management strategies and priorities. For decades, SUNY Geneseo's Biology Department has played a critical role in the implementation of the CLWMP and an extensive water quality monitoring and research program on Conesus Lake. SUNY Geneseo provides a special concentration on near-shore and in-lake studies, and the spatial analysis of the different basins within the Lake.

Relevant programs:

- Water Quality Monitoring Programs

1.4.3 Cornell Cooperative Extension of Livingston County (CCE-Livingston)

Website: www.ccelivingstoncounty.org/

Description: CCE-Livingston is a part of the larger CCE network operated by Cornell University that extends Cornell's land-grant programs to every county in the state. CCE-Livingston delivers researched-based information, education, and tools, and fosters community collaborations to help people improve their lives, communities, and natural environments. Locally, CCE-Livingston has a number of partner activities that promote the protection of Conesus Lake and water quality through public education and awareness and best management practices for landowners and agricultural partners. CCE-Livingston participated in the CLWMP Update process and regularly contributes to the Watershed Education Center programming.

1.5 Nonprofit Organizations

1.5.1 New York State Federation of Lake Associations. (NYSFOLA)

Website: www.nysfola.org/

Description: NYSFOLA is a non-profit coalition of lake associations from across NYS, individuals, and corporate members dedicated to the protection and restoration of New York lakes. NYSFOLA promotes the development of local and regional partnerships and collaborations to address lake needs and opportunities. Priorities include supporting lake associations, education and outreach, monitoring and reporting, and advocacy and public policy. NYSFOLA provides support to the NYSDEC Citizens Statewide Lake Assessment Program (CSLAP); Conesus Lake is a participant in this program.

1.5.2 Finger Lakes Institute (FLI)

Website: www.hws.edu/centers/finger-lakes-institute

Description: FLI is an academic and research center at Hobart and William Smith Colleges, located in Geneva, NY and situated on the shores of Seneca Lake. FLI is dedicated to the protection of the water resources of the Finger Lakes, promotion of environmental research and education on these Lakes, and advancing collaborative actions through partnerships. Their actions focus on research, community engagement, and education. FLI is the host for the Macrophyte Survey Program run by FL-PRISM, which is implemented on Conesus Lake.

1.5.3 Conesus Lake Association (CLA)

Website: www.conesuslake.org

Description: The Conesus Lake Association is a non-profit organization that works to promote the health, safety and welfare of the residents and users of Conesus Lake. The CLA is a strong environmental stewardship organization and effective partner in the protection of Conesus Lake, and with a large membership of over 1,000 people, the CLA serves as a collective voice for the needs and challenges that face Conesus Lake and the watershed. With a wide breadth of service, their engagement ranges from partnering on water quality projects; to education and stewardship outreach; and to advocacy with local, county, state government and agencies on lake protection issues. The CLA plays an active role in the support of the CLWMP implementation.

- Citizens Statewide Lake Assessment Program (CSLAP)
- Conesus Lake HABs Monitoring Program
- Conesus Lake State Boat Launch Watercraft Steward Program
- Conesus Lake Stewardship Initiative
- PRISM Macrophyte Survey Program
- Watershed Education Center Program

1.6 County-Level Agencies and Initiatives

1.6.1 Conesus Lake Watershed Council (CLWC)

Website: www.livingstoncountyny.gov/112/Watershed-Council

Description: The CLWC is an intermunicipal organization formed in 2003 to guide the implementation of the recommendations of the CLWMP. Members of the CLWC include municipalities with lands within the watershed, municipalities that are public water purveyors using Conesus Lake as a public water source, and watershed partners engaged in efforts to protect the Lake and the watershed. The CLWC provides an important forum for stakeholder collaboration and public education on progress and emerging issues. Livingston County has two active programs focused on Conesus Lake and its watershed to assist in the implementation of the CLWMP - the Watershed Management Program (supported by the LCPD) and Watershed Inspection Program

(supported by the LCDOH). The CLWC oversees these two programs, approves annual workplans, and sets priorities. In 2025, the CLWC worked with multiple watershed partners to complete the CLWMP Update.

Relevant Programs

- Conesus Lake Watershed Management Program
- Conesus Lake Watershed Inspection Program

1.6.2 Livingston County Department of Health (LCDOH)

Website: www.livingstoncountyny.gov/176/Environmental-Health

Description: The Center for Environmental Health, a division of Livingston County Department of Health, provides effective education and inspection programs to help reduce public exposure to environmental hazards, as well as envisioning an informed community living in a safe environment.

Relevant Programs

- Conesus Lake Watershed Inspection Program
- Sewage Disposal and Septic System Program
- Water Supply Protection
- Public Bathing Beach Inspection Program

1.6.3 Livingston County Planning Department (LCPD)

Website: <https://www.livingstoncountyny.gov/210/Planning-Department>

Description: The LCPD promotes the sound and orderly physical growth of Livingston County and its constituent municipalities. LCPD provides technical planning support to the County Administrator and County Board of Supervisors, while carrying out projects and programs designed to improve the County's built and natural environment, physical infrastructure, and the economy. LCPD offers a range of professional services to local municipalities, and other public and private entities in the areas of land use planning, grants, community development, GIS mapping, research and data analysis, and infrastructure development. The LCPD also plays a central role in implementing the CLWMP, and providing primary support to the CLWC and the CLWC Technical Committee.

1.6.4 Soil and Water Conservation Districts

Website: <https://agriculture.ny.gov/location/livingston-county-swcd-office>

Description: Soil and Water Conservation District (SWCD) activities are guided by the State's Soil and Water Conservation Committee, which works closely with the NYSAGM. Programs are listed below.

Relevant programs:

- Agricultural Environmental Management (AEM): AEM is a voluntary, incentive-based program run by county Soil and Water Conservation Districts. The primary goal of AEM is to protect

and enhance the environment while maintaining the viability of agriculture in New York State. The program provides one-on-one assistance to farmers to help them make cost-effective and science-based decisions to help meet business objectives while protecting and conserving natural resources. Farmers work with local AEM resource professionals to develop comprehensive farm plans using a tiered process:

- Tier 1: Inventory current activities, future plans and potential environmental concerns
- Tier 2: Document current land stewardship; assess and prioritize areas of concern.
- Tier 3: Develop conservation plans addressing concerns and opportunities tailored to farm goals.
- Tier 4: Implement plans utilizing available financial, educational and technical assistance.
- Tier 5: Evaluate to ensure the protection of the environment and farm viability

By participating in AEM, farmers can document their environmental stewardship. If a potential environmental concern is identified through the AEM assessment process, farmers can then take steps to plan for and then implement an appropriate course of action through the AEM approach. The AEM assessment, planning and implementation process helps to target limited local, state and federal technical and financial resources to farms with the greatest potential for impacting the environment.

- Stormwater Education: This program offers training on erosion control practices and stormwater pollution prevention to contractors, developers, engineers, highway departments, municipal boards, and code enforcement officers.

1.7 Local Government

While laws and policies at the federal, state, regional, and county levels can influence watershed health, municipal governments play an especially important role in watershed planning in New York State, which has a tradition of “home rule” that gives primary control over land use to cities, towns, and villages.

The Conesus Lake watershed includes all or part of seven municipalities in Livingston County:

- Town of Conesus
- Town of Geneseo
- Town of Groveland
- Town of Livonia
- Town of Sparta
- Town of Springwater
- Village of Livonia

The relevant plans, regulations, and programs for each municipality are listed in the next section of this document.

2. Local Law Review

This document is a review of land use regulations related to water resource protection for municipalities in the Conesus Lake watershed. Table A-1 below summarizes the land use regulations that are in place and that were reviewed. The recommendations provided below are intended to create consistency across all watershed development activity. Consistent regulations and standards will set clear expectations for residents and developers, help ensure consistent development patterns, and increase the use of best management practices to control point and nonpoint source pollution and protect water resources.

Table A-1 Inventory of Municipal Land Use Regulations

Local Planning Document	Town of Conesus	Town of Geneseo	Town of Groveland	Town of Livonia	Town of Sparta	Town of Springwater	Village of Livonia
Comprehensive Plan	2005	2009	No	2005 ^b	2010	2017	2005 ^b
Zoning Regulations (last major update)	2015	2016	1966 - 2009	2010	2020	No	2010
Site Plan Review	Yes	Yes	Yes	Yes	Yes	No	Yes
Subdivision Regulations	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Flood Damage Prevention	2001	2001	Yes	2001	Yes	No	1995
Steep Slope Overlay	Yes	Yes	No	Yes	Yes	No	Yes
Dock and Moorings Law	2021	2021	2018	2010	N/A	N/A	N/A
Sediment and Erosion Control Law	2002 ^a	2006 ^a	2007 ^a	2010 ^c	No	No	2010 ^c
Livingston County Agricultural and Farmland Protection Plan (2006) ^{b,d}	✓	✓	✓	✓	✓	✓	✓
Agricultural and Farmland Protection Plan	No	2016	2010	No	2018	No	No

Notes:

- a. Adopted Model Law
- b. Currently being updated
- c. Language is incorporated into existing zoning regulation
- d. [Agricultural & Farmland Protection Plan | Livingston County, NY - Official Website](#)

Bold indicates updates since 2012.

2.1 Assessment of Local Land Use Plan, Regulations, and Programs

Municipal assessment forms were completed by Town and Village staff to assist in understanding the law, regulation, or practice that implements best management practices that reduce point and nonpoint source pollutions, protects habitat, and protects water quality (Attachment 2).

2.1.1 Zoning

Overlays

The lakefront towns, including the Town of Conesus, Town of Livonia, Town of Geneseo, and Town of Groveland, each have zoning specific to the lakeshore (Table A-2). The Towns do not currently have overlay districts specific to incorporating additional protections for the lakeshore or water resources. However, the Town of Livonia Zoning Law includes additional provisions to protect natural resources in their Land Conservation regulations. The Town of Livonia provides supplemental maps and guides to determine what special conditions, if any, should be imposed before allowing development to proceed in environmentally sensitive areas. The Town of Livonia Building and Zoning Office should be contacted for site plan review requirements that may apply for development occurring in forests/woodlands, wetlands, along steep slopes, in a floodplain, in a major scenic overlook, along a stream corridor, and in the Conesus and Hemlock Lake watersheds.

All municipalities in the watershed, regardless of the proximity to the lakeshore, could consider adopting a watershed overlay to enhance protections of water resources. For example, the watershed overlay may include a 100-foot buffer around the Lake and the adjoining streams and require that all development comply with the municipality's erosion and sediment control regulations.

Shoreline Setback and Impervious Surface Cover Requirements

Four municipalities in the watershed directly border the Lake, including the Town of Conesus, Town of Livonia, Town of Geneseo, and Town of Groveland. Due to the nature of the development along the lakefront, the rear setback from the water is minimal. For example, Conesus requires a 10-foot setback and Groveland requires a 5-foot setback in each of the Lake Shore Districts (Table A-2). While there is limited space in single parcels along the Lake, Towns could consider increasing shoreline setbacks in the case of redevelopment. Further, Towns could consider requiring all redevelopment (including single family homes) along the lakeshore to comply with the standards set in the updated Model Erosion and Sediment Control Law, and any incorporated green infrastructure requirements. All watershed municipalities should consider updating their existing erosion and sediment control regulations when the Model Erosion & Sediment Control Law is updated.

The maximum lot coverage in residential districts in each Town varies between 10%-50% (Table A-2). Impervious surface cover, especially in lots adjacent to the Lake and its adjacent streams, negatively impacts water quality. To mitigate negative impacts, municipalities could consider reducing

maximum lot coverage by 5-10% in all residential districts. Furthermore, Towns should review area variance practices and consider reducing the number of area variances granted. While the number of area variances per municipality may seem inconsequential, the cumulative increase in impervious surface across the watershed can negatively impact water quality.

Table A-2. Zoning Regulations for Residential Districts

Municipality	Zoning District	Minimum Lot Size	Maximum Lot Coverage	Shoreline Setback
Town of Conesus	Lakeshore ¹	5,000 square feet	35%	10 feet
	Upland Lake	2 acres	35%	N/A
Town of Geneseo	Lakeshore Residential ¹	10,000–30,000 square feet for single-family; 1 acre for Specially Permitted Uses	35%–40%	15 feet
	Lakefront Neighborhood Commercial ¹	30,000	35%–60%	40 feet
	Rural Residential	1-3 acres; 15 acres for golf courses, camps, and farm wineries	25%-25%	N/A
	Low Density Residential	30,000 square feet – 3 acres; 15 acres for farm wineries	10%-35%	N/A
	Highway Residential	1-5 acres; 15 acres for farm wineries	30%-35%	N/A
Town of Groveland	Lake Shore Residential ¹	6,000 square feet	35%	5 feet
	Lake Residential	20,000 square feet	35%	N/A
	Agricultural/Residential	10,000 square feet	35%-50%	N/A
Town of Livonia	Neighborhood Residential ¹	15,000–20,000 square feet, depending on water and sewer availability	25%	30 feet
	Waterfront Development	Determined by Planning Board	40% ²	-
Village of Livonia	Neighborhood Residential	15,000–20,000 square feet, depending on water and sewer availability	25%	30 feet

Municipality	Zoning District	Minimum Lot Size	Maximum Lot Coverage	Shoreline Setback
Town of Sparta	Agricultural/Residential	60,000 square feet	-	N/A

Note:

1. Lakeshore District: Land directly adjacent to the lake
2. Also has a 30% open space requirement

Zoning regulations contained above are current as of 2025. Refer to Town/Village zoning regulations for greater specificity and further details.

2.1.2 Erosion and Sediment Control Law

Three of the municipalities in the Conesus Lake watershed have adopted the Model Erosion and Sediment Control Law created by the LCPD. The law requires an erosion control permit for activity disturbing over 500 square feet of soil and an erosion control plan for activity disturbing over 10,000 square feet of soil. Obtaining an erosion control permit may require a pre-construction meeting with the Code Enforcement Officer and the Conesus Lake Watershed Inspector. Receiving approval for an erosion control plan requires review by the municipality’s planning board so long as the plan meets the performance standards as outlined by the law. The Model Law and corresponding municipal laws could be amended to include stricter requirements for inclusion of green infrastructure measures to further reduce stormwater runoff and improve water quality. Specific recommendations are included in the Green Infrastructure Analysis section below and in Attachment 1.

2.1.3 Dock and Moorings Law

The four lakeshore Towns have dock and moorings laws to regulate the use of the shoreline. The Towns of Conesus, Geneseo, and Livonia have similar restrictions in that the regulations allow for one boat for a single lakeshore parcel that is less than 15 lineal feet, 2 boats for a single lakeshore parcel that is 15 to less than 20 lineal feet, and one additional boat for each additional 20 lineal feet of shoreline. One dock is allowed for lineal feet of lakeshore up to 50 feet and one additional dock is allowed for each additional 50 feet of lakeshore. The Town of Groveland Dock and Moorings Law is less restrictive in that it allows for one dock or boat house for each 50 feet of shoreline and two docks or boat houses for each 75 feet of shoreline. Further, it allows for up to four boatslips per dock. The Town of Groveland could consider revising the Dock and Moorings Law to match the Towns of Conesus, Groveland, and Livonia to limit erosion caused by development and wave action and better support shoreline resiliency.

2.2 Green Infrastructure Gap Analysis & Recommendations

Each municipality’s zoning regulation was reviewed for green infrastructure or low-impact development provisions. The Model Erosion and Sediment Control Law developed by Livingston County has been adopted by three municipalities in the watershed. This law was also reviewed for

green infrastructure and low-impact development provisions, as well as consistency with each municipality's zoning regulations. Through the review process, it was determined that, generally, municipalities in the watershed do not require green infrastructure or low-impact development measures. For example, landscaping regulations are included in the Towns of Geneseo, Conesus, and Livonia zoning regulations, as well as the Village of Livonia's zoning regulations. These regulations require landscaped buffers, islands, and streetscapes. However, there are limited references to specific measures that treat and reduce stormwater runoff. The Town of Geneseo references stormwater facilities and detention ponds as acceptable substitutes for landscaping but only includes engineered systems as examples.

Each municipality's zoning regulations have some variability in the definitions for lot coverage and impervious surface. These are two key definitions that control how much stormwater infiltrates the ground. Furthermore, none of the zoning regulations include a reference to or definition of green infrastructure. The County Model Erosion and Sediment Control Law lacks a definition for impervious surface, which should be included to align with the zoning regulations. Consistency in the definitions within each municipality's land use regulations and across zoning regulations could facilitate more regular development and consideration for green infrastructure practices, or at the least, less development of impervious surfaces.

The primary purpose of implementing green infrastructure measures is to reduce and treat stormwater runoff through natural measures. The New York State Department of Environmental Conservation (NYSDEC) continuously updates best management practices and educational materials for implementing green infrastructure measures in the Stormwater Management Design Manual ¹. Rather than using local resources to update or create new manuals on stormwater management, municipalities can reference the NYSDEC Stormwater Management Design Manual in each Zoning law/ordinance and the Model Erosion and Sediment Control Law to foster consistency and efficiency throughout the watershed.

Parking lots create a significant amount of impervious surface cover and are typically exposed to pollutants that communities want to prevent from entering nearby waterways. There is an opportunity to amend the parking requirements in each municipality's zoning regulation to require low-impact development and green infrastructure, so long as the measures are feasible based on engineering and site conditions. Examples may include impervious surface reduction, vegetated swales, rain gardens, bioretention facilities, permeable pavers, porous pavements, infiltration facilities, or dry swales. The NYSDEC Stormwater Management Design Manual provides guidance for implementing the most appropriate measure based on site conditions, such as depth to the water table, the available area needed for implementation, and the preferred maximum slope of the area.

To further support implementing green infrastructure and low-impact development best management practices, the County Model Erosion and Sediment Control Law, which has been

adopted by three of the municipalities in the watershed, could be amended to require stricter stormwater management provisions. The law requires an erosion control permit for activity disturbing over 500 square feet of soil and an erosion control plan for activity disturbing over 10,000 square feet of soil. Obtaining an erosion control permit requires a meeting with the Code Enforcement Officer and the Conesus Lake Watershed Inspector. Receiving approval for an erosion control plan requires review by the municipality's planning board so long as the plan meets the performance standards as outlined by the law.

The County Model Erosion and Sediment Control Law could be amended to include provisions for green infrastructure. For example, §79-11 Performance Standards could include requirements for incorporating low-impact development and green infrastructure measures as outlined in the NYSDEC Stormwater Management Design Manual. Referencing the NYSDEC Stormwater Management Design Manual as an appendix in the County Model Erosion and Sediment Control Law will help direct residents and developers to the document, which provides up-to-date educational material and guidance. Other recommended amendments to this law are included in Attachment 1.

2.3 Green Infrastructure Emerging Tools & Technologies

Climate change adaptation and contemporary green infrastructure development involve technological, financial, political, and social support to plan and implement various approaches to landscape protection, flow volume control, and water quality treatment. In addition to incorporating green infrastructure requirements into municipal codes, municipalities must identify the most suitable green infrastructure and stormwater abatement technologies for their needs and determine how to finance them.ⁱⁱ

The NYSDEC Stormwater Management Design Manual is regularly updated with site- and neighborhood-specific best management practices to reflect the latest innovations. Advancements in mapping and analysis technologies that have progressed in the last few years will help municipalities and individuals accurately and efficiently plan for incorporating green infrastructure. The EPA and NOAA have developed technologies, toolkits, and models to assist communities in incorporating green infrastructure practices and water managementⁱⁱⁱ. The EPA provides downloadable software models that can be used to calculate stormwater flow, analyze soil conditions, and estimate green infrastructure costs in different climate scenarios. The Green Infrastructure Flexible Model is a computer program that can evaluate the performance of green infrastructure practices based on conceptual models. NOAA's Mid-Atlantic Regional Integrated Sciences and Assessments team has published two open-source tools, the Stormwater Management Model (SWMM) and Rhodium (a Python library), to search for and identify green infrastructure vulnerabilities efficiently. These tools help stormwater professionals, community planners, and local decision-makers understand and weigh their green infrastructure options.

Solutions to a lack of municipal resources most commonly include general funds, green bonds, and stormwater fees; these efforts are often tied to community goals, plans, and programs. Minneapolis, MN adopted a stormwater fee structure that bills property owners based on the amount of impervious surface to combat degraded water quality in its communities.^{iv} Municipalities can also offer credits, rebates, or discounts for BMPs to incentivize residents and developers to finance green infrastructure. People in communities that provide green infrastructure incentives are more likely to support the maintenance and development of green infrastructure, which results in widespread infrastructure equipped to handle stormwater flows.

2.4 County- and Town-Specific Recommendations

2.4.1 Livingston County

Documents Reviewed:

- Model Erosion and Sediment Control Law (2002)

Recommendations for Future Action:

Model Erosion and Sediment Control Law

- Incorporate amendments to the Model Law as indicated in Attachment 1 and encourage all municipalities to adopt the updated Model Law.

2.4.2 Town of Conesus

Documents Reviewed:

- Comprehensive Plan (2005)
- Zoning Law (2015)
- Subdivision Regulations (1974)
- Flood Damage Prevention Law (2001)
- Dock and Moorings Law (2021)
- Erosion and Sediment Control Law (2002)

Recommendations for Future Action:

Zoning Law (2015)

- Amend Article I, §155-3, Definitions with the following:
 - Revise Lot Coverage Definition - The percentage of the lot area covered by IMPERVIOUS SURFACE.
 - Note: When a word is written in all capital letters, it links to another definition in the code. In this case, IMPERVIOUS SURFACE links to the definition – The horizontal area of ground covered by a surface through which water cannot infiltrate, such as buildings, decks, patios, concrete, or asphalt driveways.

- Add Green Infrastructure Definition – Stormwater management features that use plants, soil, or other natural materials to remove pollutants and allow stormwater to absorb back into the ground.
- Amend §155-23, G, Factors for Consideration to include incorporation of low-impact development and green infrastructure measures
- Amend §155-36, Off Street Parking to require low-impact development and green infrastructure measures as identified in the NYSDEC Stormwater Management Design Manual^v
- Adopt a watershed overlay district and require all development to comply with the Erosion and Sediment Control Law
- Reduce maximum lot coverage by 5-10% for zoning districts in the watershed.

Comprehensive Plan (2005)

- Update the Comprehensive Plan to include goals and strategies that guide land use decisions and enhance the protection of water resources

Model Erosion and Sediment Control Law

- Adopt the updated Model Law as amended by Livingston County

2.4.3 Town of Geneseo

Documents Reviewed:

- Comprehensive Plan (2009)
- Zoning Law (2016)
- Subdivision Regulations (1977)
- Flood Damage Prevention Law (2001)
- Dock and Moorings Law (2021)
- Erosion and Sediment Control Law (2006)
- Agricultural and Farmland Protection Plan (2016)

Recommendations for Future Action:

Zoning Law (2016)

- Amend Part 6 Terminology, §106-60.2, Definitions with the following
 - Revise Lot Coverage Definition - The percentage of the lot area covered by IMPERVIOUS SURFACE
 - Note: When a word is written in all capital letters, it links to another definition in the code. In this case, IMPERVIOUS SURFACE links to the definition – The horizontal area of ground covered by a surface through which water cannot infiltrate, such as buildings, decks, patios, concrete, or asphalt driveways.
 - Add Green Infrastructure Definition - Stormwater management features that use plants, soil, or other natural materials to remove pollutants and allow stormwater to absorb back into the ground.

- Amend Article 41, Off-Street Parking and Loading Regulations to require low-impact development and green infrastructure measures as identified in the NYSDEC Stormwater Management Design Manual √
- Amend Article 42, Landscaping, Screening, and Buffer Regulations, F, Stormwater Facilities to reference the NYS Stormwater Management Design Manual. Indicate that low-impact development or green infrastructure measures shall be considered as contributing landscaping elements to meet the requirements.
- Adopt a watershed overlay district and require all development to comply with the Erosion and Sediment Control Law
- Reduce maximum lot coverage by 5 to 10% for zoning districts in the watershed.

Comprehensive Plan (2009)

- Update the Comprehensive Plan to include goals and strategies that guide land use decisions and enhance the protection of water resources

Model Erosion and Sediment Control Law

- Adopt the updated Model Law as amended by Livingston County

2.4.4 Town of Groveland

Documents Reviewed:

- Zoning Ordinance (2009)
- Subdivision Regulations (1988)
- Flood Damage Prevention Law (2000)
- Dock and Moorings Law (2018)
- Erosion and Sediment Control Law (2007)
- Agricultural and Farmland Protection Plan (2010)

Recommendations for Future Action:

Zoning Ordinance (2009)

- Amend Article I, Section 2, Definitions with the following:
 - Add Lot Coverage Definition - The percentage of the lot area covered by IMPERVIOUS SURFACE
 - Note: When a word is written in all capital letters, it links to another definition in the code. In this case, IMPERVIOUS SURFACE links to the definition – The horizontal area of ground covered by a surface through which water cannot infiltrate, such as buildings, decks, patios, concrete, or asphalt driveways.
 - Add Impervious Surface Definition - The horizontal area of ground covered by a surface through which water cannot infiltrate, such as buildings, asphalt driveways or parking areas.

- Add Green Infrastructure Definition - Stormwater management features that use plants, soil, or other natural materials to remove pollutants and allow stormwater to absorb back into the ground.
- Amend the off-street parking sub-section within each district's regulations to require low-impact development and green infrastructure measures as identified in the NYSDEC Stormwater Management Design Manual^v
- Adopt a watershed overlay district and require all development to comply with the Erosion and Sediment Control Law
- Reduce maximum lot coverage by 5-10% for zoning districts in the watershed.

Comprehensive Plan

- Create a Comprehensive Plan to include goals and strategies that guide land use decisions and enhance the protection of water resource

Model Erosion and Sediment Control Law

- Adopt the updated Model Law as amended by Livingston County

Dock and Moorings Law (2018)

- Consider revising the Dock and Moorings Law to match the Towns of Conesus, Groveland, and Livonia regulations that limit the number of boats as follows: one boat for a single lakeshore parcel that is less than 15 lineal feet, 2 boats for a single lakeshore parcel that is 15 to less than 20 lineal feet, and one additional boat for each additional 20 lineal feet of shoreline.

2.4.5 Town of Livonia

Documents Reviewed:

- Comprehensive Plan (2005)
- Zoning Law (2010)
- Subdivision Regulations (2020)
- Flood Damage Prevention Law (2001)
- Dock and Moorings Law (2007)

Recommendations for Future Action:

Zoning Law (2010)

- Amend Article I, §150-5, Definitions with the following:
 - Revise Lot Coverage Definition - The percentage of the lot area covered by IMPERVIOUS SURFACE
 - Note: When a word is written in all capital letters, it links to another definition in the code. In this case, IMPERVIOUS SURFACE links to the definition – The horizontal area of ground covered by a surface through which water cannot infiltrate, such as buildings, decks, patios, concrete, or asphalt driveways.

- Add Green Infrastructure Definition - Stormwater management features that use plants, soil, or other natural materials to remove pollutants and allow stormwater to absorb back into the ground.
- Amend Article X Off-street Parking, §150-88, Design Standards to require low-impact development and green infrastructure measures as identified in the NYSDEC Stormwater Management Design Manual √
- Reduce maximum lot coverage by 5-10% for zoning districts in the watershed.

Comprehensive Plan (2005)

- Update the Comprehensive Plan to include goals and strategies that guide land use decisions and enhance the protection of water resources

Model Erosion and Sediment Control Law

- Adopt the updated Model Law as amended by Livingston County

2.4.6 Village of Livonia

Documents Reviewed:

- Comprehensive Plan (2005)
- Zoning Law (2010)
- Subdivision Regulations (1998)
- Flood Damage Prevention Law (1995)

Recommendations for Future Action:

Zoning Law (2010)

- Amend Article I, §155-5, Definitions with the following:
 - Revise Lot Coverage Definition - The percentage of the lot area covered by IMPERVIOUS SURFACE
 - Note: When a word is written in all capital letters, it links to another definition in the code. In this case, IMPERVIOUS SURFACE links to the definition – The horizontal area of ground covered by a surface through which water cannot infiltrate, such as buildings, decks, patios, concrete, or asphalt driveways.
 - Add Green Infrastructure Definition - Stormwater management features that use plants, soil, or other natural materials to remove pollutants and allow stormwater to absorb back into the ground.
- Amend Article X Off-street Parking, §150-88, Design Standards to require low-impact development and green infrastructure measures as identified in the NYSDEC Stormwater Management Design Manual √
- Adopt a watershed overlay district and require all development to comply with the Erosion and Sediment Control Law
- Reduce maximum lot coverage by 5-10% for zoning districts in the watershed.

Comprehensive Plan (2005)

- Update the Comprehensive Plan to include goals and strategies that guide land use decisions and enhance the protection of water resources

Model Erosion and Sediment Control Law

- Adopt the updated Model Law as amended by Livingston County

2.4.7 Town of Springwater

Documents Reviewed:

- Comprehensive Plan (2017)

Recommendations for Future Action:

Zoning Law

- Consider the adoption of a Zoning Law that includes provisions for low-impact development and green infrastructure in parking requirements

Model Erosion and Sediment Control Law

- Consider adopting the updated Model Law as amended by Livingston County

2.4.8 Town of Sparta

Documents Reviewed:

- Comprehensive Plan (2010)
- Zoning Law (2020)
- Erosion and Sediment Control Law (2020)
- Agricultural and Farmland Protection Law (2018)

Recommendations for Future Action:

Zoning Law (2020)

- Amend Section 1001, Definitions with the following:
 - Add Lot Coverage Definition - The percentage of the lot area covered by IMPERVIOUS SURFACE
 - Note: When a word is written in all capital letters, it links to another definition in the code. In this case, IMPERVIOUS SURFACE links to the definition – The horizontal area of ground covered by a surface through which water cannot infiltrate, such as buildings, decks, patios, concrete, or asphalt driveways.
 - Add Impervious Surface Definition - The horizontal area of ground covered by a surface through which water cannot infiltrate, such as buildings, asphalt driveways or parking areas.

- Add Green Infrastructure Definition - Stormwater management features that use plants, soil, or other natural materials to remove pollutants and allow stormwater to absorb back into the ground.
- Amend Section 702, Parking to require low-impact development and green infrastructure measures as identified in the NYSDEC Stormwater Management Design Manual ^v
- Adopt a watershed overlay district and require all development to comply with the Erosion and Sediment Control Law
- Reduce maximum lot coverage by 5-10% for zoning districts in the watershed.

Comprehensive Plan (2010)

- Update the Comprehensive Plan to include goals and strategies that guide land use decisions and enhance the protection of water resources

Model Erosion and Sediment Control Law

- Adopt the updated Model Law as amended by Livingston County

ⁱ New York State Department of State, Stormwater Management Design Manual, 2023. Available at: [https://extapps.dec.ny.gov/fs/projects/24-25DraftCGPDesignManual/Manual.SW.CGP.2024-07-31.Design Manual Issued 2024-07-31.pdf](https://extapps.dec.ny.gov/fs/projects/24-25DraftCGPDesignManual/Manual.SW.CGP.2024-07-31.Design%20Manual%20Issued%202024-07-31.pdf)

ⁱⁱ Joshua J. Cousins & Dustin T. Hill. (2021). Green infrastructure, stormwater, and the financialization of municipal environmental governance, *Journal of Environmental Policy & Planning*, DOI: 10.1080/1523908X.2021.1893164

ⁱⁱⁱ EPA Green Infrastructure Modeling Toolkit, Available at: <https://www.epa.gov/water-research/green-infrastructure-modeling-toolkit> and NOAA Stormwater Management Model and Rhodium, Available at: <https://cpo.noaa.gov/MARISA-PIs-Jordan-Fischbach-Debra-Knopman-and-Klaus-Keller-co-authored-a-publication-for-their-new-green-infrastructure-planning-open-source-tool/>

^{iv} Regional Plan Association (RPA). (2012). 9 Ways to Make Green Infrastructure Work for Towns and Cities. <https://s3.us-east-1.amazonaws.com/rpa-org/pdfs/RPA-9-Ways-to-Make-Green-Infrastructure-Work.pdf>

^v Example language for consideration in revising parking requirements: Designs for all new parking lots of more than 10 spaces shall follow a low-impact development (LID) approach with respect to stormwater management. Through the application of green infrastructure techniques, parking lot designs shall incorporate stormwater management systems that treat and reduce the water quality and runoff reduction volumes to the maximum extent practicable. The required water quality and minimum runoff reduction volumes shall be calculated in accordance with the methodology provided in the latest version of the New York State Department of Environmental Conservation (NYSDEC) Stormwater Management Design Manual which shall serve as the basis of design for all stormwater calculations and proposed best management practices (BMP) designs.

Any LID technique identified in the NYSDEC Stormwater Management Design Manual may be utilized in the stormwater management designs. Acceptable LID techniques may include impervious surface reduction, vegetated swales, rain gardens, bioretention facilities, permeable pavers, porous pavements, infiltration facilities or dry swales. Cisterns and gray water systems that recycle and reuse stormwater runoff may also be utilized in the design. Creative solutions that provide equivalent treatment and/or runoff reduction may be utilized if acceptable to the Planning Board.

Source: *City of Watertown, NY, Zoning Ordinance, Chapter 310 Zoning, 2023.*

Attachment 1

Chapter 79

EROSION AND SEDIMENT CONTROL

§ 79-1.	Title.	§ 79-9.	Contents of erosion control plan.
§ 79-2.	Findings of fact.	§ 79-10.	Erosion control plan review process.
§ 79-3.	Purpose.	§ 79-11.	Performance standards.
§ 79-4.	Statutory authority.	§ 79-12.	Performance bond.
§ 79-5.	Jurisdiction.	§ 79-13.	Enforcement.
§ 79-6.	Word usage; definitions.	§ 79-14.	Appeals.
§ 79-7.	Applicability; erosion control permits; exemptions from permit requirements.	§ 79-15.	Variances.
§ 79-8.	Procedures for erosion control permits and certificates of compliance.		

[HISTORY: Adopted by the Town Board of the Town of Conesus 11-19-2002 by L.L. No. 4-2002. Amendments noted where applicable.]

GENERAL REFERENCES

Building construction and fire prevention — See Ch. 59.

Subdivision of land — See Ch. 134.

Flood damage prevention — See Ch. 87.

Zoning — See Ch. 155.

§ 79-1. Title.

This chapter shall be known as the “Erosion and Sediment Control Law of the Town of Conesus, County of Livingston, State of New York.”

§ 79-2. Findings of fact.

The Town Board of Conesus finds that uncontrolled drainage and runoff associated with land development has a significant impact upon the health, safety and welfare of the community by potentially causing substantial recreational, aesthetic, environmental and economic losses resulting from adverse impacts on community waters, specifically:

- A. Construction requiring land clearing and the alteration of natural topography tends to increase erosion.
- B. Stormwater runoff can carry pollutants into receiving water bodies, degrading water quality.
- C. The increase in nutrients in stormwater runoff, such as phosphorus and nitrogen, accelerates eutrophication of receiving waters.
- D. Improper design and construction of erosion control devices can increase the velocity of runoff

thereby increasing stream bank erosion and sedimentation.

- E. Siltation of water bodies resulting from increased erosion decreases their capacity to hold and transport water, interferes with navigation, and harms flora and fauna.
- F. Development as defined in this chapter, and activities associated with development, as well as land grading and earthmoving can have a significant and potentially adverse impact on the environment.

§ 79-3. Purpose.

The purpose of this local regulation is to safeguard persons, protect property, prevent damage to the environment, including Conesus and Hemlock Lakes, as well as all bodies of water or watercourses in the Town of Conesus, and promote the public welfare by guiding and regulating the design, construction, and maintenance of any development or other activity which disturbs or breaks the topsoil or results in the movement of earth or land in the Conesus Lake and Hemlock Lake watersheds.

§ 79-4. Statutory authority.

In accordance with § 10 of the Municipal Home Rule Law/Article 9 of the Town Law of the State of New York, the Town Board has the authority to enact local laws for the purpose of promoting the health, safety or general welfare of the Town.

§ 79-5. Jurisdiction.

All site preparation and construction activities as defined hereinafter occurring in the Conesus Lake and Hemlock Lake watersheds shall be in conformance with the provisions set forth herein.

§ 79-6. Word usage; definitions.

- A. Unless specifically defined below, words or phrases shall be interpreted so as to give them the meanings they have in common usage and to give this chapter its most effective application. Words used in the singular shall include the plural and the plural the singular; words used in the present tense shall include the future tense. The word “shall” connotes mandatory and not discretionary; the word “may” is permissive.

- B. As used in this chapter, the following terms shall have the meanings indicated:

AGRICULTURAL OPERATIONS (as defined in Article 25-AA of the NYS Agriculture and Markets Law) — Land and on-farm buildings, equipment and practices which contribute to the production, preparation and marketing of crops, livestock and livestock products as a commercial enterprise.

CERTIFICATE OF COMPLIANCE — A written certificate that is issued to the applicant by the Code Enforcement Officer after all final grading and seeding are completed and all permanent erosion control measures are established as specified in the erosion control permit and to the satisfaction of the Code Enforcement Officer.

CERTIFIED PROFESSIONAL — A licensed architect, a licensed engineer, a licensed landscape architect, or an International Erosion Control Association (IECA) certified professional in erosion and sediment control.

DEVELOP — To make a site or area available for use by physical alteration.

DEVELOPMENT — Any physical alteration of a site or area, including, but not limited to, providing

access to a site, clearing of vegetation, grading, earthmoving, providing utilities and other services such as parking facilities, stormwater management and erosion control systems, and sewage disposal systems, altering landforms, or construction of a structure on the land.

EROSION — The removal of soil particles by the action of the water, wind, ice or other geological agents.

EROSION CONTROL PERMIT — A permit that is issued by the Code Enforcement Officer before any development and/or land clearing activities can occur on a site.

EROSION CONTROL PLAN — A document prepared by a certified professional that identifies predevelopment and postdevelopment conditions on a site and outlines the erosion control measures that will be used on a site. This document is required for projects exposing more than 10,000 square feet of soil.

FLOODPLAIN — For a given flood event, that area of land temporarily covered by water which adjoins a watercourse.

GABION — A galvanized wire basket filled with stone used for structural purposes. When they are fastened together, they are used as retaining walls, slope protection and similar structures.

GARDEN — A plot of ground where herbs, fruits, flowers, or vegetables are cultivated, excluding agricultural operations as defined herein.

GRADING — Excavation or fill of material, including the resulting conditions thereof.

NATURAL DRAINAGE CHANNEL — A swale, watercourse in a gully, or an unprotected stream.

PERFORMANCE STANDARDS — The set of standards outlining the erosion control requirements for construction and soil-disturbing activities.

PERIMETER CONTROL — A barrier that prevents sediment from leaving a site, either by filtering sediment-laden runoff, or diverting it to a sediment trap or basin.

PHASING — Clearing a parcel of land in distinct phases, with the stabilization of each phase occurring before the clearing of the next.

RIPRAP — A combination of large stones, cobbles and boulders used to line channels, stabilize stream banks, and reduce runoff velocities.

STABILIZATION — The use of practices that prevent exposed soil from eroding.

START OF CONSTRUCTION — The first land-disturbing activity associated with a development, including land preparation such as clearing, grading and filling; installation of streets, driveways, parking areas and walkways; excavation for basements, footings, piers or foundations; erection of temporary forms; and installation of accessory buildings such as garages.

STEEP SLOPE — Grade change of 15% or more.

STOP-WORK ORDER — A written order issued by the Code Enforcement Officer to cease and desist all activity and development on a site until such time as the violation is corrected.

STREAM CORRIDOR — The landscape features on both sides of a stream, including soils, slope and vegetation, whose alteration can directly impact the stream's physical characteristics and biological properties.

SWALE — A natural or man-made depression or wide shallow ditch used to temporarily route or filter runoff.

UTILITIES — Public and private services, including, but not limited to, public water and sewer

ADD: Green Infrastructure - Stormwater management features that use plants, soil, or other natural materials to remove pollutants and allow stormwater to absorb back into the ground. Make sure definition is consistent with definition in the zoning ordinance.

ADD: Impervious Surface - The horizontal area of ground covered by a surface through which water cannot infiltrate, such as buildings, asphalt driveways or parking areas. Make sure definition is consistent with definition in the zoning ordinance.

connection, private wells and septic systems, and telephone, natural gas, electric, and cable television services.

WATERSHED — A region or area bounded by a greater elevation and draining ultimately to a particular body of water.

§ 79-7. Applicability; erosion control permits; exemptions from permit requirements.

A. This chapter shall apply to all development, as defined herein, which involves the uncovering, exposure or disturbance of 500 or more square feet of soil. Excepted herefrom are agricultural operations whether or not within an agricultural district, as defined in Article 25-AA of the New York State Agricultural and Markets Law, and private gardens.

B. No person, corporation, entity, organization, or public agency shall initiate any development activities, land clearing, land grading, or earthmoving activities (hereinafter also collectively referred to as “land-disturbance activity”) unless in conformity with the regulations of this chapter.

C. No person, agency, corporation or other entity shall commence any development or land-disturbing activities without obtaining an erosion control permit issued by the Town Code Enforcement Officer.

D. No person shall be granted an erosion control permit for a land-disturbing activity that would require the disturbance or uncovering of 10,000 or more square feet without the approval of an erosion control plan by the Town Planning Board.

F Exemptions. The following activities are exempt from the erosion control plan requirements but must comply with the performance standards listed in § 79-11 and have the applicable erosion control measures approved by the Code Enforcement Officer:

- (1) Development or land-disturbing activities involving at least 500 square feet of soil, but less than 10,000 square feet of soil;
- (2) Development of one single-family residential structure or one duplex unit and accessory structures and utilities thereto; *Exempt single family homes if they disturb less than XX% of impervious surface [discuss this threshold]*
- (3) The installation of a lawn for one single-family residential structure;
- (4) The installation of a driveway for one single-family residential structure; and
- (5) The installation of septic systems for single-family or double-family dwellings.

Suggested change for clarity: 1) Development or land-disturbing activities involving between 500 square feet and 10,000 square feet of soil

§ 79-8. Procedures for erosion control permits and certificates of compliance.

A. Erosion control permit.

(1) An applicant shall submit an erosion control permit application to the Code Enforcement Officer, who shall inform the applicant within seven days if the application is incomplete.

(2) The Code Enforcement Officer shall refer all complete erosion control permit applications for lands within the Conesus Lake Watershed District to the Conesus Lake Watershed Inspector within seven days of receipt for review and comment.

(a) The Watershed Inspector shall have 14 days to comment on the application and return those comments to the Code Enforcement Officer; and

- (b) The Code Enforcement Officer shall consider comments from the Watershed Inspector if the comments are received within this period of time.
- (3) If an erosion control plan is not required, the Code Enforcement Officer shall review the application to determine whether the proposed erosion control measures comply with the performance standards outlined in § 79-11 of this chapter and approve or deny the erosion control permit based on that review. A preconstruction meeting with the Code Enforcement Officer, the Conesus Lake Watershed Inspector, and the applicant may be required prior to the issuance of an erosion control permit.
The Code Enforcement Officer may suggest green infrastructure practices prior to issuing an erosion control permit
- (4) If an erosion control plan is not required, an erosion control permit must be approved or denied within 60 days of receipt of a complete erosion control application by the Code Enforcement Officer.
- (5) Issuance of an erosion control permit does not authorize development of the site unless and until all other applicable permits or approvals, including a building permit, are issued pursuant to federal, state and local law.
- (6) Inspections. The applicant shall arrange with the Code Enforcement Officer for scheduling inspections of the site. The Code Enforcement Officer shall inspect the work and either approve it or notify the applicant in writing of any failure to comply with the requirements of the approved erosion control plan and/or erosion control permit. The Code Enforcement Officer and the Watershed Inspector may conduct inspections at reasonable times to ensure effective control of erosion and sedimentation during all phases of construction. The Code Enforcement Officer may have the Town Engineer assist on-site inspections. If the Town Engineer is consulted for an inspection, the applicant shall be responsible for the cost of such consultation, pursuant to Town law.

B. Certificate of compliance.

- (1) A certificate of compliance shall be issued by the Code Enforcement Officer after all final grading and seeding are completed and all permanent erosion control measures are established as specified in the erosion control permit and to the satisfaction of the Code Enforcement Officer.
- (2) A permanent certificate of occupancy shall not be issued until a certificate of compliance is issued for the satisfactory installation and/or completion of erosion control measures.

§ 79-9. Contents of erosion control plan.

- A. Erosion control plans shall be prepared by a certified professional. Plans must contain the information set forth in this section to enable the Town Planning Board to determine whether the plan will prevent the development from adversely affecting the water quality of the surface water due to erosion. In making this determination, plans shall be evaluated pursuant to the performance standards in § 79-11 hereof, and must therefore contain sufficient information to permit such evaluation.
- B. The erosion control plan shall contain the name, address, and telephone number of the owner, contractor, and developer. In addition, the legal description of the property shall be provided, and its location with reference to such landmarks as major water bodies, adjoining roads, railroads, subdivisions, or towns shall be clearly identified on a map.
- C. The structure and content of the erosion control plan shall be as follows:

- (1) Background information.
 - (a) Project description, which shall include, but not be limited to, a sequence of construction of the development site, including stripping and clearing, rough grading, construction of utilities, infrastructure, and buildings, and final grading and landscaping. Sequencing shall identify the expected date on which clearing will begin, the estimated duration of exposure of cleared areas, and the sequence of clearing, installation of temporary erosion and sediment measures, and establishment of permanent vegetation.
 - (b) Existing (predevelopment) conditions, including, but not be limited to, an identification of soils, slopes, and existing vegetative cover and drainage conditions.
 - (c) Proposed future (development) conditions, including, but not be limited to, an identification of drainage conditions and changes in vegetative cover anticipated to result from proposed activity.
- (2) Erosion and sediment control.
 - (a) Identification of temporary erosion and sediment control measures, including, but not to be limited to, seeding mixtures and rates, types of sod, method of seedbed preparation, expected seeding dates, and type and quantity of mulching for both temporary and permanent vegetative control measures.
 - (b) Identification of permanent erosion and sediment control measures.
- (3) Implementation schedule and maintenance, including, but not limited to, easements and estimates of the cost of maintenance.

§ 79-10. Erosion control plan review process.

- A. The applicant shall submit a complete erosion control plan to the Code Enforcement Officer.
- B. The Code Enforcement Officer shall inform the applicant in writing within 14 days if the erosion control plan is incomplete. The erosion control plan shall automatically be deemed complete if the Code Enforcement Officer does not inform the applicant within 14 days.
- C. When the erosion control plan is determined to be complete, the Code Enforcement Officer shall then schedule it for review at the next available Town Planning Board meeting, to be held not later than 31 days after the erosion control plan is determined to be complete.
- D. All erosion control plans for development in the Conesus Lake watershed must be referred to the Conesus Lake Watershed Inspector for review and comment within five days of Code Enforcement Officer receipt of the plan. Comments received from the Conesus Lake Watershed Inspector prior to the Town Planning Board meeting will be considered by the Code Enforcement Officer and the Town Planning Board.
- E. The applicant shall receive written notice of the time and place of the Town Planning Board meeting where the erosion control plan will be reviewed no less than five days prior to the Town Planning Board meeting.
- F. An erosion control plan shall also be reviewed by the Town Engineer or any other certified professional retained by the Town. The Engineer or certified professional may then recommend approval or disapproval of the plan to the Town Planning Board prior to the scheduled Planning

Board meeting where the plan will be discussed. A recommendation for approval or disapproval of the plan must be based on conformance to the performance standards listed in § 79-11.

- G. The Town Planning Board shall have the authority to impose reasonable conditions to ensure that the objectives of this chapter are met.
- H. The Town Planning Board shall approve or disapprove the erosion control plan. Approval or disapproval of the plan must be based on conformance to the performance standards listed in § 79-11, so as to protect the water quality of Conesus Lake, and should clearly identify why it does not, in the instance of a disapproval, conform to the performance standards.
- I. The Town Planning Board shall report the decision to the Code Enforcement Officer and the applicant within 10 days of approval or disapproval of the plan.
- J. If the erosion control plan is approved, the Code Enforcement Officer shall issue the applicant an erosion control permit within 10 days of receipt of the Town Planning Board decision.

§ 79-11. Performance standards.

The following performance standards must be applied to all land-disturbing activities described in this chapter, including those exempted under § 79-5 hereof, as well as those for which a permit is required hereunder:

- A. Existing vegetation on a project site shall be retained and protected as much as possible to minimize soil loss from the project site.
- B. Sediment control practices/measures shall be designed to protect the natural character of water bodies on site as well as off site. The practices must be in place before the start of land-disturbance activities until the establishment of permanent stabilization.
 - (1) The off-site impacts of erosion and sedimentation from the development site shall not be any greater during and following land-disturbance activities than under predevelopment conditions.
 - (2) Water in stream reaches on site and downstream of construction areas shall not have substantial visible contrast relative to color, taste, odor, turbidity and sediment deposition from the water in reaches upstream of the construction area.
 - (3) Sediment-laden runoff shall not be allowed to enter any water body and result in deposition on the bottom of the water body, degrade its natural biological functions, or be deleterious to the classified usage of the water.
- C. All erosion and sediment control measures shall be constructed prior to beginning any land-disturbance activities. All runoff from disturbed areas shall be directed to sediment control devices. These devices shall not be removed until the disturbed land areas are stabilized.
- D. Specific guidance.
 - (1) Exposure restrictions. No more than 10 acres of unprotected soil shall be exposed at any one time. Previous earthwork shall be stabilized in accord with approved design standards and specifications referenced in Subsection D(8) before additional area is exposed.
 - (2) Grading. Perimeter grading shall blend with adjoining properties.
 - (3) Vegetative protection. Where protection of trees and/or other vegetation is required, the location

shall be shown on the erosion control plan or on the drawings for the proposed development project. The method of protecting vegetation during construction shall conform to the design specifications referenced in Subsection D(8).

(4) Drainage control.

- (a) Surface runoff that is relatively clean and sediment free shall be diverted or otherwise prevented from flowing through areas of construction activity on the project site. (This will greatly reduce sediment loading in surface runoff.)
- (b) A fill associated with an approved temporary sediment control structure or permanent stormwater management structure shall not be created which causes water to pond off site on adjacent property, without first having obtained ownership or permanent easement for such use from the owner of the off-site or adjacent property.
- (c) Natural drainage channels shall not be altered. Pursuant to Article 15 of the Environmental Conservation Law, a protected stream and banks thereof shall not be altered or relocated without the approval of the Department of Environmental Conservation.
- (d) Runoff from any land-disturbing activity shall not be discharged or have the potential to be discharged off site or into storm drains or into watercourses unless such discharge is directed through a properly designed, installed and maintained structure, such as a sediment trap, to retain sediment on site. Accumulated sediment shall be removed when it takes up 60% of the storage capacity of the sediment retention structure. [See Subsection D(8) below for design specifications.]
- (e) For finished grading, adequate gradients shall be provided so as to prevent water from standing on the surface of lawns for more than 24 hours after the end of a rainfall, except in a swale flow area which may drain as long as 48 hours after the end of rainfall.
- (f) Permanent swales or other points of concentrated water flow shall be stabilized. Biotechnical approaches using certain types of grasses, such as reed canary grass, are preferable to using sod, gabions and riprap where water quality enhancement is a high priority and the swale design allows. However, sod, gabions, or riprap may be used to stabilize swales where soils and gradient preclude the use of grasses. Use of grasses may require an erosion control matting as provided for in the design specifications referenced in Subsection D(8) below.
- (g) Surface lows over cut and fill slopes shall be controlled as provided for in the design specifications for vegetating waterways referenced in Subsection D(8).

ADD: H. Permanent Low impact development and green infrastructure measures as provided in Appendix X shall be incorporated where possible.

(5) Timing.

- (a) Except as noted below, all sites shall be seeded and mulched with erosion control materials, such as rye grass, straw mulch, jute, or excelsior (wood shavings), within 15 days of initial disturbance. If construction has been suspended, or sections completed, areas shall be seeded immediately and stabilized with erosion control materials. Maintenance shall be performed as necessary to ensure continued stabilization.
- (b) For active construction areas, such as borrow or stockpile areas, roadway improvements, and areas within 50 feet of a building under construction, a perimeter sediment control system consisting, for example, of silt fencing or hay bales, shall be installed and maintained to contain soil.

- (c) On cut sides of roads, ditches shall be stabilized immediately with rock riprap or other nonerodible liners, or where appropriate, vegetative measures such as sod. When seeding is approved, an anchor mulch shall be used and soil shall be limed and fertilized in accord with recommendations referenced in Subsection D(8).
 - (d) Permanent seeding shall optimally be undertaken in the spring from April 1 through June 15, and in late summer from August 1 to October 15. During the peak summer months and in the fall after October 15 when seeding is found to be impracticable, an appropriate mulch shall be applied. Permanent seeding may be undertaken during summer if plans provide for adequate watering of the seedbed.
 - (e) All slopes steeper than 15%, as well as basin or trap embankments, and perimeter dikes shall, upon completion, be stabilized with sod, seed and anchored straw mulch, or other approved stabilization measures. Areas outside of the perimeter sediment control system shall not be disturbed. Maintenance shall be performed as necessary to ensure continued stabilization.
 - (f) Temporary sediment trapping devices shall be removed within 30 calendar days following establishment of permanent stabilization in all contributory drainage areas. Stormwater management structures used temporarily for sediment control shall be made permanent within this time period as well. Accumulated sediments removed from temporary sediment traps or permanent stormwater management facilities shall be disposed in a manner so as not to erode and enter a water body.
- (6) Stream corridor management. The bed and banks of all on-site and off-site streams which may be impacted by land clearing, grading, and construction activities shall be protected to prevent sedimentation, stream bank erosion, stream enlargement, or degradation or loss of fisheries habitat. Measures for protecting the bed and/or banks of a stream may include gabion baskets, riprap, log cribbing, and vegetative measures. Whenever possible, vegetative stream bank stabilization practices are recommended over structural practices such as riprap and gabion linings that may unnecessarily alter the existing stream ecosystem. Native species of vegetation shall be used for stream bank stabilization wherever practical. In undertaking stream bank stabilization activities for protected streams, the applicant shall comply with appropriate protection of water provisions in Article 15 of the Environmental Conservation Law of the State of New York.
- (7) Maintenance.
- (a) All points of construction ingress and egress shall be protected to prevent the deposition of materials onto traversed public thoroughfares either by installing and maintaining a stabilized construction entrance or by maintaining a vehicle wash area in a safe disposal area to wash vehicle shells and undercarriage. All materials deposited onto public thoroughfares shall be removed immediately. Proper precaution shall be taken to assure that the removal of materials deposited onto public thoroughfares will not enter catch basins, storm sewers, or water bodies.
 - (b) Accumulated sediment shall be removed when 60% of the storage capacity of sediment retention structures is reached. All removed sediment shall be disposed of in a spoil area where it can be graded, mulched and seeded to prevent erosion and sedimentation.
- (8) Design specifications. The designs, standards and specifications for controlling erosion and sedimentation found in the most recent version of the following publication are acceptable for

use and shall be identified and shown in the erosion control plan:

- (a) New York Guidelines for Urban Erosion and Sediment Control.
- (b) Urban Soil Erosion and Sediment Control Committee.

§ 79-12. Performance bond.

- A. In order to ensure the full and faithful completion of all construction activities related to compliance with all conditions set forth by the Town Planning Board in its approval of the erosion control plan, the Town Planning Board may require the applicant and/or the applicant's contractor to provide, prior to construction, a performance bond, escrow account certification, or irrevocable letter of credit from an appropriate financial or surety institution which guarantees satisfactory completion of the project and names the Town as the beneficiary. The security shall be in an amount to be determined by the Town Planning Board based on submission of final design plans, with reference to actual construction costs.
- B. Where erosion and sediment control facilities are to be operated and maintained by the applicant or by any person or entity that owns or manages a commercial or industrial facility, the applicant, prior to construction, may be required to provide the Town with a performance bond or an irrevocable letter of credit from an appropriate financial institution or noted surety to ensure proper operation and maintenance of all erosion control facilities for the life of the project.
- C. The performance bond or letter of credit shall remain in force until the surety is released from liability by the Town.
- D. Per annum interest on the performance bond or letter of credit shall be reinvested in the account until the surety is released from liability.
- E. If the developer or owner fails to properly operate and maintain erosion and sediment control facilities, the Town may draw upon the account or notify the surety to cover the costs of proper operation and maintenance.

§ 79-13. Enforcement.

- A. Any development activity that is commenced without first being granted an erosion control permit, or which is conducted contrary to an approved erosion control plan, or contrary to the performance standards listed in § 79-11 hereof, may be issued a notice of violation and restrained by a stop-work order issued by the Code Enforcement Officer.
- B. Service of a notice of violation shall be sufficient if directed to the owner, agent of the owner, or contractor and left at their last known place of business or residence, if within the municipality; and if no place of business or residence can be found, then the notice shall be served by posting in a conspicuous place on the premises which are the subject of the violation.
- C. A stop-work order shall also be issued on the project if any of the following conditions are not met during development of the land:
 - (1) There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;
 - (2) There shall be no suspended, colloidal and settleable solids that will cause deposition or impair waters in the area for their best usages; and

- (3) There shall be no residue from oil and floating substances, visible oil film, globules, or grease. (6 NYCRR, Part 703, Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations)
- D. Civil and criminal penalties. In addition to or as an alternative to any penalty provided herein or by law, any person who violates the provisions of this chapter shall be punished by a fine of not less than \$200 per day nor more than \$500 per day or by imprisonment for a period not to exceed 30 days, or by both such fine and imprisonment. Such person shall be guilty of a separate offense for each day during which the violation occurs or continues.¹
- E. Any violator may be required to restore land to its undisturbed condition. In the event that restoration is not undertaken within a reasonable time after notice, the Town may take necessary corrective action, the cost of which shall become a lien upon the property until paid.

§ 79-14. Appeals.

Any person aggrieved by the action of any official charged with the enforcement of this chapter, as the result of the disapproval or approval of an erosion control permit or an alleged failure by the Code Enforcement Officer to properly enforce the chapter in regard to a specific application, shall have the right to appeal the action to the Town Zoning Board of Appeals. The appeal shall be filed in writing within 20 days of the date of official transmittal of the final decision or determination to the applicant, shall state clearly the grounds on which the appeal is based, and shall be processed in the manner prescribed for hearing administrative appeals under (state/local code provision).

§ 79-15. Variances.

The Town Zoning Board of Appeals may grant a written variance from any requirement of this chapter using the following criteria:

- A. There are special circumstances applicable to the subject property or its intended use; and
- B. The granting of the variance shall not result in:
- (1) An increase or decrease in the rate or volume of surface water runoff;
 - (2) An adverse impact on a wetland, watercourse or water body;
 - (3) Degradation of water quality; or
 - (4) Otherwise impair attainment of the objectives of this chapter.

See green infrastructure considerations as outlined in the NYSDEC Stormwater Management Design Manual (2024). This document is available at: https://extapps.dec.ny.gov/fs/projects/24-25DraftCGPDesignManual/Manual.SW.CGP.2024-07-31.Design_Manual_Issued_2024-07-31.pdf

1. Editor's Note: Amended at time of adoption of Code (see Ch. 1, General Provisions, Art. I).

Attachment 2

Attachment 2
Municipal Assessment Forms

Town of Conesus
Conesus Lake Watershed

	Best Management Practices (BMP)	Existing Means of Implementation (law, regulation, practice, etc)	Degree of Implementation
			(2-fully, 1-partially, 0-not at all, n/a-not applicable)
1-01	Identify retrofit opportunities		0
1-02	Identify habitat and natural conveyance system restoration opportunities		0
1-03	Establish retention/detention areas		0
1-04	Acquire additional land for locating treatment facilities		0
1-05	Encourage homeowners to place compost piles away from waterbodies and roadways		0
1-06	Encourage proper use and disposal of lawn and other household chemicals	Practice: Genesee, Livingston and Wyoming Counties Solid Waste Management Committee; household hazardous waste disposal advertised; services available by appointment	2
1-07	Institute turf management practices on golf courses and parks and recreation areas		0
1-08	Undertake storm drain stenciling		0
1-09	Encourage volunteer programs, such as adopt-a-highways and adopt-a-stream, etc.	Practice: adopt-a-highway administered by state and county highway departments; Conesus Lake Watershed Planning Committee administers volunteer education and outreach, in conjunction with SWCD and CCE	2
1-10	Include high percentage of indigenous plants in new landscaping on privately-owned properties (excluding arboretums, horticultural gardens, and sites requiring turf grasses)	Erosion and Sediment Control Law, Sec. 11(4)(f): ...Native species of vegetation shall be used for stream bank stabilization wherever practical...	1
1-11	Encourage water conservation		0
1-12	Develop outreach programs targeted at specific problems related to water quality management & resource conservation	Practice: FL/LOWPA, the Finger Lakes Institute, county SWCD, Cornell Cooperative Extension and local watershed groups each develop programs	2
1-13	Encourage proper control of pet wastes		0
1-14	Encourage continued operation of private storm water runoff control structures		0
1-15	Discourage feeding of waterfowl		0

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1-16	Discourage the introduction of exotic aquatic species (Eurasian water milfoil, zebra mussels, water chestnut, etc	Practice: Finger Lakes Institute "Weeds Watch Out" program, as well as other initiatives by CCE, SWCD, and other local watershed groups	2
1-17	Encourage continued (periodic) operation and maintenance of private septic disposal systems	Practice: SLAP-5 has conducted extensive education and outreach throughout the Finger Lakes region regarding proper operation and maintenance of septic systems, along with county CCE's, SWCD's and other pertinent groups	2
1-18	Effective and consistent application and enforcement of stormwater regulations & requirements		0
1-19	Require certification of existing on site septic systems for property transfers or building expansions.	Livingston County Sanitary Code, Article II, Sec. 7(a-d): [Inspections to occur at time of construction and at property transfer]	2
1-20	Require entire property (existing as well as proposed) to be included in stormwater analysis/calculation.		0
1-21	Minimize the amount of land disturbed and the duration of disturbance	Zoning Ordinance, Art. VII, Sec. 155-39H(1): Architectural design of the house or structure shall be such as to minimize the amount of cutting into the embankment, general grading and removal of vegetative cover...; See Also Erosion and Sediment Control Law, Sec. 11(4)(a): No more than 10 acres of unprotected soil shall be exposed at any one time...	2
1-22	Preserve natural features and conform substantially with the natural boundaries and alignment of waterbodies	Erosion and Sediment Control Law, Sec. 11(4)(d)(3): Natural drainage channels shall not be altered.	2
1-23	Retain and protect trees and other natural vegetation on and near disturbed sites	Subdivision Ordinance, Art. IV, Sec 134-21E: Preservation of natural features. The Planning Board shall, wherever possible, establish the preservation of all natural features which add value to residential developments... See Also Erosion and Sediment Control Law, Sec. 11 (1): Existing vegetation on a project site shall be retained and protected as much as possible to minimize soil loss from the project site.; See Also (4)(c): [regarding the protection of vegetative cover]	2
1-24	Account for topography and soil type in efforts to minimize erosion potential		0

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1-25	Maintain runoff rates similar to pre-construction levels	Erosion and Sediment Control Law, Sec. 11 (2)(a): The off-site impacts of erosion and sedimentation from the development site shall not be any greater during and following land disturbance activities than under pre-development conditions.	2
1-26	Minimize the creation of impervious areas		0
1-27	Control increased runoff caused by changed surface conditions to minimize the danger of flooding, erosion, sedimentation and pollutants entering waterbodies prior to, during and after construction	Zoning Ordinance, Art VII, Sec 155-39H(2): Erosion control for slope conditions. The use of silt fences to control runoff during construction is required...; (4) Terracing, placement of sod, planting and the construction of retaining walls shall be performed as found necessary. See Also Subdivision Ordinance, Art. IV, Sec. 134-20B: Drainage structure to accommodate potential development upstream. A culvert or other drainage facility shall, in each case, be large enough to accommodate potential runoff from its entire upstream drainage area...	2
1-28	Use temporary vegetation and mulching to protect exposed and critical areas during development	Erosion and Sediment Control Law, Sec. 11(4)(e)(8): ...all sites shall be seeded and mulched with erosion control materials such as...within 15 days of initial disturbance...	2
1-29	Redistribute topsoil within the boundaries of the disturbed land for seeding and planting		0
1-30	Stabilize disturbed soils as soon as possible	Zoning Ordinance, Art. VII, Sec. 155-39H(5): Any area of land from which topsoil has been removed or covered over by fill shall be seeded to provide an effective cover crop within the first growing season following the start of said operation	2
1-31	Minimize the use of cut and fill operations. Conform such operations to topography and soils to minimize erosion potential and adequately accommodate runoff	Zoning Ordinance, Art. VII, Sec. 155-38H(1) and (3): Architectural design of the house or structure shall be such as to minimize the amount of cutting into the embankment, general grading and removal of vegetative cover...; (3) Location of driveway, walkway, accessory buildings and structures and general grading shall conform to the overall objective of Subsection G(1) above.	2
1-32	Use appropriate solid and hazardous waste generation and disposal practices including source controls and recycling		0

Town of Conesus
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1-33	Encourage construction site management techniques which include the proper handling and disposal of pesticides and petroleum products and containers		0
1-34	Ensure proper operation and maintenance of runoff management facilities	Erosion and Sediment Control Law, Sec. 11 (3): All erosion and sediment control measures shall be constructed prior to beginning any land disturbance activities. All runoff from disturbed areas shall be directed to sediment control devices. These devices shall not be removed until the disturbed land areas are stabilized. See Also Sec. 12: [re: performance bonds...]	2
1-35	Target training for contractors, inspectors and zoning and planning officials.	Practice: staff attend when available and feasible	2
1-36	Require tree surveys and/or cutting plans.		0
1-37	Develop priority list for BMP's - use of vegetative low areas for retention/infiltration.		0
1-38	Encourage cluster development.		0
1-39	Require connection to and/or extension of existing water & sewer if project is within 500 feet of existing infrastructure	Livingston County Sanitary Code, Article II, Sec. 3(c): No individual sewage treatment system shall be installed on property accessible to a public or municipal sanitary sewer.	2
1-40	Enact limits on driveway grades.	Zoning Ordinance, Art. VII, Sec. 155-38 H(3): Location of driveway, walkway, accessory buildings and structures and general grading shall conform to the overall objective of Subsection G(1) above [re: grading]	2
1-41	For redevelopment, employ regulations that provide for technologically advanced (on and off) site wastewater treatment systems to optimize efficiencies and address "challenging" sites		0
1-42	Implement Federal/State Stormwater (SPDES) Phase II requirements	Practice: rules for Pre/Post Construction facilitated by county SWCD, county planning and the regional planning council	2

Town of Conesus
Conesus Lake Watershed

2-01	Consider potential water quality impacts when selecting silviculture system (yarding system, site preparation, pesticides employment, etc)	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-02	Consider harvesting practices		0
2-03	Seasonal preference for logging operations		0
2-04	Have specialists (geologist, soil scientist, geotechnical engineer, wildland hydrologist) review plans in high erosion hazard areas	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-05	Preplan harvest areas, skid trails, and access so as to be on stable soils, avoiding steep gradients, multiple stream crossings, poor drainage areas, etc.	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-06	Limit grades of access roads.		0
2-07	Require stabilization of roads/drives to forestry site.		0
2-08	Employ natural topography and contour for design of road network		0
2-09	Require stormwater controls for increased runoff from ground cover modification	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2

Town of Conesus
Conesus Lake Watershed

2-10	Consider site restoration	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-11	Use Agricultural Environmental Management (AEM)	Practice: Active and administered by county SWCD; projects are prioritized each year based on local needs and EPF funding	2
2-12	Require farms seeking agricultural value assessment to participate in AEM		0
3-01	Develop an operation and maintenance program for existing modified streams that includes identification of opportunities and actions to restore habitat and the physical and chemical characteristics of these streams.		0
3-02	Improve stream quality by controlling instream sedimentation and selectively clearing debris	Erosion and Sediment Control: Law [various provisions and stipulations]	2
3-03	Establish or reestablish riparian buffers		0
3-04	Prevent animal wastes from entering waterbodies		0
3-05	Attempt vegetative stabilization before undertaking structural measures	Erosion and Sediment Control Law, Sec. 11 (1): Existing vegetation on a project site shall be retained and protected as much as possible to minimize soil loss from the project site.	2
3-06	Design and construct shore erosion control facilities, in accordance with an erosion and sedimentation control plan, in areas where marsh creation and soil bioengineering are ineffective or where existing protection methods are being flanked or are falling		0
3-07	Schedule the periodic maintenance of sediment control measures, and inspect and repair them as needed in conformance with established schedule.	Erosion and Sediment Control Law, Sec. 11(4)(g): Maintenance	2

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3-08	Protect streambanks through direct nonstructural means, such as new vegetation or protection of existing vegetation; direct structural means, such as revetments and bulkheads; indirect nonstructural means, such as regulating irrigation near streambanks or rerouting overbank drainage; or indirect structural means, such as deflecting channel flow away from streambanks with dikes, board fences and gabions	Erosion and Sediment Control Law, Sec. 11(4)(f) Stream Corridor Management	2
3-09	Use setbacks to minimize disturbance of land adjacent to streambanks and shorelines		0
3-10	Prevent discharges to waterbodies in amounts that would adversely affect the taste, color or odor of the waters, or would impair the waters for their best usages	Erosion and Sediment Control Law, Sec. 11 (2)(b): Water in stream reaches on-site and downstream of construction areas shall not have substantial visible contrast relative to color, taste, odor, turbidity and sediment deposition from the water in reaches upstream...; (c) Sediment laden runoff shall not be allowed to enter any waterbody and result in deposition on the bottom of the waterbody, degrade its natural biological functions, or be deleterious to the classified usage of the water.	2
3-11	Consider wetlands and riparian areas and their non-point source (nps) control potential on a watershed scale		0
3-12	Identify existing functions of those wetland and riparian areas with significant nps control potential when implementing nps management practices. Do not alter wetlands or riparian areas to improve their water quality at the expense of their other functions		0
3-13	Conduct permitting, licensing, certification and nonregulatory nps pollution activities in a manner that protects wetland functions		0
3-14	Special zoning considerations to protect wetland areas		0

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3-15	Use appropriate pretreatment practices such as vegetated systems or detention or retention basins to prevent adverse impacts to wetland functions that affect nps pollution abatement from hydrologic changes, sedimentation, or contaminants		0
3-16	All projects should require wetlands certification.		0
4-01	Clean maintenance areas regularly preferably by vacuuming to remove trash, sandings, paint chips, etc.		0
4-02	Prevent residue from being carried into surface waters by performing abrasive blasting within plastic tarp enclosures on windless days or within spray booths		0
4-03	Provide proper disposal/recycling facilities to marina patrons, preferably covered receptacles		0
4-04	Establish fish cleaning areas, and implement rules governing the conduct of fish cleaning operations		0
4-05	Educate boaters on the importance of proper fish cleaning practices		0
4-06	Implement fish composting where appropriate		0
4-07	Store materials in areas impervious to the type of material stored. Build curbs, berms, or other barriers around the areas to contain spills		0
4-08	Use separate, clearly labeled containers for the disposal of oil, gasoline, antifreeze, diesel, kerosene, and mineral spirits		0
4-09	Target outreach programs about proper disposal at marina patrons through the use of signs, mailings, and other means		0
4-10	Promote the use in bilges of oil-absorbing materials, and replace them as necessary, preferably recycling, or disposing of them in accordance with petroleum disposal regulation		0
4-11	Use a container under the air vent while refueling inboard tanks if the tank vents are not equipped with a fuel/air separator		0

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4-12	Prohibit in-water hull scraping or any underwater process to remove paint from boat hulls		0
4-13	Wash the boat hull above the waterline by hand, using only necessary amounts of detergents and cleaning compounds that are phosphate-free and biodegradable		0
4-14	Prohibit the use of detergents and cleaning compounds containing ammonia, sodium hypochloride, chlorinated solvents, petroleum distillates, alcohol, or lye		0
4-15	Educate individuals about the importance of trash reduction and recycling through: interpretive and instructional signs placed at marinas and boat-launching sites, pamphlets or flyers, newsletters, inserts in billings, meetings and presentations, workshops, and certification programs		0
4-16	Inspect pumpout facilities regularly, and repair them, if practical, under a maintenance contract with a competent contractor		0
4-17	Add language to slip lease agreements mandating the use of pumpout facilities and specifying penalties for failure to comply		0
4-18	Place dye tablets in holding tanks to identify and discourage illegal disposal		0
4-19	Prohibit motorized vessels from areas (define areas) that contain important shallow-water habitats		0
4-20	Establish and enforce no-wake zones to decrease turbidity and reduce erosion potential from boat wakes		0
4-21	Design and site marinas to maximize exchange of marina basin water. Limit basins and channels with square corners that tend to trap flotsam, and place dock structures in a manner that promotes circulation		0
4-22	Perform a preconstruction assessment, which includes a water quality monitoring and modeling methodology, to predict post-construction water quality conditions		0

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4-23	Monitor water quality during construction to protect ambient water quality to the maximum practicable extent		0
4-24	Develop a marina siting policy to discourage development in areas containing important habitat designated by local, State, or federal agencies		0
4-25	Conduct surveys and employ rapid bioassessment techniques to assess historic habitat function (e.g. spawning, nursery, and migration pathways) and potential impacts to these and other biological functions and resources		0
4-26	Encourage the redevelopment or expansion of existing marina facilities that have demonstrated minimal environmental impacts instead of developing new marina facilities		0
4-27	Consider alternative sites with minimal potential environmental impacts when the use of previously disturbed sites is not feasible		0
4-28	Minimize disturbance of indigenous vegetation in the riparian area		0
4-29	Use soil bioengineering or plants, wherever conditions allow, to restore damaged habitat along shorelines and streambanks		0
4-30	Use properly designed and constructed engineering practices that minimize shoreline disturbance in areas where soil bioengineering and plants are ineffective		0
4-31	Use appropriate shore erosion control methods, such as returns or return walls, in areas where existing protection methods are being flanked or are falling		0
4-32	Plan and design all steambank, shoreline, and navigation structures so that they do not transfer erosion energy to or otherwise cause visible loss of surrounding streambanks or shorelines		0

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4-33	Locate and design fuel stations so that spills can be contained in a limited area		0
4-34	Design and install underground fuel storage tanks according to State regulations, including the provision of detection systems and automatic fuel tank and pump leak shut-offs		0
4-35	Provide aboveground fuel tanks and fueling areas with a curbed or diked storage area to handle containment volumes meeting State (and local) codes and inspect regularly		0
4-36	Use preferred pumpout systems: fixed-point, portable, dedicated slipside, and pumpout boats		0
4-37	Design onsite wastewater treatment systems to specifically handle waste from vessels		0
4-38	Post pumpout facility location and regulations at the marina. Charge fees that encourage rather than discourage facility use. Consider offsetting the cost of maintaining pumpout facilities by fuel sales where these facilities are conveniently located in close proximity to one another		0
4-39	Restrict boat repair and maintenance activities to clearly marked designated areas to prevent debris from falling into the water and preventing invasive species		0
4-40	Secure all fueling facilities and storage areas with appropriate shut-off devices and security locks and inspect regularly		0
4-41	Design fueling stations with spill containment equipment that is stored in a clearly marked location, accessible to work and storage areas. Post emergency phone numbers in a prominent location		0
4-42	Design a spill contingency plan		0

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4-43	Inspect and maintain all containment berms or devices in accordance with State regulations. Investigate immediately signs of leakage or spillage, and undertake cleanup in accordance with applicable best management practices		0
4-44	Have a trained operator present and prepared to respond to accidental spills		0
4-45	Maintain daily inventory records to identify abnormal loss or gain of liquid		0
4-46	Prohibit the cleaning of hoses, fittings, pumps, and other accessory equipment on piers, docks or adjacent upland to prevent runoff into the marina basin or other surface or groundwater		0
4-47	Create and/or maintain a dedicated fund for maintenance in the case of government-owned facilities		0
4-48	Restrict the operation of pumpout facilities to trained marina personnel only		0
5-01	Conduct road and bridge maintenance (de-icing material usage and storage, pot-hole repair, bridge washing, scraping and painting, etc) according to best management practices	Practice: BMPs are used when feasible, particularly near environmentally sensitive areas; salt storage is undertaken and salt alternatives have been explored.	2
5-02	Conduct right-of-way activities (mowing, brush removal, pesticide and fertilizer use, etc) - according to best management practices	Practice: no pesticides used; wet conditions avoided; vegetation retained near waterbodies when feasible	2
5-03	Include high percentage of indigenous plants in new landscaping on public-owned properties (excluding arboretums, horticultural gardens, and site requiring turf grasses)	Erosion and Sediment Control Law, Sec. 11(4)(f): ...Native species of vegetation shall be used for stream bank stabilization wherever practical...	2
5-04	Implement a regular inspection and maintenance plan of existing structures	Practice: facilities are inspected visually as needed	1
5-05	Develop and identify erosion/sediment control areas (examples include steep slopes, easily erodible soils, and nearby sensitive areas) and retrofit opportunities	Practice: ditches with problem areas have been stabilized using structural means; check dams are put in place when back cutting occurs on steep roadbanks	2

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5-06	Require percentage of roads to be tested with non-ice and non-sand de-icing.	Practice: alternatives have been used, although with limited success	1
5-07	Minimize the amount of land disturbed and the duration of disturbance	Practice: standard procedure	2
5-08	Preserve natural features and conform substantially with the natural boundaries and alignment of waterbodies	Subdivision Ordinance, Art. IV, Sec 134-16K: Relation to topography. The street plan of a proposed subdivision shall bear a logical relationship to the topography of the property...	2
5-09	Retain and protect trees and other natural vegetation on and near disturbed sites	Subdivision Ordinance, Art. IV, Sec 134-21E: Preservation of natural features. The Planning Board shall, wherever possible, establish the preservation of all natural features which add value to residential developments...	2
5-10	Retain additional runoff sites		0
5-11	Minimize the creation of impervious areas		0
5-12	Treat increased runoff caused by changed surface conditions to minimize the danger of flooding, erosion and pollutants entering waterbodies prior to, during and after construction	Practice: check dams are installed where and when necessary and maintained	2
5-13	Use temporary vegetation and mulching to protect exposed and critical areas during development	Erosion and Sediment Control Law, Sec. 11(4)(e)(8): ...all sites shall be seeded and mulched with erosion control materials such as...within 15 days of initial disturbance...	2
5-14	Redistribute topsoil within the boundaries of the disturbed land for seeding and planting	Practice: standard procedure	2
5-15	Stabilize disturbed soils as soon as possible	Practice: standard procedure	2
5-16	Minimize the use of cut and fill operations. Conform such operations to topography and soils to minimize erosion potential and adequately accommodate runoff	Practice: standard procedure	2
5-17	Control erosion and sedimentation prior to, during and after site preparation and construction	Erosion and Sediment Control Law, Sec. 11 (3): All erosion and sediment control measures shall be constructed prior to beginning any land disturbance activities. All runoff from disturbed areas shall be directed to sediment control devices. These devices shall not be removed until the disturbed land areas are stabilized. See Also Sec. 12: re: performance bonds...	2

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5-18	Require long term stormwater management plan.		0
5-19	Require long term sedimentation control & maintenance.	Practice: while written plans are not yet required, Supervisor is aware of Phase II Stormwater reg's and takes the appropriate steps	1
5-20	Target existing public holdings, such as parks, for removing unnecessary impervious surfaces		0
5-21	Incorporate New York State Department of Transportation design and guidance documents, standard specifications, and procedural manuals (<i>Highway Design Manual, Environmental Procedures Manual, Maintenance Guidelines, etc</i>) into local laws and operating procedures	Practice: resources are referenced on a regular basis and used in the field for special projects	2
5-22	Ensure application of appropriate solid and hazardous waste generation and disposal practices including source controls and recycling	Practice: general waste management practices used	1
5-23	Ensure proper operation and maintenance of runoff management facilities	Practice: check dams are maintained; supervisor is aware of status of all other facilities throughout jurisdiction	2
5-24	Participate in Cornell Local Roads Program activities and training	Practice: annual attendance	2
5-25	Target training programs at highway officials, contractors, construction workers, inspectors, zoning and planning officials	Practice: programs on structural procedures and erosion and sediment control are offered to staff when available and feasible	2
5-26	Target training and outreach programs about the proper handling of materials, leakage and spill prevention and spill response procedures at maintenance staff and workers	Practice: staff have been trained in basics of spills prevention and response	2
6-01	Conduct regular inspections of OWTS at a frequency adequate to determine failure and undertake required maintenance		0
6-02	Institute setback guidelines		0
6-03	Promulgate plumbing codes that require practices that are compatible with OWTS		0

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6-04	Target outreach programs at homeowners, contractors and developers	Practice: Cornell Cooperative Extension, Soil and Water Conservation Districts, Livingston County Health Dept. all conduct education and outreach programs and/or offer technical assistance	2
6-05	Inspection of all OWTS at property transfer or within 1 year prior to transfer	Livingston County Sanitary Code, Article II, Sec. 7(a-d): [Inspections to occur at time of construction and at property transfer]	2
6-06	Require all properties within 500' of municipal service to connect.	Livingston County Sanitary Code, Article II, Sec. 3(c): No individual sewage treatment system shall be installed on property accessible to a public or municipal sanitary sewer.	2
6-07	Set goals for effluent limits (nitrogen, phosphorous, BOD, etc)		0

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	Best Management Practices (BMP)	Existing Means of Implementation (law, regulation, practice, etc)	Degree of Implementation
			(2-fully, 1-partially, 0-not at all, n/a-not applicable)
1-01	Identify retrofit opportunities		0
1-02	Identify habitat and natural conveyance system restoration opportunities		0
1-03	Establish retention/detention areas		0
1-04	Acquire additional land for locating treatment facilities		0
1-05	Encourage homeowners to place compost piles away from waterbodies and roadways		0
1-06	Encourage proper use and disposal of lawn and other household chemicals	Practice: Genesee, Livingston and Wyoming Counties Solid Waste Management Committee; household hazardous waste disposal advertised; services available by appointment	2
1-07	Institute turf management practices on golf courses and parks and recreation areas		0
1-08	Undertake storm drain stenciling		0
1-09	Encourage volunteer programs, such as adopt-a-highways and adopt-a-stream, etc.	Practice: adopt-a-highway administered by state and county highway departments; Conesus Lake Watershed Planning Committee administers volunteer education and outreach, in conjunction with SWCD and CCE	2
1-10	Include high percentage of indigenous plants in new landscaping on privately-owned properties (excluding arboretums, horticultural gardens, and sites requiring turf grasses)		0
1-11	Encourage water conservation		0
1-12	Develop outreach programs targeted at specific problems related to water quality management & resource conservation	Practice: FL/LOWPA, the Finger Lakes Institute, county SWCD, Cornell Cooperative Extension and local watershed groups each develop programs	2
1-13	Encourage proper control of pet wastes		0
1-14	Encourage continued operation of private storm water runoff control structures		0
1-15	Discourage feeding of waterfowl		0

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1-16	Discourage the introduction of exotic aquatic species (Eurasian water milfoil, zebra mussels, water chestnut, etc)	Practice: Finger Lakes Institute "Weeds Watch Out" program, as well as other initiatives by CCE, SWCD, and other local watershed groups	2
1-17	Encourage continued (periodic) operation and maintenance of private septic disposal systems	Practice: SLAP-5 has conducted extensive education and outreach throughout the Finger Lakes region regarding proper operation and maintenance of septic systems, along with county CCE's, SWCD's and other pertinent groups	2
1-18	Effective and consistent application and enforcement of stormwater regulations & requirements		0
1-19	Require certification of existing on site septic systems for property transfers or building expansions.	Subdivision Reg's, Sec. 93-16(B) ...the Planning Board may require that the subdivider request the State DoH to make such test as are necessary to determine the adequacy of the proposed facilities in relation to the proposed lot size.	2
1-20	Require entire property (existing as well as proposed) to be included in stormwater analysis/calculation.		0
1-21	Minimize the amount of land disturbed and the duration of disturbance	Erosion and Sediment Control Law, Sec. 54-11(D)(1): Exposure restrictions. No more than 10 acres of unprotected soil shall be exposed at any one time. Previous earthwork shall be stabilized in accord with approved design standards and specifications... See Also Sec. 54-11(D)(5)(a): ...all sites shall be seeded...within 15 days of initial disturbance...	2
1-22	Preserve natural features and conform substantially with the natural boundaries and alignment of waterbodies	Zoning Code, Art. III, Sec. 106-30.21: It is hereby deemed the town's policy to preserve the normal flow of water and the normal fall of land whenever possible. See Also Subdivision Reg's, Art. II, Sec 93-8(F): Lots shall be laid out to encourage positive drainage away from proposed building areas, and wherever desirable, natural drainage courses shall be maintained.	2
1-23	Retain and protect trees and other natural vegetation on and near disturbed sites	Erosion and Sediment Control Law, Sec. 54-11(A): Existing vegetation on a project site shall be retained and protected as much as possible to minimize soil loss from the project site.	2
1-24	Account for topography and soil type in efforts to minimize erosion potential		2

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1-25	Maintain runoff rates similar to pre-construction levels	Erosion and Sediment Control Law, Sec. 54-11(B)(1): The off-site impacts of erosion and sedimentation from the development site shall not be any greater during and following land disturbance activities than under predevelopment conditions.	0
1-26	Minimize the creation of impervious areas		0
1-27	Control increased runoff caused by changed surface conditions to minimize the danger of flooding, erosion, sedimentation and pollutants entering waterbodies prior to, during and after construction	Erosion and Sediment Control Law, Sec. 54-11: General Performance Standards	2
1-28	Use temporary vegetation and mulching to protect exposed and critical areas during development	Sediment and Erosion Control Law, Sec. 54-11(4)(f): Permanent swales or other points of concentrated water flow shall be stabilized. Biotechnical approaches using certain types of grasses...are preferable to using sod, gabions and riprap.	2
1-29	Redistribute topsoil within the boundaries of the disturbed land for seeding and planting		0
1-30	Stabilize disturbed soils as soon as possible		0
1-31	Minimize the use of cut and fill operations. Conform such operations to topography and soils to minimize erosion potential and adequately accommodate runoff		0
1-32	Use appropriate solid and hazardous waste generation and disposal practices including source controls and recycling		0
1-33	Encourage construction site management techniques which include the proper handling and disposal of pesticides and petroleum products and containers		0
1-34	Ensure proper operation and maintenance of runoff management facilities	Sediment and Erosion Control Law, Sec. 54-11(D)(7)(b): Accumulated sediment shall be removed when 60% of the storage capacity ...is reached. See Also Sec. 15-12: re: Performance Bond stipulations	2

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1-35	Target training for contractors, inspectors and zoning and planning officials.		0
1-36	Require tree surveys and/or cutting plans.		0
1-37	Develop priority list for BMP's - use of vegetative low areas for retention/infiltration.		0
1-38	Encourage cluster development.	Zoning Code, Art. V, Sec 106-20.2 (A): Provisions should also be made for clustering building sites...	2
1-39	Require connection to and/or extension of existing water & sewer if project is within 500 feet of existing infrastructure	Subdivision Reg's, Art III, Sec. 93-16(a): Public sewer system. See Also Livingston County Sanitary Code, Article II, Sec. 3(c): No individual sewage treatment system shall be installed on property accessible to a public or municipal sanitary sewer.	2
1-40	Enact limits on driveway grades.		0
1-41	For redevelopment, employ regulations that provide for technologically advanced (on and off) site wastewater treatment systems to optimize efficiencies and address "challenging" sites		0
1-42	Implement Federal/State Stormwater (SPDES) Phase II requirements	Practice: rules for Pre/Post Construction facilitated by county SWCD, county planning and the regional planning council	2
2-01	Consider potential water quality impacts when selecting silviculture system (yarding system, site preparation, pesticides employment, etc)	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-02	Consider harvesting practices		0
2-03	Seasonal preference for logging operations		0
2-04	Have specialists (geologist, soil scientist, geotechnical engineer, wildland hydrologist) review plans in high erosion hazard areas	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2

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2-05	Preplan harvest areas, skid trails, and access so as to be on stable soils, avoiding steep gradients, multiple stream crossings, poor drainage areas, etc.	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-06	Limit grades of access roads.		0
2-07	Require stabilization of roads/drives to forestry site.		0
2-08	Employ natural topography and contour for design of road network		0
2-09	Require stormwater controls for increased runoff from ground cover modification	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-10	Consider site restoration	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-11	Use Agricultural Environmental Management (AEM)	Practice: Active and administered by county SWCD; projects are prioritized each year based on local needs and EPF funding	2
2-12	Require farms seeking agricultural value assessment to participate in AEM		0
3-01	Develop an operation and maintenance program for existing modified streams that includes identification of opportunities and actions to restore habitat and the physical and chemical characteristics of these streams.		0

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3-02	Improve stream quality by controlling instream sedimentation and selectively clearing debris	Erosion and Sediment Control Law, Sec. 54-11(B): Sediment control practices/measures shall be designed to protect the natural character of water bodies on-site as well as off-site. The practices must be in place before the start of land disturbance activities until the establishment of permanent stabilization.	2
3-03	Establish or reestablish riparian buffers		0
3-04	Prevent animal wastes from entering waterbodies		0
3-05	Attempt vegetative stabilization before undertaking structural measures	Erosion and Sediment Control Law, Sec. 54-11(4)(f): Permanent swales or other points of concentrated water flow shall be stabilized. Biotechnical approaches using certain types of grasses...are preferable to using sod, gabions and riprap.	0
3-06	Design and construct shore erosion control facilities, in accordance with an erosion and sedimentation control plan, in areas where marsh creation and soil bioengineering are ineffective or where existing protection methods are being flanked or are falling		0
3-07	Schedule the periodic maintenance of sediment control measures, and inspect and repair them as needed in conformance with established schedule.		0
3-08	Protect streambanks through direct nonstructural means, such as new vegetation or protection of existing vegetation; direct structural means, such as revetments and bulkheads; indirect nonstructural means, such as regulating irrigation near streambanks or rerouting overbank drainage; or indirect structural means, such as deflecting channel flow away from streambanks with dikes, board fences and gabions	Erosion and Sediment Control Law, Sec. 54-11: General Performance Standards	2
3-09	Use setbacks to minimize disturbance of land adjacent to streambanks and shorelines		0

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3-10	Prevent discharges to waterbodies in amounts that would adversely affect the taste, color or odor of the waters, or would impair the waters for their best usages	Erosion and Sediment Control Law, Sec. 54-11(B)(2): Water in stream reaches on-site and downstream of construction areas shall not have substantial visible contrast relative to color, taste, odor, turbidity and sediment deposition from the water in reaches upstream of the construction area.	2
3-11	Consider wetlands and riparian areas and their non-point source (nps) control potential on a watershed scale		0
3-12	Identify existing functions of those wetland and riparian areas with significant nps control potential when implementing nps management practices. Do not alter wetlands or riparian areas to improve their water quality at the expense of their other functions		0
3-13	Conduct permitting, licensing, certification and nonregulatory nps pollution activities in a manner that protects wetland functions		0
3-14	Special zoning considerations to protect wetland areas		0
3-15	Use appropriate pretreatment practices such as vegetated systems or detention or retention basins to prevent adverse impacts to wetland functions that affect nps pollution abatement from hydrologic changes, sedimentation, or contaminants		0
3-16	All projects should require wetlands certification.		0
4-01	Clean maintenance areas regularly preferably by vacuuming to remove trash, sandings, paint chips, etc.		0
4-02	Prevent residue from being carried into surface waters by performing abrasive blasting within plastic tarp enclosures on windless days or within spray booths		0
4-03	Provide proper disposal/recycling facilities to marina patrons, preferably covered receptacles		0
4-04	Establish fish cleaning areas, and implement rules governing the conduct of fish cleaning operations		0

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4-05	Educate boaters on the importance of proper fish cleaning practices		0
4-06	Implement fish composting where appropriate		0
4-07	Store materials in areas impervious to the type of material stored. Build curbs, berms, or other barriers around the areas to contain spills		0
4-08	Use separate, clearly labeled containers for the disposal of oil, gasoline, antifreeze, diesel, kerosene, and mineral spirits		0
4-09	Target outreach programs about proper disposal at marina patrons through the use of signs, mailings, and other means		0
4-10	Promote the use in bilges of oil-absorbing materials, and replace them as necessary, preferably recycling, or disposing of them in accordance with petroleum disposal regulation		0
4-11	Use a container under the air vent while refueling inboard tanks if the tank vents are not equipped with a fuel/air separator		0
4-12	Prohibit in-water hull scraping or any underwater process to remove paint from boat hulls		0
4-13	Wash the boat hull above the waterline by hand, using only necessary amounts of detergents and cleaning compounds that are phosphate-free and biodegradable		0
4-14	Prohibit the use of detergents and cleaning compounds containing ammonia, sodium hypochloride, chlorinated solvents, petroleum distillates, alcohol, or lye		0
4-15	Educate individuals about the importance of trash reduction and recycling through: interpretive and instructional signs placed at marinas and boat-launching sites, pamphlets or flyers, newsletters, inserts in billings, meetings and presentations, workshops, and certification programs		0

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4-16	Inspect pumpout facilities regularly, and repair them, if practical, under a maintenance contract with a competent contractor		0
4-17	Add language to slip lease agreements mandating the use of pumpout facilities and specifying penalties for failure to comply		0
4-18	Place dye tablets in holding tanks to identify and discourage illegal disposal		0
4-19	Prohibit motorized vessels from areas (define areas) that contain important shallow-water habitats		0
4-20	Establish and enforce no-wake zones to decrease turbidity and reduce erosion potential from boat wakes		0
4-21	Design and site marinas to maximize exchange of marina basin water. Limit basins and channels with square corners that tend to trap flotsam, and place dock structures in a manner that promotes circulation		0
4-22	Perform a preconstruction assessment, which includes a water quality monitoring and modeling methodology, to predict post-construction water quality conditions		0
4-23	Monitor water quality during construction to protect ambient water quality to the maximum practicable extent		0
4-24	Develop a marina siting policy to discourage development in areas containing important habitat designated by local, State, or federal agencies		0
4-25	Conduct surveys and employ rapid bioassessment techniques to assess historic habitat function (e.g. spawning, nursery, and migration pathways) and potential impacts to these and other biological functions and resources		0
4-26	Encourage the redevelopment or expansion of existing marina facilities that have demonstrated minimal environmental impacts instead of developing new marina facilities		0

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4-27	Consider alternative sites with minimal potential environmental impacts when the use of previously disturbed sites is not feasible		0
4-28	Minimize disturbance of indigenous vegetation in the riparian area		0
4-29	Use soil bioengineering or plants, wherever conditions allow, to restore damaged habitat along shorelines and streambanks		0
4-30	Use properly designed and constructed engineering practices that minimize shoreline disturbance in areas where soil bioengineering and plants are ineffective		0
4-31	Use appropriate shore erosion control methods, such as returns or return walls, in areas where existing protection methods are being flanked or are falling		0
4-32	Plan and design all steambank, shoreline, and navigation structures so that they do not transfer erosion energy to or otherwise cause visible loss of surrounding streambanks or shorelines		0
4-33	Locate and design fuel stations so that spills can be contained in a limited area		0
4-34	Design and install underground fuel storage tanks according to State regulations, including the provision of detection systems and automatic fuel tank and pump leak shut-offs		0
4-35	Provide aboveground fuel tanks and fueling areas with a curbed or diked storage area to handle containment volumes meeting State (and local) codes and inspect regularly		0
4-36	Use preferred pumpout systems: fixed-point, portable, dedicated slipside, and pumpout boats		0
4-37	Design onsite wastewater treatment systems to specifically handle waste from vessels		0

Town of Geneseo
Conesus Lake Watershed

4-38	Post pumpout facility location and regulations at the marina. Charge fees that encourage rather than discourage facility use. Consider offsetting the cost of maintaining pumpout facilities by fuel sales where these facilities are conveniently located in close proximity to one another		0
4-39	Restrict boat repair and maintenance activities to clearly marked designated areas to prevent debris from falling into the water and preventing invasive species		0
4-40	Secure all fueling facilities and storage areas with appropriate shut-off devices and security locks and inspect regularly		0
4-41	Design fueling stations with spill containment equipment that is stored in a clearly marked location, accessible to work and storage areas. Post emergency phone numbers in a prominent location		0
4-42	Design a spill contingency plan		0
4-43	Inspect and maintain all containment berms or devices in accordance with State regulations. Investigate immediately signs of leakage or spillage, and undertake cleanup in accordance with applicable best management practices		0
4-44	Have a trained operator present and prepared to respond to accidental spills		0
4-45	Maintain daily inventory records to identify abnormal loss or gain of liquid		0
4-46	Prohibit the cleaning of hoses, fittings, pumps, and other accessory equipment on piers, docks or adjacent upland to prevent runoff into the marina basin or other surface or groundwater		0
4-47	Create and/or maintain a dedicated fund for maintenance in the case of government-owned facilities		0

Town of Geneseo
Conesus Lake Watershed

4-48	Restrict the operation of pumpout facilities to trained marina personnel only		0
5-01	Conduct road and bridge maintenance (de-icing material usage and storage, pot-hole repair, bridge washing, scraping and painting, etc) according to best management practices	Practice: erosion and sediment control BMPs are always considered; salt storage shed is used;	2
5-02	Conduct right-of-way activities (mowing, brush removal, pesticide and fertilizer use, etc) - according to best management practices	Practice: no herbicides are used; operations during wet periods strictly avoided; topographical conditions taken into account	2
5-03	Include high percentage of indigenous plants in new landscaping on public-owned properties (excluding arboretums, horticultural gardens, and site requiring turf grasses)		0
5-04	Implement a regular inspection and maintenance plan of existing structures	Practice: structures are visually inspected on a regular basis and also during resurfacing	1
5-05	Develop and identify erosion/sediment control areas (examples include steep slopes, easily erodible soils, and nearby sensitive areas) and retrofit opportunities	Practice: structural retrofits are commonly put into place on roadbanks	2
5-06	Require percentage of roads to be tested with non-ice and non-sand de-icing.	Practice: non-salt alternatives have been tested, with limited success	1
5-07	Minimize the amount of land disturbed and the duration of disturbance	Erosion and Sediment Control Law, Sec. 54-11(D)(1): Exposure restrictions. No more than 10 acres of unprotected soil shall be exposed at any one time. Previous earthwork shall be stabilized in accord with approved design standards and specifications... See Also Sec. 54-11(D)(5)(a): ...all sites shall be seeded...within 15 days of initial disturbance...	2
5-08	Preserve natural features and conform substantially with the natural boundaries and alignment of waterbodies	Zoning Code, Art. III, Sec. 106-30.21: It is hereby deemed the town's policy to preserve the normal flow of water and the normal fall of land whenever possible. See Also Sediment and Erosion Control Law, Sec 54-11(4)(c): Natural drainage channels shall not be altered...	2

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5-09	Retain and protect trees and other natural vegetation on and near disturbed sites	Erosion and Sediment Control Law, Sec. 54-11(A): Existing vegetation on a project site shall be retained and protected as much as possible to minimize soil loss from the project site.	2
5-10	Retain additional runoff sites		0
5-11	Minimize the creation of impervious areas		0
5-12	Treat increased runoff caused by changed surface conditions to minimize the danger of flooding, erosion and pollutants entering waterbodies prior to, during and after construction	Erosion and Sediment Control Law, Sec. 54-11: General Performance Standards	2
5-13	Use temporary vegetation and mulching to protect exposed and critical areas during development	Erosion and Sediment Control Law, Sec. 54-11(4)(f): Permanent swales or other points of concentrated water flow shall be stabilized. Biotechnical approaches using certain types of grasses...are preferable to using sod, gabions and riprap.	2
5-14	Redistribute topsoil within the boundaries of the disturbed land for seeding and planting	Practice: standard procedure	2
5-15	Stabilize disturbed soils as soon as possible	Erosion and Sediment Control Law, Sec. 54-11(D)(5)(a): ...all sites shall be seeded...within 15 days of initial disturbance...	2
5-16	Minimize the use of cut and fill operations. Conform such operations to topography and soils to minimize erosion potential and adequately accommodate runoff	Practice: typically avoided	2
5-17	Control erosion and sedimentation prior to, during and after site preparation and construction	Practice: BMPs put into place as needed, such as geotextiles, gabion, etc.	2
5-18	Require long term stormwater management plan.		0
5-19	Require long term sedimentation control & maintenance.	Practice: not in a written or contractual form	1
5-20	Target existing public holdings, such as parks, for removing unnecessary impervious surfaces		0
5-21	Incorporate New York State Department of Transportation design and guidance documents, standard specifications, and procedural manuals (<i>Highway Design Manual, Environmental Procedures Manual, Maintenance Guidelines, etc</i>) into local laws and operating procedures		0

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Conesus Lake Watershed

5-22	Ensure application of appropriate solid and hazardous waste generation and disposal practices including source controls and recycling	Practice: basic procedures in place	1
5-23	Ensure proper operation and maintenance of runoff management facilities	Erosion and Sediment Control Law, Sec. 54-11(D)(7)(b): Accumulated sediment shall be removed when 60% of the storage capacity ... is reached. See Also Sec. 15-12: re: Performance Bond stipulations	2
5-24	Participate in Cornell Local Roads Program activities and training		0
5-25	Target training programs at highway officials, contractors, construction workers, inspectors, zoning and planning officials		0
5-26	Target training and outreach programs about the proper handling of materials, leakage and spill prevention and spill response procedures at maintenance staff and workers		0
6-01	Conduct regular inspections of OWTS at a frequency adequate to determine failure and undertake required maintenance		0
6-02	Institute setback guidelines		0
6-03	Promulgate plumbing codes that require practices that are compatible with OWTS		0
6-04	Target outreach programs at homeowners, contractors and developers	Practice: Cornell Cooperative Extension, Soil and Water Conservation Districts, Livingston County Health Dept. all conduct education and outreach programs and/or offer technical assistance	2
6-05	Inspection of all OWTS at property transfer or within 1 year prior to transfer	Livingston County Sanitary Code, Article II, Sec. 7(a-d): [Inspections to occur at time of construction and at property transfer]	2
6-06	Require all properties within 500' of municipal service to connect.	Subdivision Reg's, Art III, Sec. 93-16(a): Public sewer system. See Also Livingston County Sanitary Code, Article II, Sec. 3(c): No individual sewage treatment system shall be installed on property accessible to a public or municipal sanitary sewer.	2
6-07	Set goals for effluent limits (nitrogen, phosphorous, BOD, etc)		0

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Conesus Lake Watershed

	Best Management Practices (BMP)	Existing Means of Implementation (law, regulation, practice, etc)	Degree of Implementation
			(2-fully, 1-partially, 0-not at all, n/a-not applicable)
1-01	Identify retrofit opportunities		0
1-02	Identify habitat and natural conveyance system restoration opportunities		0
1-03	Establish retention/detention areas		0
1-04	Acquire additional land for locating treatment facilities		0
1-05	Encourage homeowners to place compost piles away from waterbodies and roadways		0
1-06	Encourage proper use and disposal of lawn and other household chemicals	Practice: Genesee, Livingston and Wyoming Counties Solid Waste Management Committee; household hazardous waste disposal advertised; services available by appointment	2
1-07	Institute turf management practices on golf courses and parks and recreation areas		0
1-08	Undertake storm drain stenciling		0
1-09	Encourage volunteer programs, such as adopt-a-highways and adopt-a-stream, etc.	Practice: adopt-a-highway administered by state and county highway departments; Conesus Lake Watershed Planning Committee administers volunteer education and outreach, in conjunction with SWCD and CCE	2
1-10	Include high percentage of indigenous plants in new landscaping on privately-owned properties (excluding arboretums, horticultural gardens, and sites requiring turf grasses)		0
1-11	Encourage water conservation		0
1-12	Develop outreach programs targeted at specific problems related to water quality management & resource conservation	Practice: FL/LOWPA, the Finger Lakes Institute, county SWCD, Cornell Cooperative Extension and local watershed groups each develop programs	2
1-13	Encourage proper control of pet wastes		0
1-14	Encourage continued operation of private storm water runoff control structures		0
1-15	Discourage feeding of waterfowl		0

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1-16	Discourage the introduction of exotic aquatic species (Eurasian water milfoil, zebra mussels, water chestnut, etc	Practice: Finger Lakes Institute "Weeds Watch Out" program, as well as other initiatives by CCE, SWCD, and other local watershed groups	2
1-17	Encourage continued (periodic) operation and maintenance of private septic disposal systems	Practice: SLAP-5 has conducted extensive education and outreach throughout the Finger Lakes region regarding proper operation and maintenance of septic systems, along with county CCE's, SWCD's and other pertinent groups	2
1-18	Effective and consistent application and enforcement of stormwater regulations & requirements		0
1-19	Require certification of existing on site septic systems for property transfers or building expansions.	Livingston County Sanitary Code, Article II, Sec. 7.1-7.4: [Inspections to occur at time of construction and at property transfer]	2
1-20	Require entire property (existing as well as proposed) to be included in stormwater analysis/calculation.	Land Subdivision Reg's, Article IV, Sec. 6(b): Drainage Structure to Accommodate Potential Development Upstream: [culverts and other facilities must be large enough to accommodate upstream drainage] and Sec. 6(c): [must also consider the effect on downstream facilities...]	2
1-21	Minimize the amount of land disturbed and the duration of disturbance		0
1-22	Preserve natural features and conform substantially with the natural boundaries and alignment of waterbodies	Land Subdivision Reg's, Article IV, Sec. 7(e): The Planning Board shall, wherever possible, establish the preservation of all natural features which add value to residential developments and to the community, such as large trees or groves, watercourses and falls, beaches, historic spots, vistas and similar irreplaceable assets.... See also Zoning Amendments, Sec 41-E Design Standards, Part 2: Lot Development Criteria, b) Environmental Considerations, 7) Fringes of Waterbodies or Watercourses [shall be preserved].	2
1-23	Retain and protect trees and other natural vegetation on and near disturbed sites	Land Subdivision Reg's, Article IV, Sec. 7(e): ...No tree with a diameter of 8 inches or more as measured 3 feet above the base of the trunk should be unnecessarily removed...	2

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1-24	Account for topography and soil type in efforts to minimize erosion potential	Land Subdivision Reg's, Article IV, Sec 2(K) Relation to Topography: The street plan of a proposed subdivision shall bear a logical relationship to the topography of the property... See also Zoning Amendments, Sec 41-E Design Standards, Part 2: Lot Development Criteria, b) Environmental Considerations, 4) soils with excessively slow or fast percolation [shall be avoided].	2
1-25	Maintain runoff rates similar to pre-construction levels		0
1-26	Minimize the creation of impervious areas		0
1-27	Control increased runoff caused by changed surface conditions to minimize the danger of flooding, erosion, sedimentation and pollutants entering waterbodies prior to, during and after construction		0
1-28	Use temporary vegetation and mulching to protect exposed and critical areas during development		0
1-29	Redistribute topsoil within the boundaries of the disturbed land for seeding and planting		0
1-30	Stabilize disturbed soils as soon as possible		0
1-31	Minimize the use of cut and fill operations. Conform such operations to topography and soils to minimize erosion potential and adequately accommodate runoff		0
1-32	Use appropriate solid and hazardous waste generation and disposal practices including source controls and recycling		0
1-33	Encourage construction site management techniques which include the proper handling and disposal of pesticides and petroleum products and containers		0
1-34	Ensure proper operation and maintenance of runoff management facilities	Practice: highway staff attend on occasion	2
1-35	Target training for contractors, inspectors and zoning and planning officials.	Practice: staff will attend on occasion	2
1-36	Require tree surveys and/or cutting plans.		0

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1-37	Develop priority list for BMP's - use of vegetative low areas for retention/infiltration.		0
1-38	Encourage cluster development.		0
1-39	Require connection to and/or extension of existing water & sewer if project is within 500 feet of existing infrastructure	Livingston County Sanitary Code, Article II, Sec. 3.3: No individual sewage treatment system shall be installed on property accessible to a public or municipal sanitary sewer.	2
1-40	Enact limits on driveway grades.	Land Subdivision Reg's, Article IV, Sec 5(d): ...Driveway grades between the street and setback line shall not exceed 10%.	2
1-41	For redevelopment, employ regulations that provide for technologically advanced (on and off) site wastewater treatment systems to optimize efficiencies and address "challenging" sites		0
1-42	Implement Federal/State Stormwater (SPDES) Phase II requirements	Practice: rules for Pre/Post Construction facilitated by county SWCD, county planning and the regional planning council	2
2-01	Consider potential water quality impacts when selecting silviculture system (yarding system, site preparation, pesticides employment, etc)	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-02	Consider harvesting practices		0
2-03	Seasonal preference for logging operations		0
2-04	Have specialists (geologist, soil scientist, geotechnical engineer, wildland hydrologist) review plans in high erosion hazard areas	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2

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2-05	Preplan harvest areas, skid trails, and access so as to be on stable soils, avoiding steep gradients, multiple stream crossings, poor drainage areas, etc.	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-06	Limit grades of access roads.		0
2-07	Require stabilization of roads/drives to forestry site.		0
2-08	Employ natural topography and contour for design of road network		0
2-09	Require stormwater controls for increased runoff from ground cover modification	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-10	Consider site restoration	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-11	Use Agricultural Environmental Management (AEM)	Practice: Active and administered by county SWCD; projects are prioritized each year based on local needs and EPF funding	2
2-12	Require farms seeking agricultural value assessment to participate in AEM		0
3-01	Develop an operation and maintenance program for existing modified streams that includes identification of opportunities and actions to restore habitat and the physical and chemical characteristics of these streams.		0

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3-02	Improve stream quality by controlling instream sedimentation and selectively clearing debris		0
3-03	Establish or reestablish riparian buffers		0
3-04	Prevent animal wastes from entering waterbodies		0
3-05	Attempt vegetative stabilization before undertaking structural measures		0
3-06	Design and construct shore erosion control facilities, in accordance with an erosion and sedimentation control plan, in areas where marsh creation and soil bioengineering are ineffective or where existing protection methods are being flanked or are falling		0
3-07	Schedule the periodic maintenance of sediment control measures, and inspect and repair them as needed in conformance with established schedule.		0
3-08	Protect streambanks through direct nonstructural means, such as new vegetation or protection of existing vegetation; direct structural means, such as revetments and bulkheads; indirect nonstructural means, such as regulating irrigation near streambanks or rerouting overbank drainage; or indirect structural means, such as deflecting channel flow away from streambanks with dikes, board fences and gabions		0
3-09	Use setbacks to minimize disturbance of land adjacent to streambanks and shorelines		0
3-10	Prevent discharges to waterbodies in amounts that would adversely affect the taste, color or odor of the waters, or would impair the waters for their best usages		0
3-11	Consider wetlands and riparian areas and their non-point source (nps) control potential on a watershed scale		0

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3-12	Identify existing functions of those wetland and riparian areas with significant nps control potential when implementing nps management practices. Do not alter wetlands or riparian areas to improve their water quality at the expense of their other functions		0
3-13	Conduct permitting, licensing, certification and nonregulatory nps pollution activities in a manner that protects wetland functions		0
3-14	Special zoning considerations to protect wetland areas	See also Zoning Amendments, Sec 41-E Design Standards, Part 2: Lot Development Criteria, b) Environmental Considerations, 6) state regulated freshwater wetlands [shall not be developed among new lots]	2
3-15	Use appropriate pretreatment practices such as vegetated systems or detention or retention basins to prevent adverse impacts to wetland functions that affect nps pollution abatement from hydrologic changes, sedimentation, or contaminants		0
3-16	All projects should require wetlands certification.		0
4-01	Clean maintenance areas regularly preferably by vacuuming to remove trash, sandings, paint chips, etc.		0
4-02	Prevent residue from being carried into surface waters by performing abrasive blasting within plastic tarp enclosures on windless days or within spray booths		0
4-03	Provide proper disposal/recycling facilities to marina patrons, preferably covered receptacles		0
4-04	Establish fish cleaning areas, and implement rules governing the conduct of fish cleaning operations		0
4-05	Educate boaters on the importance of proper fish cleaning practices		0
4-06	Implement fish composting where appropriate		0
4-07	Store materials in areas impervious to the type of material stored. Build curbs, berms, or other barriers around the areas to contain spills		0

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4-08	Use separate, clearly labeled containers for the disposal of oil, gasoline, antifreeze, diesel, kerosene, and mineral spirits		0
4-09	Target outreach programs about proper disposal at marina patrons through the use of signs, mailings, and other means		0
4-10	Promote the use in bilges of oil-absorbing materials, and replace them as necessary, preferably recycling, or disposing of them in accordance with petroleum disposal regulation		0
4-11	Use a container under the air vent while refueling inboard tanks if the tank vents are not equipped with a fuel/air separator		0
4-12	Prohibit in-water hull scraping or any underwater process to remove paint from boat hulls		0
4-13	Wash the boat hull above the waterline by hand, using only necessary amounts of detergents and cleaning compounds that are phosphate-free and biodegradable		0
4-14	Prohibit the use of detergents and cleaning compounds containing ammonia, sodium hypochloride, chlorinated solvents, petroleum distillates, alcohol, or lye		0
4-15	Educate individuals about the importance of trash reduction and recycling through: interpretive and instructional signs placed at marinas and boat-launching sites, pamphlets or flyers, newsletters, inserts in billings, meetings and presentations, workshops, and certification programs		0
4-16	Inspect pumpout facilities regularly, and repair them, if practical, under a maintenance contract with a competent contractor		0
4-17	Add language to slip lease agreements mandating the use of pumpout facilities and specifying penalties for failure to comply		0

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4-18	Place dye tablets in holding tanks to identify and discourage illegal disposal		0
4-19	Prohibit motorized vessels from areas (define areas) that contain important shallow-water habitats		0
4-20	Establish and enforce no-wake zones to decrease turbidity and reduce erosion potential from boat wakes		0
4-21	Design and site marinas to maximize exchange of marina basin water. Limit basins and channels with square corners that tend to trap flotsam, and place dock structures in a manner that promotes circulation		0
4-22	Perform a preconstruction assessment, which includes a water quality monitoring and modeling methodology, to predict post-construction water quality conditions		0
4-23	Monitor water quality during construction to protect ambient water quality to the maximum practicable extent		0
4-24	Develop a marina siting policy to discourage development in areas containing important habitat designated by local, State, or federal agencies		0
4-25	Conduct surveys and employ rapid bioassessment techniques to assess historic habitat function (e.g. spawning, nursery, and migration pathways) and potential impacts to these and other biological functions and resources		0
4-26	Encourage the redevelopment or expansion of existing marina facilities that have demonstrated minimal environmental impacts instead of developing new marina facilities		0
4-27	Consider alternative sites with minimal potential environmental impacts when the use of previously disturbed sites is not feasible		0
4-28	Minimize disturbance of indigenous vegetation in the riparian area		0

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4-29	Use soil bioengineering or plants, wherever conditions allow, to restore damaged habitat along shorelines and streambanks		0
4-30	Use properly designed and constructed engineering practices that minimize shoreline disturbance in areas where soil bioengineering and plants are ineffective		0
4-31	Use appropriate shore erosion control methods, such as returns or return walls, in areas where existing protection methods are being flanked or are falling		0
4-32	Plan and design all steambank, shoreline, and navigation structures so that they do not transfer erosion energy to or otherwise cause visible loss of surrounding streambanks or shorelines		0
4-33	Locate and design fuel stations so that spills can be contained in a limited area		0
4-34	Design and install underground fuel storage tanks according to State regulations, including the provision of detection systems and automatic fuel tank and pump leak shut-offs		0
4-35	Provide aboveground fuel tanks and fueling areas with a curbed or diked storage area to handle containment volumes meeting State (and local) codes and inspect regularly		0
4-36	Use preferred pumpout systems: fixed-point, portable, dedicated slipside, and pumpout boats		0
4-37	Design onsite wastewater treatment systems to specifically handle waste from vessels		0
4-38	Post pumpout facility location and regulations at the marina. Charge fees that encourage rather than discourage facility use. Consider offsetting the cost of maintaining pumpout facilities by fuel sales where these facilities are conveniently located in close proximity to one another		0

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4-39	Restrict boat repair and maintenance activities to clearly marked designated areas to prevent debris from falling into the water and preventing invasive species		0
4-40	Secure all fueling facilities and storage areas with appropriate shut-off devices and security locks and inspect regularly		0
4-41	Design fueling stations with spill containment equipment that is stored in a clearly marked location, accessible to work and storage areas. Post emergency phone numbers in a prominent location		0
4-42	Design a spill contingency plan		0
4-43	Inspect and maintain all containment berms or devices in accordance with State regulations. Investigate immediately signs of leakage or spillage, and undertake cleanup in accordance with applicable best management practices		0
4-44	Have a trained operator present and prepared to respond to accidental spills		0
4-45	Maintain daily inventory records to identify abnormal loss or gain of liquid		0
4-46	Prohibit the cleaning of hoses, fittings, pumps, and other accessory equipment on piers, docks or adjacent upland to prevent runoff into the marina basin or other surface or groundwater		0
4-47	Create and/or maintain a dedicated fund for maintenance in the case of government-owned facilities		0
4-48	Restrict the operation of pumpout facilities to trained marina personnel only		0
5-01	Conduct road and bridge maintenance (de-icing material usage and storage, pot-hole repair, bridge washing, scraping and painting, etc) according to best management practices	Practice: basic BMPs are used; salt storage is contained, etc	1

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5-02	Conduct right-of-way activities (mowing, brush removal, pesticide and fertilizer use, etc) - according to best management practices	Practice: no chemicals are used; operations avoided during wet periods; vegetation retained on steep slopes and near waterbodies	2
5-03	Include high percentage of indigenous plants in new landscaping on public-owned properties (excluding arboretums, horticultural gardens, and site requiring turf grasses)	Practice: indigenous plants are used in the rare instances that planting occurs	2
5-04	Implement a regular inspection and maintenance plan of existing structures	Practice: springtime maintenance occurs throughout the town	1
5-05	Develop and identify erosion/sediment control areas (examples include steep slopes, easily erodible soils, and nearby sensitive areas) and retrofit opportunities	Practice: checkdams are used often; ditches are lined with riprap when problems occur	2
5-06	Require percentage of roads to be tested with non-ice and non-sand de-icing.	Practice: alternatives have been tested; however they have not been found to be cost-effective	1
5-07	Minimize the amount of land disturbed and the duration of disturbance	Practice: standard procedure	2
5-08	Preserve natural features and conform substantially with the natural boundaries and alignment of waterbodies	Practice: standard procedure	2
5-09	Retain and protect trees and other natural vegetation on and near disturbed sites	Practice: standard procedure	2
5-10	Retain additional runoff sites		0
5-11	Minimize the creation of impervious areas		0
5-12	Treat increased runoff caused by changed surface conditions to minimize the danger of flooding, erosion and pollutants entering waterbodies prior to, during and after construction	Practice: checkdams are the preferred method; other structural means are also used, particularly when a large area is disturbed	2
5-13	Use temporary vegetation and mulching to protect exposed and critical areas during development	Practice: hydroseeding does take place	2
5-14	Redistribute topsoil within the boundaries of the disturbed land for seeding and planting	Practice: standard procedure	2
5-15	Stabilize disturbed soils as soon as possible	Practice: standard procedure	2

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5-16	Minimize the use of cut and fill operations. Conform such operations to topography and soils to minimize erosion potential and adequately accommodate runoff		0
5-17	Control erosion and sedimentation prior to, during and after site preparation and construction	Practice: structural means used, particularly when a large area is disturbed	2
5-18	Require long term stormwater management plan.		0
5-19	Require long term sedimentation control & maintenance.		0
5-20	Target existing public holdings, such as parks, for removing unnecessary impervious surfaces		0
5-21	Incorporate New York State Department of Transportation design and guidance documents, standard specifications, and procedural manuals (<i>Highway Design Manual, Environmental Procedures Manual, Maintenance Guidelines, etc</i>) into local laws and operating procedures	Practice: manuals are used to guide operating procedures	2
5-22	Ensure application of appropriate solid and hazardous waste generation and disposal practices including source controls and recycling	Practice: basic practices used	1
5-23	Ensure proper operation and maintenance of runoff management facilities	Practice: standard procedure	2
5-24	Participate in Cornell Local Roads Program activities and training	Practice: superintendent attends regularly	2
5-25	Target training programs at highway officials, contractors, construction workers, inspectors, zoning and planning officials	Practice: highway staff attend on occasion	2
5-26	Target training and outreach programs about the proper handling of materials, leakage and spill prevention and spill response procedures at maintenance staff and workers	Practice: spills training is received during basic OSHA workplace safety workshops	2
6-01	Conduct regular inspections of OWTS at a frequency adequate to determine failure and undertake required maintenance		0
6-02	Institute setback guidelines		0

Town of Groveland
Conesus Lake Watershed

6-03	Promulgate plumbing codes that require practices that are compatible with OWTS		0
6-04	Target outreach programs at homeowners, contractors and developers	Practice: Cornell Cooperative Extension, Soil and Water Conservation Districts, Livingston County Health Dept. all conduct education and outreach programs and/or offer technical assistance	2
6-05	Inspection of all OWTS at property transfer or within 1 year prior to transfer	Livingston County Sanitary Code, Article II, Sec. 7.1-7.4: [Inspections to occur at time of construction and at property transfer]	2
6-06	Require all properties within 500' of municipal service to connect.	Livingston County Sanitary Code, Article II, Sec. 3.3: No individual sewage treatment system shall be installed on property accessible to a public or municipal sanitary sewer.	2
6-07	Set goals for effluent limits (nitrogen, phosphorous, BOD, etc)		0

Town of Livonia
Conesus Lake Watershed

	Best Management Practices (BMP)	Existing Means of Implementation (law, regulation, practice, etc)	Degree of Implementation
			(2-fully, 1-partially, 0-not at all, n/a-not applicable)
1-01	Identify retrofit opportunities		0
1-02	Identify habitat and natural conveyance system restoration opportunities		0
1-03	Establish retention/detention areas	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Erosion Control I.8.1 Storm Water Detention Basins: The Town has determined it to be desirable to require storm water detention basins in certain areas...	2
1-04	Acquire additional land for locating treatment facilities		0
1-05	Encourage homeowners to place compost piles away from waterbodies and roadways		0
1-06	Encourage proper use and disposal of lawn and other household chemicals	Zoning Ordinance, Art VII, Sec 150-69 (D)(7)(f): (1) Open storage of chemical fertilizers for commercial use is prohibited; (2) Fertilizer use for all applications shall be done in accordance with best management practices. See Also 155-69 (D)(7)(g): (1) Use of lakes, reservoirs or streams for makeup water or washing of equipment is prohibited; (2) Pesticides and herbicides shall be used in accordance with label instructions. Practice: Genesee, Livingston and Wyoming Counties Solid Waste Management Committee; household hazardous waste disposal advertised; services available by appointment	2
1-07	Institute turf management practices on golf courses and parks and recreation areas		0
1-08	Undertake storm drain stenciling		0
1-09	Encourage volunteer programs, such as adopt-a-highways and adopt-a-stream, etc.	Practice: adopt-a-highway administered by state and county highway departments; Conesus Lake Watershed Planning Committee administers volunteer education and outreach, in conjunction with SWCD and CCE	2

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1-10	Include high percentage of indigenous plants in new landscaping on privately-owned properties (excluding arboretums, horticultural gardens, and sites requiring turf grasses)		0
1-11	Encourage water conservation		0
1-12	Develop outreach programs targeted at specific problems related to water quality management & resource conservation	Practice: FL/LOWPA, the Finger Lakes Institute, county SWCD, Cornell Cooperative Extension and local watershed groups each develop programs	2
1-13	Encourage proper control of pet wastes	Practice: no dogs aloud in near-shore park areas	2
1-14	Encourage continued operation of private storm water runoff control structures	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Construction II.9.4: It is the responsibility of the Developer adequately to maintain the filtering integrity of the facility and to repair or replace it when required.	2
1-15	Discourage feeding of waterfowl		0
1-16	Discourage the introduction of exotic aquatic species (Eurasian water milfoil, zebra mussels, water chestnut, etc	Practice: Finger Lakes Institute "Weeds Watch Out" program, as well as other initiatives by CCE, SWCD, and other local watershed groups	2
1-17	Encourage continued (periodic) operation and maintenance of private septic disposal systems	Practice: SLAP-5 has conducted extensive education and outreach throughout the Finger Lakes region regarding proper operation and maintenance of septic systems, along with county CCE's, SWCD's and other pertinent groups	2
1-18	Effective and consistent application and enforcement of stormwater regulations & requirements		0
1-19	Require certification of existing on site septic systems for property transfers or builing expansions.	Livingston County Sanitary Code, Article II, Sec. 7.1-7.4: [Inspections to occur at time of construction and at property transfer]	2
1-20	Require entire property (existing as well as proposed) to be included in stormwater analysis/calculation.	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Storm Drainage I.5.7-13: requirements of storm system design, including conveyance systems	2
1-21	Minimize the amount of land disturbed and the duration of disturbance	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Erosion Control I.6.1.2: Exposing the smallest practical area of land at any one time during development.	2

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1-22	Preserve natural features and conform substantially with the natural boundaries and alignment of waterbodies	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Storm Drainage I.5.1: In general, the preservation of natural watercourses is preferable to the construction of drainage channels... See Also Zoning Ordinance, Art IIV, Sec 155-68(6)(c): A buffer strip consistent with the following standards shall separate all new structures...from the stream.	2
1-23	Retain and protect trees and other natural vegetation on and near disturbed sites	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], I.4.7: The developer shall take adequate measures to preserve desirable existing trees in suitable locations within the subdivision. See Also Zoning Ordinance, Art VII, Sec 155-68(D)(1): Whenever possible, the site plan shall be so designed as to minimize the number of trees 30 feet and over in height which would have to be removed...	2
1-24	Account for topography and soil type in efforts to minimize erosion potential	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], I.4.1: Streets shall be arranged to conform as closely as possible to the original topography, to minimize grading and disturbance of the existing physical characteristics of the site....The suitability of a soil as a roadway subgrade is an important engineering consideration...	2
1-25	Maintain runoff rates similar to pre-construction levels	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Erosion I.8.4.1: The rate of discharge from a developed area shall not exceed the rate of discharge under the natural undeveloped conditions...	2
1-26	Minimize the creation of impervious areas	Zoning Ordinance, Art. IX: Landscaping, Screening and Buffer Reg's, Sec. 150-72(B): Reduce surface runoff and minimize soil erosion through the natural filtering capability of landscaped areas	2

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1-27	Control increased runoff caused by changed surface conditions to minimize the danger of flooding, erosion, sedimentation and pollutants entering waterbodies prior to, during and after construction	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Storm Drainage I.5.2: Storm drains and channels shall be designed and provided to adequately convey the anticipated runoff from the development as well as all future development upstream or uphill from the development in question. See Also Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Erosion Control I.6.1.4: Provision of adequate drainage facilities...	2
1-28	Use temporary vegetation and mulching to protect exposed and critical areas during development	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Erosion Control I.6.1.3: Provision for temporary vegetation and/or mulching to protect critical areas. See Also Zoning Ordinance, Art. VII, Sec 155-53, Filling and excavating (c): Any grade alteration...shall be seeded to provide an effective cover crop within the first season...	2
1-29	Redistribute topsoil within the boundaries of the disturbed land for seeding and planting		0
1-30	Stabilize disturbed soils as soon as possible		0
1-31	Minimize the use of cut and fill operations. Conform such operations to topography and soils to minimize erosion potential and adequately accommodate runoff	Construction Specifications for Land Development, I.4.1: Streets shall be arranged to conform as closely as possible to the original topography, to minimize grading and disturbance of the existing physical characteristics of the site.	2
1-32	Use appropriate solid and hazardous waste generation and disposal practices including source controls and recycling		0
1-33	Encourage construction site management techniques which include the proper handling and disposal of pesticides and petroleum products and containers		0
1-34	Ensure proper operation and maintenance of runoff management facilities	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Construction II.9.4: It is the responsibility of the Developer adequately to maintain the filtering integrity of the facility and to repair or replace it when required.	2

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1-35	Target training for contractors, inspectors and zoning and planning officials.		0
1-36	Require tree surveys and/or cutting plans.		0
1-37	Develop priority list for BMP's - use of vegetative low areas for retention/infiltration.		0
1-38	Encourage cluster development.	Zoning Ordinance, Art. XIII, Residential Cluster Developments, Sec. 150-111	2
1-39	Require connection to and/or extension of existing water & sewer if project is within 500 feet of existing infrastructure	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], I.11.1: Sanitary sewers shall be used wherever the proximity of existing sewers make it possible... See Also I.12.2: Water lines shall be used wherever the proximity of water lines make it possible. See Also Livingston County Sanitary Code, Article II, Sec. 3(c): No individual sewage treatment system shall be installed on property accessible to a public or municipal sanitary sewer.	2
1-40	Enact limits on driveway grades.	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Table 4.1: Standards for Street Design [lists maximum and minimum grades for public and private roadways]	2
1-41	For redevelopment, employ regulations that provide for technologically advanced (on and off) site wastewater treatment systems to optimize efficiencies and address "challenging" sites		0
1-42	Implement Federal/State Stormwater (SPDES) Phase II requirements	Practice: rules for Pre/Post Construction facilitated by county SWCD, county planning and the regional planning council	2
2-01	Consider potential water quality impacts when selecting silviculture system (yarding system, site preparation, pesticides employment, etc)	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2

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2-02	Consider harvesting practices	Zoning Ordinance, Art VII, Sec 150-69D(6)(f): To protect the water quality, bed and banks of a stream from the impacts associated with logging, no more than 1/3 of the timber will be removed in a ten-year period within the buffer strip designated under Subsection D(6)(e) above...	2
2-03	Seasonal preference for logging operations		0
2-04	Have specialists (geologist, soil scientist, geotechnical engineer, wildland hydrologist) review plans in high erosion hazard areas	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-05	Preplan harvest areas, skid trails, and access so as to be on stable soils, avoiding steep gradients, multiple stream crossings, poor drainage areas, etc.	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-06	Limit grades of access roads.		0
2-07	Require stabilization of roads/drives to forestry site.		0
2-08	Employ natural topography and contour for design of road network		0
2-09	Require stormwater controls for increased runoff from ground cover modification	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2

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2-10	Consider site restoration	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-11	Use Agricultural Environmental Management (AEM)	Practice: Active and administered by county SWCD; projects are prioritized each year based on local needs and EPF funding	2
2-12	Require farms seeking agricultural value assessment to participate in AEM		0
3-01	Develop an operation and maintenance program for existing modified streams that includes identification of opportunities and actions to restore habitat and the physical and chemical characteristics of these streams.		0
3-02	Improve stream quality by controlling instream sedimentation and selectively clearing debris		2
3-03	Establish or reestablish riparian buffers	Zoning Ordinance, Art IIV, Sec 150-69(D)(6)(c): A buffer strip consistent with the following standards shall separate all new structures...from the stream.	2
3-04	Prevent animal wastes from entering waterbodies	Zoning Ordinance, Art VII, Sec 150-69(D)(7)(d): (1-4) No concentration of animal wastes from an agricultural operation, including but not limited to manure piles...shall be located within a linear distance of 250 feet from any lake, reservoir, impoundment or watercourse... [drainage from barnyards, feeding lots, milkhouse waste is also regulated to various degrees]	2
3-05	Attempt vegetative stablization before undertaking structural measures		0
3-06	Design and construct shore erosion control facilities, in accordance with an erosion and sedimentation control plan, in areas where marsh creation and soil bioengineering are ineffective or where existing protection methods are being flanked or are falling		0

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3-07	Schedule the periodic maintenance of sediment control measures, and inspect and repair them as needed in conformance with established schedule.	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Construction II.9.4: It is the responsibility of the Developer adequately to maintain the filtering integrity of the facility and to repair or replace it when required.	2
3-08	Protect streambanks through direct nonstructural means, such as new vegetation or protection of existing vegetation; direct structural means, such as revetments and bulkheads; indirect nonstructural means, such as regulating irrigation near streambanks or rerouting overbank drainage; or indirect structural means, such as deflecting channel flow away from streambanks with dikes, board fences and gabions	Zoning Ordinance, Art IIV, Sec 150-69(D)(6)(c): A buffer strip consistent with the following standards shall separate all new structures...from the stream.	2
3-09	Use setbacks to minimize disturbance of land adjacent to streambanks and shorelines		0
3-10	Prevent discharges to waterbodies in amounts that would adversely affect the taste, color or odor of the waters, or would impair the waters for their best usages	Zoning Ordinance, Art. VII, Sec 150-69(D)(7)(b): Storm sewer outlets shall not be made directly to lakes, impoundments, streams or their tributary watercourses... (c) The dumping of more than two cubic yards of snow removed from streets, road and parking areas directly into lakes, reservoirs, impoundments or streams is prohibited	2
3-11	Consider wetlands and riparian areas and their non-point source (nps) control potential on a watershed scale		0
3-12	Identify existing functions of those wetland and riparian areas with significant nps control potential when implementing nps management practices. Do not alter wetlands or riparian areas to improve their water quality at the expense of their other functions	Zoning Ordinance, Art. VII, Sec 150-69(D)(2) Wetlands: (a) Development activities in wetland and wetland buffer areas shall be regulated by state and federal permit requirements. (b) The development and/or use shall be designed so as not to disturb the natural function and process of the wetland.	2
3-13	Conduct permitting, licensing, certification and nonregulatory nps pollution activities in a manner that protects wetland functions		0

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3-14	Special zoning considerations to protect wetland areas	Zoning Ordinance, Art. VII, Sec 150-69(D)(2) Wetlands: (a) Development activities in wetland and wetland buffer areas shall be regulated by state and federal permit requirements. (b) The development and/or use shall be designed so as not to disturb the natural function and process of the wetland.	2
3-15	Use appropriate pretreatment practices such as vegetated systems or detention or retention basins to prevent adverse impacts to wetland functions that affect nps pollution abatement from hydrologic changes, sedimentation, or contaminants		0
3-16	All projects should require wetlands certification.	Zoning Ordinance, Art. VII, Sec 150-69(D)(2) Wetlands: (a) Development activities in wetland and wetland buffer areas shall be regulated by state and federal permit requirements. (b) The development and/or use shall be designed so as not to disturb the natural function and process of the wetland.	2
4-01	Clean maintenance areas regularly preferably by vacuuming to remove trash, sandings, paint chips, etc.		0
4-02	Prevent residue from being carried into surface waters by performing abrasive blasting within plastic tarp enclosures on windless days or within spray booths		0
4-03	Provide proper disposal/recycling facilities to marina patrons, preferably covered receptacles	Practice: Vitale Park, covered garbage receptacles provided	1
4-04	Establish fish cleaning areas, and implement rules governing the conduct of fish cleaning operations		0
4-05	Educate boaters on the importance of proper fish cleaning practices		0
4-06	Implement fish composting where appropriate		0
4-07	Store materials in areas impervious to the type of material stored. Build curbs, berms, or other barriers around the areas to contain spills		0
4-08	Use separate, clearly labeled containers for the disposal of oil, gasoline, antifreeze, diesel, kerosene, and mineral spirits		0

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4-09	Target outreach programs about proper disposal at marina patrons through the use of signs, mailings, and other means	Practice: Vitale Park, information provided on general watershed stewardship guidelines	1
4-10	Promote the use in bilges of oil-absorbing materials, and replace them as necessary, preferably recycling, or disposing of them in accordance with petroleum disposal regulation		0
4-11	Use a container under the air vent while refueling inboard tanks if the tank vents are not equipped with a fuel/air separator		0
4-12	Prohibit in-water hull scraping or any underwater process to remove paint from boat hulls		0
4-13	Wash the boat hull above the waterline by hand, using only necessary amounts of detergents and cleaning compounds that are phosphate-free and biodegradable		0
4-14	Prohibit the use of detergents and cleaning compounds containing ammonia, sodium hypochloride, chlorinated solvents, petroleum distillates, alcohol, or lye		0
4-15	Educate individuals about the importance of trash reduction and recycling through: interpretive and instructional signs placed at marinas and boat-launching sites, pamphlets or flyers, newsletters, inserts in billings, meetings and presentations, workshops, and certification programs		0
4-16	Inspect pumpout facilities regularly, and repair them, if practical, under a maintenance contract with a competent contractor		0
4-17	Add language to slip lease agreements mandating the use of pumpout facilities and specifying penalties for failure to comply		0
4-18	Place dye tablets in holding tanks to identify and discourage illegal disposal		0
4-19	Prohibit motorized vessels from areas (define areas) that contain important shallow-water habitats		0

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4-20	Establish and enforce no-wake zones to decrease turbidity and reduce erosion potential from boat wakes		0
4-21	Design and site marinas to maximize exchange of marina basin water. Limit basins and channels with square corners that tend to trap flotsam, and place dock structures in a manner that promotes circulation		0
4-22	Perform a preconstruction assessment, which includes a water quality monitoring and modeling methodology, to predict post-construction water quality conditions		0
4-23	Monitor water quality during construction to protect ambient water quality to the maximum practicable extent		0
4-24	Develop a marina siting policy to discourage development in areas containing important habitat designated by local, State, or federal agencies		0
4-25	Conduct surveys and employ rapid bioassessment techniques to assess historic habitat function (e.g. spawning, nursery, and migration pathways) and potential impacts to these and other biological functions and resources		0
4-26	Encourage the redevelopment or expansion of existing marina facilities that have demonstrated minimal environmental impacts instead of developing new marina facilities		0
4-27	Consider alternative sites with minimal potential environmental impacts when the use of previously disturbed sites is not feasible		0
4-28	Minimize disturbance of indigenous vegetation in the riparian area		0
4-29	Use soil bioengineering or plants, wherever conditions allow, to restore damaged habitat along shorelines and streambanks		0

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4-30	Use properly designed and constructed engineering practices that minimize shoreline disturbance in areas where soil bioengineering and plants are ineffective		0
4-31	Use appropriate shore erosion control methods, such as returns or return walls, in areas where existing protection methods are being flanked or are falling		0
4-32	Plan and design all steambank, shoreline, and navigation structures so that they do not transfer erosion energy to or otherwise cause visible loss of surrounding streambanks or shorelines		0
4-33	Locate and design fuel stations so that spills can be contained in a limited area		0
4-34	Design and install underground fuel storage tanks according to State regulations, including the provision of detection systems and automatic fuel tank and pump leak shut-offs		0
4-35	Provide aboveground fuel tanks and fueling areas with a curbed or diked storage area to handle containment volumes meeting State (and local) codes and inspect regularly		0
4-36	Use preferred pumpout systems: fixed-point, portable, dedicated slipside, and pumpout boats		0
4-37	Design onsite wastewater treatment systems to specifically handle waste from vessels		0
4-38	Post pumpout facility location and regulations at the marina. Charge fees that encourage rather than discourage facility use. Consider offsetting the cost of maintaining pumpout facilities by fuel sales where these facilities are conveniently located in close proximity to one another		0
4-39	Restrict boat repair and maintenance activities to clearly marked designated areas to prevent debris from falling into the water and preventing invasive species		0

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4-40	Secure all fueling facilities and storage areas with appropriate shut-off devices and security locks and inspect regularly		0
4-41	Design fueling stations with spill containment equipment that is stored in a clearly marked location, accessible to work and storage areas. Post emergency phone numbers in a prominent location		0
4-42	Design a spill contingency plan		0
4-43	Inspect and maintain all containment berms or devices in accordance with State regulations. Investigate immediately signs of leakage or spillage, and undertake cleanup in accordance with applicable best management practices		0
4-44	Have a trained operator present and prepared to respond to accidental spills		0
4-45	Maintain daily inventory records to identify abnormal loss or gain of liquid		0
4-46	Prohibit the cleaning of hoses, fittings, pumps, and other accessory equipment on piers, docks or adjacent upland to prevent runoff into the marina basin or other surface or groundwater		0
4-47	Create and/or maintain a dedicated fund for maintenance in the case of government-owned facilities		0
4-48	Restrict the operation of pumpout facilities to trained marina personnel only		0
5-01	Conduct road and bridge maintenance (de-icing material usage and storage, pot-hole repair, bridge washing, scraping and painting, etc) according to best management practices	Zoning Ordinance, Art. VI, Sec 150-69(D)(7)(i): All land-disturbing activity, including general construction, highway construction, access road construction and maintenance, is prohibited except where remedial measures have been put in place to minimize erosion and sediment production as per the standards of the Livonia Design Criteria and New York State Guidelines for Stream Corridor Management and Erosion and Sediment Control.	2

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5-02	Conduct right-of-way activities (mowing, brush removal, pesticide and fertilizer use, etc) - according to best management practices	Zoning Ordinance, Art. VI, Sec 150-69(D)(7)(i): All land-disturbing activity, including general construction, highway construction, access road construction and maintenance, is prohibited except where remedial measures have been put in place to minimize erosion and sediment production as per the standards of the Livonia Design Criteria and New York State Guidelines for Stream Corridor Management and Erosion and Sediment Control.	2
5-03	Include high percentage of indigenous plants in new landscaping on public-owned properties (excluding arboretums, horticultural gardens, and site requiring turf grasses)		0
5-04	Implement a regular inspection and maintenance plan of existing structures		0
5-05	Develop and identify erosion/sediment control areas (examples include steep slopes, easily erodible soils, and nearby sensitive areas) and retrofit opportunities		0
5-06	Require percentage of roads to be tested with non-ice and non-sand de-icing.		0
5-07	Minimize the amount of land disturbed and the duration of disturbance	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Erosion Control I.6.1.2: Exposing the smallest practical area of land at any one time during development.	2
5-08	Preserve natural features and conform substantially with the natural boundaries and alignment of waterbodies	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Storm Drainage I.5.1: In general, the preservation of natural watercourses is preferable to the construction of drainage channels... See Also Zoning Ordinance, Art VII, Sec 155-68(6)(c): A buffer strip consistent with the following standards shall separate all new structures...from the stream.	2

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5-09	Retain and protect trees and other natural vegetation on and near disturbed sites	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], I.4.7: The developer shall take adequate measures to preserve desirable existing trees in suitable locations within the subdivision. See Also Zoning Ordinance, Art VII, Sec 155-68(D)(1): Whenever possible, the site plan shall be so designed as to minimize the number of trees 30 feet and over in height which would have to be removed...	2
5-10	Retain additional runoff sites		0
5-11	Minimize the creation of impervious areas	Zoning Ordinance, Art. IX: Landscaping, Screening and Buffer Reg's, Sec. 150-72(B): Reduce surface runoff and minimize soil erosion through the natural filtering capability of landscaped areas	2
5-12	Treat increased runoff caused by changed surface conditions to minimize the danger of flooding, erosion and pollutants entering waterbodies prior to, during and after construction	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Storm Drainage I.5.2: Storm drains and channels shall be designed and provided to adequately convey the anticipated runoff from the development as well as all future development upstream or uphill from the development in question. See Also Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Erosion Control I.6.1.4: Provision of adequate drainage facilities...	2
5-13	Use temporary vegetation and mulching to protect exposed and critical areas during development	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Erosion Control I.6.1.3: Provision for temporary vegetation and/or mulching to protect critical areas. See Also Zoning Ordinance, Art. VII, Sec 155-53, Filling and excavating (c): Any grade alteration...shall be seeded to provide an effective cover crop within the first season...	2
5-14	Redistribute topsoil within the boundaries of the disturbed land for seeding and planting		0
5-15	Stabilize disturbed soils as soon as possible		0

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5-16	Minimize the use of cut and fill operations. Conform such operations to topography and soils to minimize erosion potential and adequately accommodate runoff	Construction Specifications for Land Development, I.4.1: Streets shall be arranged to conform as closely as possible to the original topography, to minimize grading and disturbance of the existing physical characteristics of the site.	2
5-17	Control erosion and sedimentation prior to, during and after site preparation and construction		0
5-18	Require long term stormwater management plan.		0
5-19	Require long term sedimentation control & maintenance.		0
5-20	Target existing public holdings, such as parks, for removing unnecessary impervious surfaces		0
5-21	Incorporate New York State Department of Transportation design and guidance documents, standard specifications, and procedural manuals (<i>Highway Design Manual, Environmental Procedures Manual, Maintenance Guidelines, etc</i>) into local laws and operating procedures		0
5-22	Ensure application of appropriate solid and hazardous waste generation and disposal practices including source controls and recycling		0
5-23	Ensure proper operation and maintenance of runoff management facilities		0
5-24	Participate in Cornell Local Roads Program activities and training		0
5-25	Target training programs at highway officials, contractors, construction workers, inspectors, zoning and planning officials		0
5-26	Target training and outreach programs about the proper handling of materials, leakage and spill prevention and spill response procedures at maintenance staff and workers		0
6-01	Conduct regular inspections of OWTS at a frequency adequate to determine failure and undertake required maintenance		0
6-02	Institute setback guidelines		0

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6-03	Promulgate plumbing codes that require practices that are compatible with OWTS		0
6-04	Target outreach programs at homeowners, contractors and developers	Practice: Cornell Cooperative Extension, Soil and Water Conservation Districts, Livingston County Health Dept. all conduct education and outreach programs and/or offer technical assistance	2
6-05	Inspection of all OWTS at property transfer or within 1 year prior to transfer	Livingston County Sanitary Code, Article II, Sec. 7.1-7.4: [Inspections to occur at time of construction and at property transfer]	2
6-06	Require all properties within 500' of municipal service to connect.	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], 1.11.1: Sanitary sewers shall be used wherever the proximity of existing sewers make it possible... See Also 1.12.2: Water lines shall be used wherever the proximity of water lines make it possible. See Also Livingston County Sanitary Code, Article II, Sec. 3(c): No individual sewage treatment system shall be installed on property accessible to a public or municipal sanitary sewer.	2
6-07	Set goals for effluent limits (nitrogen, phosphorous, BOD, etc)		0

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	Best Management Practices (BMP)	Existing Means of Implementation (law, regulation, practice, etc)	Degree of Implementation
			(2-fully, 1-partially, 0-not at all, n/a-not applicable)
1-01	Identify retrofit opportunities		0
1-02	Identify habitat and natural conveyance system restoration opportunities		0
1-03	Establish retention/detention areas	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Erosion Control I.8.1 Storm Water Detention Basins: The Town has determined it to be desirable to require storm water detention basins in certain areas...	2
1-04	Acquire additional land for locating treatment facilities		0
1-05	Encourage homeowners to place compost piles away from waterbodies and roadways		0
1-06	Encourage proper use and disposal of lawn and other household chemicals	Zoning Ordinance, Art VII, Sec 155-69(D)(7)(f): (1) Open storage of chemical fertilizers for commercial use is prohibited; (2) Fertilizer use for all applications shall be done in accordance with best management practices. See Also 155-69(D)(7)(g): (1) Use of lakes, reservoirs or streams for makeup water or washing of equipment is prohibited; (2) Pesticides and herbicides shall be used in accordance with label instructions. Practice: Genesee, Livingston and Wyoming Counties Solid Waste Management Committee; household hazardous waste disposal advertised; services available by appointment	2
1-07	Institute turf management practices on golf courses and parks and recreation areas		0
1-08	Undertake storm drain stenciling		0
1-09	Encourage volunteer programs, such as adopt-a-highways and adopt-a-stream, etc.	Practice: adopt-a-highway administered by state and county highway departments; Conesus Lake Watershed Planning Committee administers volunteer education and outreach, in conjunction with SWCD and CCE	2

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1-10	Include high percentage of indigenous plants in new landscaping on privately-owned properties (excluding arboretums, horticultural gardens, and sites requiring turf grasses)		0
1-11	Encourage water conservation		0
1-12	Develop outreach programs targeted at specific problems related to water quality management & resource conservation	Practice: FL/LOWPA, the Finger Lakes Institute, county SWCD, Cornell Cooperative Extension and local watershed groups each develop programs	2
1-13	Encourage proper control of pet wastes		0
1-14	Encourage continued operation of private storm water runoff control structures	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Construction II.9.4: It is the responsibility of the Developer adequately to maintain the filtering integrity of the facility and to repair or replace it when required.	2
1-15	Discourage feeding of waterfowl		0
1-16	Discourage the introduction of exotic aquatic species (Eurasian water milfoil, zebra mussels, water chestnut, etc)	Practice: Finger Lakes Institute "Weeds Watch Out" program, as well as other initiatives by CCE, SWCD, and other local watershed groups	2
1-17	Encourage continued (periodic) operation and maintenance of private septic disposal systems	Practice: SLAP-5 has conducted extensive education and outreach throughout the Finger Lakes region regarding proper operation and maintenance of septic systems, along with county CCE's, SWCD's and other pertinent groups	2
1-18	Effective and consistent application and enforcement of stormwater regulations & requirements		0
1-19	Require certification of existing on site septic systems for property transfers or building expansions.	Livingston County Sanitary Code, Article II, Sec. 7.1-7.4: [Inspections to occur at time of construction and at property transfer]	2
1-20	Require entire property (existing as well as proposed) to be included in stormwater analysis/calculation.	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Storm Drainage I.5.7-13: requirements of storm system design, including conveyance systems	2
1-21	Minimize the amount of land disturbed and the duration of disturbance	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Erosion Control I.6.1.2: Exposing the smallest practical area of land at any one time during development.	2

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1-22	Preserve natural features and conform substantially with the natural boundaries and alignment of waterbodies	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Storm Drainage I.5.1: In general, the preservation of natural watercourses is preferable to the construction of drainage channels... See Also Zoning Ordinance, Art IIV, Sec 150-68(6)(c): A buffer strip consistent with the following standards shall separate all new structures...from the stream.	2
1-23	Retain and protect trees and other natural vegetation on and near disturbed sites	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], I.4.7: The developer shall take adequate measures to preserve desirable existing trees in suitable locations within the subdivision. See Also Zoning Ordinance, Art VII, Sec 155-69(D)(1): Whenever possible, the site plan shall be so designed as to minimize the number of trees 30 feet and over in height which would have to be removed...	2
1-24	Account for topography and soil type in efforts to minimize erosion potential	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], I.4.1: Streets shall be arranged to conform as closely as possible to the original topography, to minimize grading and disturbance of the existing physical characteristics of the site....The suitability of a soil as a roadway subgrade is an important engineering consideration...	2
1-25	Maintain runoff rates similar to pre-construction levels	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Erosion I.8.4.1: The rate of discharge from a developed area shall not exceed the rate of discharge under the natural undeveloped conditions...	2
1-26	Minimize the creation of impervious areas	Zoning Ordinance, Art. IX: Landscaping, Screening and Buffer Reg's, Sec. 155-72(B): Reduce surface runoff and minimize soil erosion through the natural filtering capability of landscaped areas	2

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1-27	Control increased runoff caused by changed surface conditions to minimize the danger of flooding, erosion, sedimentation and pollutants entering waterbodies prior to, during and after construction	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Storm Drainage I.5.2: Storm drains and channels shall be designed and provided to adequately convey the anticipated runoff from the development as well as all future development upstream or uphill from the development in question. See Also Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Erosion Control I.6.1.4: Provision of adequate drainage facilities...	2
1-28	Use temporary vegetation and mulching to protect exposed and critical areas during development	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Erosion Control I.6.1.3: Provision for temporary vegetation and/or mulching to protect critical areas. See Also Zoning Ordinance, Art. VII, Sec 150-53, Filling and excavating (c): Any grade alteration...shall be seeded to provide an effective cover crop within the first season...	2
1-29	Redistribute topsoil within the boundaries of the disturbed land for seeding and planting		0
1-30	Stabilize disturbed soils as soon as possible		0
1-31	Minimize the use of cut and fill operations. Conform such operations to topography and soils to minimize erosion potential and adequately accommodate runoff	Construction Specifications for Land Development, I.4.1: Streets shall be arranged to conform as closely as possible to the original topography, to minimize grading and disturbance of the existing physical characteristics of the site.	2
1-32	Use appropriate solid and hazardous waste generation and disposal practices including source controls and recycling		0
1-33	Encourage construction site management techniques which include the proper handling and disposal of pesticides and petroleum products and containers		0
1-34	Ensure proper operation and maintenance of runoff management facilities	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Construction II.9.4: It is the responsibility of the Developer adequately to maintain the filtering integrity of the facility and to repair or replace it when required.	2

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1-35	Target training for contractors, inspectors and zoning and planning officials.	Practice: staff will attend when feasible	2
1-36	Require tree surveys and/or cutting plans.		0
1-37	Develop priority list for BMP's - use of vegetative low areas for retention/infiltration.		0
1-38	Encourage cluster development.	Zoning Ordinance, Art. XIII< Residential Cluster Developments, Sec. 155-111	2
1-39	Require connection to and/or extension of existing water & sewer if project is within 500 feet of existing infrastructure	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], I.11.1: Sanitary sewers shall be used wherever the proximity of existing sewers make it possible... See Also I.12.2: Water lines shall be used wherever the proximity of water lines make it possible. See Also Livingston County Sanitary Code, Article II, Sec. 3(c): No individual sewage treatment system shall be installed on property accessible to a public or municipal sanitary sewer.	2
1-40	Enact limits on driveway grades.	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Table 4.1: Standards for Street Design [lists maximum and minimum grades for public and private roadways]	2
1-41	For redevelopment, employ regulations that provide for technologically advanced (on and off) site wastewater treatment systems to optimize efficiencies and address "challenging" sites		0
1-42	Implement Federal/State Stormwater (SPDES) Phase II requirements	Practice: rules for Pre/Post Construction facilitated by county SWCD, county planning and the regional planning council	2
2-01	Consider potential water quality impacts when selecting silviculture system (yarding system, site preparation, pesticides employment, etc)		n/a
2-02	Consider harvesting practices		n/a
2-03	Seasonal preference for logging operations		n/a
2-04	Have specialists (geologist, soil scientist, geotechnical engineer, wildland hydrologist) review plans in high erosion hazard areas		n/a

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2-05	Preplan harvest areas, skid trails, and access so as to be on stable soils, avoiding steep gradients, multiple stream crossings, poor drainage areas, etc.		n/a
2-06	Limit grades of access roads.		n/a
2-07	Require stabilization of roads/drives to forestry site.		n/a
2-08	Employ natural topography and contour for design of road network		n/a
2-09	Require stormwater controls for increased runoff from ground cover modification		n/a
2-10	Consider site restoration		n/a
2-11	Use Agricultural Environmental Management (AEM)		n/a
2-12	Require farms seeking agricultural value assessment to participate in AEM		n/a
3-01	Develop an operation and maintenance program for existing modified streams that includes identification of opportunities and actions to restore habitat and the physical and chemical characteristics of these streams.		0
3-02	Improve stream quality by controlling instream sedimentation and selectively clearing debris		0
3-03	Establish or reestablish riparian buffers	Zoning Ordinance, Art VII, Sec 155-69(6)(c): A buffer strip consistent with the following standards shall separate all new structures...from the stream.	2
3-04	Prevent animal wastes from entering waterbodies	Zoning Ordinance, Art VII, Sec 155-69(7)(d): (1-4) No concentration of animal wastes from an agricultural operation, including but not limited to manure piles...shall be located within a linear distance of 250 feet from any lake, reservoir, impoundment or watercourse...[drainage from barnyards, feeding lots, milkhouse waste is also regulated to various degrees]	2
3-05	Attempt vegetative stabilization before undertaking structural measures		0

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3-06	Design and construct shore erosion control facilities, in accordance with an erosion and sedimentation control plan, in areas where marsh creation and soil bioengineering are ineffective or where existing protection methods are being flanked or are falling		0
3-07	Schedule the periodic maintenance of sediment control measures, and inspect and repair them as needed in conformance with established schedule.	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Construction II.9.4: It is the responsibility of the Developer adequately to maintain the filtering integrity of the facility and to repair or replace it when required.	2
3-08	Protect streambanks through direct nonstructural means, such as new vegetation or protection of existing vegetation; direct structural means, such as revetments and bulkheads; indirect nonstructural means, such as regulating irrigation near streambanks or rerouting overbank drainage; or indirect structural means, such as deflecting channel flow away from streambanks with dikes, board fences and gabions	Zoning Ordinance, Art VII, Sec 155-69(6)(c): A buffer strip consistent with the following standards shall separate all new structures...from the stream.	2
3-09	Use setbacks to minimize disturbance of land adjacent to streambanks and shorelines		0
3-10	Prevent discharges to waterbodies in amounts that would adversely affect the taste, color or odor of the waters, or would impair the waters for their best usages	Zoning Ordinance, Art. VII, Sec 155-69(D)(7)(b): Storm sewer outlets shall not be made directly to lakes, impoundments, streams or their tributary watercourses... (c) The dumping of more than two cubic yards of snow removed from streets, road and parking areas directly into lakes, reservoirs, impoundments or streams is prohibited	2
3-11	Consider wetlands and riparian areas and their non-point source (nps) control potential on a watershed scale		0
3-12	Identify existing functions of those wetland and riparian areas with significant nps control potential when implementing nps management practices. Do not alter wetlands or riparian areas to improve their water quality at the expense of their other functions	Zoning Ordinance, Art. VII, Sec 155-69(D)(2) Wetlands: (a) Development activities in wetland and wetland buffer areas shall be regulated by state and federal permit requirements. (b) The development and/or use shall be designed so as not to disturb the natural function and process of the wetland.	2

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3-13	Conduct permitting, licensing, certification and nonregulatory nps pollution activities in a manner that protects wetland functions		0
3-14	Special zoning considerations to protect wetland areas	Zoning Ordinance, Art. VII, Sec 155-69(D)(2) Wetlands: (a) Development activities in wetland and wetland buffer areas shall be regulated by state and federal permit requirements. (b) The development and/or use shall be designed so as not to disturb the natural function and process of the wetland.	2
3-15	Use appropriate pretreatment practices such as vegetated systems or detention or retention basins to prevent adverse impacts to wetland functions that affect nps pollution abatement from hydrologic changes, sedimentation, or contaminants		0
3-16	All projects should require wetlands certification.		0
4-01	Clean maintenance areas regularly preferably by vacuuming to remove trash, sandings, paint chips, etc.		n/a
4-02	Prevent residue from being carried into surface waters by performing abrasive blasting within plastic tarp enclosures on windless days or within spray booths		n/a
4-03	Provide proper disposal/recycling facilities to marina patrons, preferably covered receptacles		n/a
4-04	Establish fish cleaning areas, and implement rules governing the conduct of fish cleaning operations		n/a
4-05	Educate boaters on the importance of proper fish cleaning practices		n/a
4-06	Implement fish composting where appropriate		n/a
4-07	Store materials in areas impervious to the type of material stored. Build curbs, berms, or other barriers around the areas to contain spills		n/a
4-08	Use separate, clearly labeled containers for the disposal of oil, gasoline, antifreeze, diesel, kerosene, and mineral spirits		n/a

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4-09	Target outreach programs about proper disposal at marina patrons through the use of signs, mailings, and other means	n/a
4-10	Promote the use in bilges of oil-absorbing materials, and replace them as necessary, preferably recycling, or disposing of them in accordance with petroleum disposal regulation	n/a
4-11	Use a container under the air vent while refueling inboard tanks if the tank vents are not equipped with a fuel/air separator	n/a
4-12	Prohibit in-water hull scraping or any underwater process to remove paint from boat hulls	n/a
4-13	Wash the boat hull above the waterline by hand, using only necessary amounts of detergents and cleaning compounds that are phosphate-free and biodegradable	n/a
4-14	Prohibit the use of detergents and cleaning compounds containing ammonia, sodium hypochloride, chlorinated solvents, petroleum distillates, alcohol, or lye	n/a
4-15	Educate individuals about the importance of trash reduction and recycling through: interpretive and instructional signs placed at marinas and boat-launching sites, pamphlets or flyers, newsletters, inserts in billings, meetings and presentations, workshops, and certification programs	n/a
4-16	Inspect pumpout facilities regularly, and repair them, if practical, under a maintenance contract with a competent contractor	n/a
4-17	Add language to slip lease agreements mandating the use of pumpout facilities and specifying penalties for failure to comply	n/a
4-18	Place dye tablets in holding tanks to identify and discourage illegal disposal	n/a
4-19	Prohibit motorized vessels from areas (define areas) that contain important shallow-water habitats	n/a

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4-20	Establish and enforce no-wake zones to decrease turbidity and reduce erosion potential from boat wakes	n/a
4-21	Design and site marinas to maximize exchange of marina basin water. Limit basins and channels with square corners that tend to trap flotsam, and place dock structures in a manner that promotes circulation	n/a
4-22	Perform a preconstruction assessment, which includes a water quality monitoring and modeling methodology, to predict post-construction water quality conditions	n/a
4-23	Monitor water quality during construction to protect ambient water quality to the maximum practicable extent	n/a
4-24	Develop a marina siting policy to discourage development in areas containing important habitat designated by local, State, or federal agencies	n/a
4-25	Conduct surveys and employ rapid bioassessment techniques to assess historic habitat function (e.g. spawning, nursery, and migration pathways) and potential impacts to these and other biological functions and resources	n/a
4-26	Encourage the redevelopment or expansion of existing marina facilities that have demonstrated minimal environmental impacts instead of developing new marina facilities	n/a
4-27	Consider alternative sites with minimal potential environmental impacts when the use of previously disturbed sites is not feasible	n/a
4-28	Minimize disturbance of indigenous vegetation in the riparian area	n/a
4-29	Use soil bioengineering or plants, wherever conditions allow, to restore damaged habitat along shorelines and streambanks	n/a

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4-30	Use properly designed and constructed engineering practices that minimize shoreline disturbance in areas where soil bioengineering and plants are ineffective	n/a
4-31	Use appropriate shore erosion control methods, such as returns or return walls, in areas where existing protection methods are being flanked or are falling	n/a
4-32	Plan and design all steambank, shoreline, and navigation structures so that they do not transfer erosion energy to or otherwise cause visible loss of surrounding streambanks or shorelines	n/a
4-33	Locate and design fuel stations so that spills can be contained in a limited area	n/a
4-34	Design and install underground fuel storage tanks according to State regulations, including the provision of detection systems and automatic fuel tank and pump leak shut-offs	n/a
4-35	Provide aboveground fuel tanks and fueling areas with a curbed or diked storage area to handle containment volumes meeting State (and local) codes and inspect regularly	n/a
4-36	Use preferred pumpout systems: fixed-point, portable, dedicated slipside, and pumpout boats	n/a
4-37	Design onsite wastewater treatment systems to specifically handle waste from vessels	n/a
4-38	Post pumpout facility location and regulations at the marina. Charge fees that encourage rather than discourage facility use. Consider offsetting the cost of maintaining pumpout facilities by fuel sales where these facilities are conveniently located in close proximity to one another	n/a
4-39	Restrict boat repair and maintenance activities to clearly marked designated areas to prevent debris from falling into the water and preventing invasive species	n/a

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4-40	Secure all fueling facilities and storage areas with appropriate shut-off devices and security locks and inspect regularly		n/a
4-41	Design fueling stations with spill containment equipment that is stored in a clearly marked location, accessible to work and storage areas. Post emergency phone numbers in a prominent location		n/a
4-42	Design a spill contingency plan		n/a
4-43	Inspect and maintain all containment berms or devices in accordance with State regulations. Investigate immediately signs of leakage or spillage, and undertake cleanup in accordance with applicable best management practices		n/a
4-44	Have a trained operator present and prepared to respond to accidental spills		n/a
4-45	Maintain daily inventory records to identify abnormal loss or gain of liquid		n/a
4-46	Prohibit the cleaning of hoses, fittings, pumps, and other accessory equipment on piers, docks or adjacent upland to prevent runoff into the marina basin or other surface or groundwater		n/a
4-47	Create and/or maintain a dedicated fund for maintenance in the case of government-owned facilities		n/a
4-48	Restrict the operation of pumpout facilities to trained marina personnel only		n/a
5-01	Conduct road and bridge maintenance (de-icing material usage and storage, pot-hole repair, bridge washing, scraping and painting, etc) according to best management practices	Zoning Ordinance, Art. VI, Sec 155-69 (7)(i): All land-disturbing activity, including general construction, highway construction, access road construction and maintenance, is prohibited except where remedial measures have been put in place to minimize erosion and sediment production as per the standards of the Livonia Design Criteria and New York State Guidelines for Stream Corridor Management and Erosion and Sediment Control. Practice: salt storage, spreading and other BMPs are readily used by the department	2

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5-02	Conduct right-of-way activities (mowing, brush removal, pesticide and fertilizer use, etc) - according to best management practices	Practice: no chemicals are used; vegetation retained on steep slopes	2
5-03	Include high percentage of indigenous plants in new landscaping on public-owned properties (excluding arboretums, horticultural gardens, and site requiring turf grasses)	Practice: standard procedure	2
5-04	Implement a regular inspection and maintenance plan of existing structures	Practice: regular inspection and maintenance takes place	2
5-05	Develop and identify erosion/sediment control areas (examples include steep slopes, easily erodible soils, and nearby sensitive areas) and retrofit opportunities	Practice: few examples in recent time; however some structural methods have been put in place	2
5-06	Require percentage of roads to be tested with non-ice and non-sand de-icing.		0
5-07	Minimize the amount of land disturbed and the duration of disturbance	Practice: standard procedure	2
5-08	Preserve natural features and conform substantially with the natural boundaries and alignment of waterbodies	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], Storm Drainage I.5.1: In general, the preservation of natural watercourses is preferable to the construction of drainage channels... See Also Zoning Ordinance, Art VII, Sec 155-69(6)(c): A buffer strip consistent with the following standards shall separate all new structures...from the stream.	2
5-09	Retain and protect trees and other natural vegetation on and near disturbed sites	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], I.4.7: The developer shall take adequate measures to preserve desirable existing trees in suitable locations within the subdivision. See Also Zoning Ordinance, Art VII, Sec 155-69(D)(1): Whenever possible, the site plan shall be so designed as to minimize the number of trees 30 feet and over in height which would have to be removed...	2
5-10	Retain additional runoff sites		0
5-11	Minimize the creation of impervious areas		0

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5-12	Treat increased runoff caused by changed surface conditions to minimize the danger of flooding, erosion and pollutants entering waterbodies prior to, during and after construction		0
5-13	Use temporary vegetation and mulching to protect exposed and critical areas during development	Practice: hydroseeding	2
5-14	Redistribute topsoil within the boundaries of the disturbed land for seeding and planting	Practice: standard procedure	2
5-15	Stabilize disturbed soils as soon as possible	Practice: standard procedure	2
5-16	Minimize the use of cut and fill operations. Conform such operations to topography and soils to minimize erosion potential and adequately accommodate runoff		0
5-17	Control erosion and sedimentation prior to, during and after site preparation and construction		0
5-18	Require long term stormwater management plan.		0
5-19	Require long term sedimentation control & maintenance.		0
5-20	Target existing public holdings, such as parks, for removing unnecessary impervious surfaces		0
5-21	Incorporate New York State Department of Transportation design and guidance documents, standard specifications, and procedural manuals (<i>Highway Design Manual</i> , <i>Environmental Procedures Manual</i> , <i>Maintenance Guidelines</i> , etc) into local laws and operating procedures		0
5-22	Ensure application of appropriate solid and hazardous waste generation and disposal practices including source controls and recycling	Practice: basic procedures are in place	1
5-23	Ensure proper operation and maintenance of runoff management facilities	Practice: visual inspection; vaccum truck used for cleaning out facilities when necessary	2
5-24	Participate in Cornell Local Roads Program activities and training	Practice: supervisor attends	2

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5-25	Target training programs at highway officials, contractors, construction workers, inspectors, zoning and planning officials		0
5-26	Target training and outreach programs about the proper handling of materials, leakage and spill prevention and spill response procedures at maintenance staff and workers	Practice: staff receives basic OSHA workplace safety training	1
6-01	Conduct regular inspections of OWTS at a frequency adequate to determine failure and undertake required maintenance		0
6-02	Institute setback guidelines		0
6-03	Promulgate plumbing codes that require practices that are compatible with OWTS		0
6-04	Target outreach programs at homeowners, contractors and developers	Practice: Cornell Cooperative Extension, Soil and Water Conservation Districts, Livingston County Health Dept. all conduct education and outreach programs and/or offer technical assistance	2
6-05	Inspection of all OWTS at property transfer or within 1 year prior to transfer	Livingston County Sanitary Code, Article II, Sec. 7.1-7.4: [Inspections to occur at time of construction and at property transfer]	2
6-06	Require all properties within 500' of municipal service to connect.	Construction Specifications for Land Development, Street, Road and Pavement Design [of subdivisions], 1.11.1: Sanitary sewers shall be used wherever the proximity of existing sewers make it possible... See Also 1.12.2: Water lines shall be used wherever the proximity of water lines make it possible. See Also Livingston County Sanitary Code, Article II, Sec. 3.3: No individual sewage treatment system shall be installed on property accessible to a public or municipal sanitary sewer.	2
6-07	Set goals for effluent limits (nitrogen, phosphorous, BOD, etc)		0

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	Best Management Practices (BMP)	Existing Means of Implementation (law, regulation, practice, etc)	Degree of Implementation
			(2-fully, 1-partially, 0-not at all, n/a-not applicable)
1-01	Identify retrofit opportunities		0
1-02	Identify habitat and natural conveyance system restoration opportunities		0
1-03	Establish retention/detention areas		0
1-04	Acquire additional land for locating treatment facilities		0
1-05	Encourage homeowners to place compost piles away from waterbodies and roadways		0
1-06	Encourage proper use and disposal of lawn and other household chemicals	Practice: Genesee, Livingston and Wyoming Counties Solid Waste Management Committee; household hazardous waste disposal advertised; services available by appointment	2
1-07	Institute turf management practices on golf courses and parks and recreation areas		0
1-08	Undertake storm drain stenciling		0
1-09	Encourage volunteer programs, such as adopt-a-highways and adopt-a-stream, etc.	Practice: adopt-a-highway administered by state and county highway departments; Conesus Lake Watershed Planning Committee administers volunteer education and outreach, in conjunction with SWCD and CCE	2
1-10	Include high percentage of indigenous plants in new landscaping on privately-owned properties (excluding arboretums, horticultural gardens, and sites requiring turf grasses)		0
1-11	Encourage water conservation		0
1-12	Develop outreach programs targeted at specific problems related to water quality management & resource conservation	Practice: FL/LOWPA, the Finger Lakes Institute, county SWCD, Cornell Cooperative Extension and local watershed groups each develop programs	2
1-13	Encourage proper control of pet wastes		0
1-14	Encourage continued operation of private storm water runoff control structures		0
1-15	Discourage feeding of waterfowl		0

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1-16	Discourage the introduction of exotic aquatic species (Eurasian water milfoil, zebra mussels, water chestnut, etc)	Practice: Finger Lakes Institute "Weeds Watch Out" program, as well as other initiatives by CCE, SWCD, and other local watershed groups	2
1-17	Encourage continued (periodic) operation and maintenance of private septic disposal systems	Practice: SLAP-5 has conducted extensive education and outreach throughout the Finger Lakes region regarding proper operation and maintenance of septic systems, along with county CCE's, SWCD's and other pertinent groups	2
1-18	Effective and consistent application and enforcement of stormwater regulations & requirements		0
1-19	Require certification of existing on site septic systems for property transfers or building expansions.	Livingston County Sanitary Code, Article II, Sec. 7.1-7.4: [Inspections to occur at time of construction and at property transfer]	2
1-20	Require entire property (existing as well as proposed) to be included in stormwater analysis/calculation.		0
1-21	Minimize the amount of land disturbed and the duration of disturbance	Comprehensive Plan, page 29, "Residential Goals and Policies" #4: Limit new residential development in areas which are environmentally sensitive. This would include areas subject to natural flooding, areas with erodible soil, wetlands, steeply sloped areas and other locations characterized by similar physical limitations.	1
1-22	Preserve natural features and conform substantially with the natural boundaries and alignment of waterbodies	Comprehensive Plan, page 31, "Open Space, Conservation and Recreation Goals and Policies:" Direct the Town's land use and development program in a manner that enhances the natural landscape, helps to create an open space system and establishes a natural environment that reinforces the rural character of the community...	1
1-23	Retain and protect trees and other natural vegetation on and near disturbed sites		0
1-24	Account for topography and soil type in efforts to minimize erosion potential		0
1-25	Maintain runoff rates similar to pre-construction levels		0
1-26	Minimize the creation of impervious areas		0

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1-27	Control increased runoff caused by changed surface conditions to minimize the danger of flooding, erosion, sedimentation and pollutants entering waterbodies prior to, during and after construction		0
1-28	Use temporary vegetation and mulching to protect exposed and critical areas during development		0
1-29	Redistribute topsoil within the boundaries of the disturbed land for seeding and planting		0
1-30	Stabilize disturbed soils as soon as possible		0
1-31	Minimize the use of cut and fill operations. Conform such operations to topography and soils to minimize erosion potential and adequately accommodate runoff	Zoning Ordinance, Art VI, Sec 606(D)(a): Architectural design of the house or structure shall be such as to minimize the amount of cutting into the embankment...	2
1-32	Use appropriate solid and hazardous waste generation and disposal practices including source controls and recycling		0
1-33	Encourage construction site management techniques which include the proper handling and disposal of pesticides and petroleum products and containers		0
1-34	Ensure proper operation and maintenance of runoff management facilities		0
1-35	Target training for contractors, inspectors and zoning and planning officials.		0
1-36	Require tree surveys and/or cutting plans.		0
1-37	Develop priority list for BMP's - use of vegetative low areas for retention/infiltration.		0
1-38	Encourage cluster development.	Comprehensive Plan, page 28, "Land Use Goals and Policies" #4: Utilize site plan techniques to minimize the potential loss of prime agricultural soils and disruptions to farming operations that could result from new non-farm development.	1
1-39	Require connection to and/or extension of existing water & sewer if project is within 500 feet of existing infrastructure	Livingston County Sanitary Code, Article II, Sec. 3.3 No individual sewage treatment system shall be installed on property accessible to a public or municipal sanitary sewer.	2

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1-40	Enact limits on driveway grades.	Zoning Ordinance, Art VI, Sec 606(D)(b): Location of driveway, walkway, accessory buildings and structures and general grading shall conform to the same overall objective stated in Paragraph (a) above [see 1-31]	2
1-41	For redevelopment, employ regulations that provide for technologically advanced (on and off) site wastewater treatment systems to optimize efficiencies and address "challenging" sites		0
1-42	Implement Federal/State Stormwater (SPDES) Phase II requirements	Practice: rules for Pre/Post Construction facilitated by county SWCD, county planning and the regional planning council	2
2-01	Consider potential water quality impacts when selecting silviculture system (yarding system, site preparation, pesticides employment, etc)	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-02	Consider harvesting practices		0
2-03	Seasonal preference for logging operations		0
2-04	Have specialists (geologist, soil scientist, geotechnical engineer, wildland hydrologist) review plans in high erosion hazard areas	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-05	Preplan harvest areas, skid trails, and access so as to be on stable soils, avoiding steep gradients, multiple stream crossings, poor drainage areas, etc.	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-06	Limit grades of access roads.		0

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2-07	Require stabilization of roads/drives to forestry site.		0
2-08	Employ natural topography and contour for design of road network		0
2-09	Require stormwater controls for increased runoff from ground cover modification	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-10	Consider site restoration	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-11	Use Agricultural Environmental Management (AEM)	Practice: Active and administered by county SWCD; projects are prioritized each year based on local needs and EPF funding	2
2-12	Require farms seeking agricultural value assessment to participate in AEM		0
3-01	Develop an operation and maintenance program for existing modified streams that includes identification of opportunities and actions to restore habitat and the physical and chemical characteristics of these streams.		0
3-02	Improve stream quality by controlling instream sedimentation and selectively clearing debris		0
3-03	Establish or reestablish riparian buffers		0
3-04	Prevent animal wastes from entering waterbodies		0
3-05	Attempt vegetative stabilization before undertaking structural measures		0

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3-06	Design and construct shore erosion control facilities, in accordance with an erosion and sedimentation control plan, in areas where marsh creation and soil bioengineering are ineffective or where existing protection methods are being flanked or are falling		0
3-07	Schedule the periodic maintenance of sediment control measures, and inspect and repair them as needed in conformance with established schedule.		0
3-08	Protect streambanks through direct nonstructural means, such as new vegetation or protection of existing vegetation; direct structural means, such as revetments and bulkheads; indirect nonstructural means, such as regulating irrigation near streambanks or rerouting overbank drainage; or indirect structural means, such as deflecting channel flow away from streambanks with dikes, board fences and gabions		0
3-09	Use setbacks to minimize disturbance of land adjacent to streambanks and shorelines		0
3-10	Prevent discharges to waterbodies in amounts that would adversely affect the taste, color or odor of the waters, or would impair the waters for their best usages		0
3-11	Consider wetlands and riparian areas and their non-point source (nps) control potential on a watershed scale		0
3-12	Identify existing functions of those wetland and riparian areas with significant nps control potential when implementing nps management practices. Do not alter wetlands or riparian areas to improve their water quality at the expense of their other functions		0
3-13	Conduct permitting, licensing, certification and nonregulatory nps pollution activities in a manner that protects wetland functions		0

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3-14	Special zoning considerations to protect wetland areas		0
3-15	Use appropriate pretreatment practices such as vegetated systems or detention or retention basins to prevent adverse impacts to wetland functions that affect nps pollution abatement from hydrologic changes, sedimentation, or contaminants		0
3-16	All projects should require wetlands certification.		0
4-01	Clean maintenance areas regularly preferably by vacuuming to remove trash, sandings, paint chips, etc.		n/a
4-02	Prevent residue from being carried into surface waters by performing abrasive blasting within plastic tarp enclosures on windless days or within spray booths		n/a
4-03	Provide proper disposal/recycling facilities to marina patrons, preferably covered receptacles		n/a
4-04	Establish fish cleaning areas, and implement rules governing the conduct of fish cleaning operations		n/a
4-05	Educate boaters on the importance of proper fish cleaning practices		n/a
4-06	Implement fish composting where appropriate		n/a
4-07	Store materials in areas impervious to the type of material stored. Build curbs, berms, or other barriers around the areas to contain spills		n/a
4-08	Use separate, clearly labeled containers for the disposal of oil, gasoline, antifreeze, diesel, kerosene, and mineral spirits		n/a
4-09	Target outreach programs about proper disposal at marina patrons through the use of signs, mailings, and other means		n/a
4-10	Promote the use in bilges of oil-absorbing materials, and replace them as necessary, preferably recycling, or disposing of them in accordance with petroleum disposal regulation		n/a

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4-11	Use a container under the air vent while refueling inboard tanks if the tank vents are not equipped with a fuel/air separator		n/a
4-12	Prohibit in-water hull scraping or any underwater process to remove paint from boat hulls		n/a
4-13	Wash the boat hull above the waterline by hand, using only necessary amounts of detergents and cleaning compounds that are phosphate-free and biodegradable		n/a
4-14	Prohibit the use of detergents and cleaning compounds containing ammonia, sodium hypochloride, chlorinated solvents, petroleum distillates, alcohol, or lye		n/a
4-15	Educate individuals about the importance of trash reduction and recycling through: interpretive and instructional signs placed at marinas and boat-launching sites, pamphlets or flyers, newsletters, inserts in billings, meetings and presentations, workshops, and certification programs		n/a
4-16	Inspect pumpout facilities regularly, and repair them, if practical, under a maintenance contract with a competent contractor		n/a
4-17	Add language to slip lease agreements mandating the use of pumpout facilities and specifying penalties for failure to comply		n/a
4-18	Place dye tablets in holding tanks to identify and discourage illegal disposal		n/a
4-19	Prohibit motorized vessels from areas (define areas) that contain important shallow-water habitats		n/a
4-20	Establish and enforce no-wake zones to decrease turbidity and reduce erosion potential from boat wakes		n/a
4-21	Design and site marinas to maximize exchange of marina basin water. Limit basins and channels with square corners that tend to trap flotsam, and place dock structures in a manner that promotes circulation		n/a

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4-22	Perform a preconstruction assessment, which includes a water quality monitoring and modeling methodology, to predict post-construction water quality conditions		n/a
4-23	Monitor water quality during construction to protect ambient water quality to the maximum practicable extent		n/a
4-24	Develop a marina siting policy to discourage development in areas containing important habitat designated by local, State, or federal agencies		n/a
4-25	Conduct surveys and employ rapid bioassessment techniques to assess historic habitat function (e.g. spawning, nursery, and migration pathways) and potential impacts to these and other biological functions and resources		n/a
4-26	Encourage the redevelopment or expansion of existing marina facilities that have demonstrated minimal environmental impacts instead of developing new marina facilities		n/a
4-27	Consider alternative sites with minimal potential environmental impacts when the use of previously disturbed sites is not feasible		n/a
4-28	Minimize disturbance of indigenous vegetation in the riparian area		n/a
4-29	Use soil bioengineering or plants, wherever conditions allow, to restore damaged habitat along shorelines and streambanks		n/a
4-30	Use properly designed and constructed engineering practices that minimize shoreline disturbance in areas where soil bioengineering and plants are ineffective		n/a
4-31	Use appropriate shore erosion control methods, such as returns or return walls, in areas where existing protection methods are being flanked or are falling		n/a

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4-32	Plan and design all steambank, shoreline, and navigation structures so that they do not transfer erosion energy to or otherwise cause visible loss of surrounding streambanks or shorelines		n/a
4-33	Locate and design fuel stations so that spills can be contained in a limited area		n/a
4-34	Design and install underground fuel storage tanks according to State regulations, including the provision of detection systems and automatic fuel tank and pump leak shut-offs		n/a
4-35	Provide aboveground fuel tanks and fueling areas with a curbed or diked storage area to handle containment volumes meeting State (and local) codes and inspect regularly		n/a
4-36	Use preferred pumpout systems: fixed-point, portable, dedicated slipside, and pumpout boats		n/a
4-37	Design onsite wastewater treatment systems to specifically handle waste from vessels		n/a
4-38	Post pumpout facility location and regulations at the marina. Charge fees that encourage rather than discourage facility use. Consider offsetting the cost of maintaining pumpout facilities by fuel sales where these facilities are conveniently located in close proximity to one another		n/a
4-39	Restrict boat repair and maintenance activities to clearly marked designated areas to prevent debris from falling into the water and preventing invasive species		n/a
4-40	Secure all fueling facilities and storage areas with appropriate shut-off devices and security locks and inspect regularly		n/a
4-41	Design fueling stations with spill containment equipment that is stored in a clearly marked location, accessible to work and storage areas. Post emergency phone numbers in a prominent location		n/a

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4-42	Design a spill contingency plan		n/a
4-43	Inspect and maintain all containment berms or devices in accordance with State regulations. Investigate immediately signs of leakage or spillage, and undertake cleanup in accordance with applicable best management practices		n/a
4-44	Have a trained operator present and prepared to respond to accidental spills		n/a
4-45	Maintain daily inventory records to identify abnormal loss or gain of liquid		n/a
4-46	Prohibit the cleaning of hoses, fittings, pumps, and other accessory equipment on piers, docks or adjacent upland to prevent runoff into the marina basin or other surface or groundwater		n/a
4-47	Create and/or maintain a dedicated fund for maintenance in the case of government-owned facilities		n/a
4-48	Restrict the operation of pumpout facilities to trained marina personnel only		n/a
5-01	Conduct road and bridge maintenance (de-icing material usage and storage, pot-hole repair, bridge washing, scraping and painting, etc) according to best management practices	Practice: basic BMPs are used when feasible; currently no salt storage	1
5-02	Conduct right-of-way activities (mowing, brush removal, pesticide and fertilizer use, etc) - according to best management practices	Practice: no chemicals are used; seasonal conditions are taken into consideration	2
5-03	Include high percentage of indigenous plants in new landscaping on public-owned properties (excluding arboretums, horticultural gardens, and site requiring turf grasses)		0
5-04	Implement a regular inspection and maintenance plan of existing structures	Practice: routine visual inspections take place	1

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5-05	Develop and identify erosion/sediment control areas (examples include steep slopes, easily erodible soils, and nearby sensitive areas) and retrofit opportunities	Practice: riprap has been used to stabilize roadbanks and ditches near sensitive areas	2
5-06	Require percentage of roads to be tested with non-ice and non-sand de-icing.		0
5-07	Minimize the amount of land disturbed and the duration of disturbance	Comprehensive Plan, page 29, "Residential Goals and Policies" #4: Limit new residential development in areas which are environmentally sensitive. This would include areas subject to natural flooding, areas with erodible soil, wetlands, steeply sloped areas and other locations characterized by similar physical limitations.	1
5-08	Preserve natural features and conform substantially with the natural boundaries and alignment of waterbodies	Comprehensive Plan, page 31, "Open Space, Conservation and Recreation Goals and Policies:" Direct the Town's land use and development program in a manner that enhances the natural landscape, helps to create an open space system and establishes a natural environment that reinforces the rural character of the community...	1
5-09	Retain and protect trees and other natural vegetation on and near disturbed sites	Practice: standard procedure	2
5-10	Retain additional runoff sites		0
5-11	Minimize the creation of impervious areas		0
5-12	Treat increased runoff caused by changed surface conditions to minimize the danger of flooding, erosion and pollutants entering waterbodies prior to, during and after construction	Practice: only in extreme situations	1
5-13	Use temporary vegetation and mulching to protect exposed and critical areas during development	Practice: hydroseeding	2
5-14	Redistribute topsoil within the boundaries of the disturbed land for seeding and planting	Practice: standard procedure	2
5-15	Stabilize disturbed soils as soon as possible	Practice: standard procedure	2
5-16	Minimize the use of cut and fill operations. Conform such operations to topography and soils to minimize erosion potential and adequately accommodate runoff		0

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5-17	Control erosion and sedimentation prior to, during and after site preparation and construction	Practice: only in extreme situations	1
5-18	Require long term stormwater management plan.		0
5-19	Require long term sedimentation control & maintenance.		0
5-20	Target existing public holdings, such as parks, for removing unnecessary impervious surfaces		0
5-21	Incorporate New York State Department of Transportation design and guidance documents, standard specifications, and procedural manuals (<i>Highway Design Manual, Environmental Procedures Manual, Maintenance Guidelines, etc</i>) into local laws and operating procedures		0
5-22	Ensure application of appropriate solid and hazardous waste generation and disposal practices including source controls and recycling	Practice: basic controls are in place	1
5-23	Ensure proper operation and maintenance of runoff management facilities		0
5-24	Participate in Cornell Local Roads Program activities and training	Practice: supervisor attends every 2 years	2
5-25	Target training programs at highway officials, contractors, construction workers, inspectors, zoning and planning officials		0
5-26	Target training and outreach programs about the proper handling of materials, leakage and spill prevention and spill response procedures at maintenance staff and workers	Practice: basic workplace safety training	1
6-01	Conduct regular inspections of OWTS at a frequency adequate to determine failure and undertake required maintenance		0
6-02	Institute setback guidelines		0
6-03	Promulgate plumbing codes that require practices that are compatible with OWTS		0

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6-04	Target outreach programs at homeowners, contractors and developers	Practice: Cornell Cooperative Extension, Soil and Water Conservation Districts, Livingston County Health Dept. all conduct education and outreach programs and/or offer technical assistance	2
6-05	Inspection of all OWTS at property transfer or within 1 year prior to transfer	Livingston County Sanitary Code, Article II, Sec. 7.1-7.4: [Inspections to occur at time of construction and at property transfer]	2
6-06	Require all properties within 500' of municipal service to connect.	Livingston County Sanitary Code, Article II, Sec. 3.3: No individual sewage treatment system shall be installed on property accessible to a public or municipal sanitary sewer.	2
6-07	Set goals for effluent limits (nitrogen, phosphorous, BOD, etc)		0

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	Best Management Practices (BMP)	Existing Means of Implementation (law, regulation, practice, etc)	Degree of Implementation
			(2-fully, 1-partially, 0-not at all, n/a-not applicable)
1-01	Identify retrofit opportunities		0
1-02	Identify habitat and natural conveyance system restoration opportunities		0
1-03	Establish retention/detention areas		0
1-04	Acquire additional land for locating treatment facilities		0
1-05	Encourage homeowners to place compost piles away from waterbodies and roadways		0
1-06	Encourage proper use and disposal of lawn and other household chemicals	Practice: Genesee, Livingston and Wyoming Counties Solid Waste Management Committee; household hazardous waste disposal advertised; services available by appointment	2
1-07	Institute turf management practices on golf courses and parks and recreation areas		0
1-08	Undertake storm drain stenciling		0
1-09	Encourage volunteer programs, such as adopt-a-highways and adopt-a-stream, etc.	Practice: adopt-a-highway administered by state and county highway departments; Conesus Lake Watershed Planning Committee administers volunteer education and outreach, in conjunction with SWCD and CCE	2
1-10	Include high percentage of indigenous plants in new landscaping on privately-owned properties (excluding arboretums, horticultural gardens, and sites requiring turf grasses)		0
1-11	Encourage water conservation		0
1-12	Develop outreach programs targeted at specific problems related to water quality management & resource conservation	Practice: FL/LOWPA, the Finger Lakes Institute, county SWCD, Cornell Cooperative Extension and local watershed groups each develop programs	2
1-13	Encourage proper control of pet wastes		0
1-14	Encourage continued operation of private storm water runoff control structures		0
1-15	Discourage feeding of waterfowl		0

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1-16	Discourage the introduction of exotic aquatic species (Eurasian water milfoil, zebra mussels, water chestnut, etc)	Practice: Finger Lakes Institute "Weeds Watch Out" program, as well as other initiatives by CCE, SWCD, and other local watershed groups	2
1-17	Encourage continued (periodic) operation and maintenance of private septic disposal systems	Practice: SLAP-5 has conducted extensive education and outreach throughout the Finger Lakes region regarding proper operation and maintenance of septic systems, along with county CCE's, SWCD's and other pertinent groups	2
1-18	Effective and consistent application and enforcement of stormwater regulations & requirements		0
1-19	Require certification of existing on site septic systems for property transfers or building expansions.	Livingston County Sanitary Code, Article II, Sec. 7.1-7.4: [Inspections to occur at time of construction and at property transfer]	2
1-20	Require entire property (existing as well as proposed) to be included in stormwater analysis/calculation.		0
1-21	Minimize the amount of land disturbed and the duration of disturbance		0
1-22	Preserve natural features and conform substantially with the natural boundaries and alignment of waterbodies		0
1-23	Retain and protect trees and other natural vegetation on and near disturbed sites		0
1-24	Account for topography and soil type in efforts to minimize erosion potential		0
1-25	Maintain runoff rates similar to pre-construction levels		0
1-26	Minimize the creation of impervious areas		0
1-27	Control increased runoff caused by changed surface conditions to minimize the danger of flooding, erosion, sedimentation and pollutants entering waterbodies prior to, during and after construction		0
1-28	Use temporary vegetation and mulching to protect exposed and critical areas during development		0
1-29	Redistribute topsoil within the boundaries of the disturbed land for seeding and planting		0
1-30	Stabilize disturbed soils as soon as possible		0

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1-31	Minimize the use of cut and fill operations. Conform such operations to topography and soils to minimize erosion potential and adequately accommodate runoff		0
1-32	Use appropriate solid and hazardous waste generation and disposal practices including source controls and recycling		0
1-33	Encourage construction site management techniques which include the proper handling and disposal of pesticides and petroleum products and containers		0
1-34	Ensure proper operation and maintenance of runoff management facilities		0
1-35	Target training for contractors, inspectors and zoning and planning officials.		0
1-36	Require tree surveys and/or cutting plans.		0
1-37	Develop priority list for BMP's - use of vegetative low areas for retention/infiltration.		0
1-38	Encourage cluster development.		0
1-39	Require connection to and/or extension of existing water & sewer if project is within 500 feet of existing infrastructure	Livingston County Sanitary Code, Article II, Sec. 3.3 : No individual sewage treatment system shall be installed on property accessible to a public or municipal sanitary sewer.	2
1-40	Enact limits on driveway grades.		0
1-41	For redevelopment, employ regulations that provide for technologically advanced (on and off) site wastewater treatment systems to optimize efficiencies and address "challenging" sites		0
1-42	Implement Federal/State Stormwater (SPDES) Phase II requirements	Practice: rules for Pre/Post Construction facilitated by county SWCD, county planning and the regional planning council	2

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2-01	Consider potential water quality impacts when selecting silviculture system (yarding system, site preparation, pesticides employment, etc)	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-02	Consider harvesting practices		0
2-03	Seasonal preference for logging operations		0
2-04	Have specialists (geologist, soil scientist, geotechnical engineer, wildland hydrologist) review plans in high erosion hazard areas	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-05	Preplan harvest areas, skid trails, and access so as to be on stable soils, avoiding steep gradients, multiple stream crossings, poor drainage areas, etc.	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-06	Limit grades of access roads.		0
2-07	Require stabilization of roads/drives to forestry site.		0
2-08	Employ natural topography and contour for design of road network		0
2-09	Require stormwater controls for increased runoff from ground cover modification	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2

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2-10	Consider site restoration	Practice: Livingston County Cornell Cooperative Extension in conjunction with the Livingston County SWCD and several other governmental and academic organizations is working on several demonstration projects on farms implementing BMPs re: sediment transport and nutrient management (installing catch basins, stream buffers, and monitoring water quality to determine effectiveness)	2
2-11	Use Agricultural Environmental Management (AEM)	Practice: Active and administered by county SWCD; projects are prioritized each year based on local needs and EPF funding	2
2-12	Require farms seeking agricultural value assessment to participate in AEM		0
3-01	Develop an operation and maintenance program for existing modified streams that includes identification of opportunities and actions to restore habitat and the physical and chemical characteristics of these streams.		0
3-02	Improve stream quality by controlling instream sedimentation and selectively clearing debris		0
3-03	Establish or reestablish riparian buffers		0
3-04	Prevent animal wastes from entering waterbodies		0
3-05	Attempt vegetative stabilization before undertaking structural measures		0
3-06	Design and construct shore erosion control facilities, in accordance with an erosion and sedimentation control plan, in areas where marsh creation and soil bioengineering are ineffective or where existing protection methods are being flanked or are falling		0
3-07	Schedule the periodic maintenance of sediment control measures, and inspect and repair them as needed in conformance with established schedule.		0

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3-08	Protect streambanks through direct nonstructural means, such as new vegetation or protection of existing vegetation; direct structural means, such as revetments and bulkheads; indirect nonstructural means, such as regulating irrigation near streambanks or rerouting overbank drainage; or indirect structural means, such as deflecting channel flow away from streambanks with dikes, board fences and gabions		0
3-09	Use setbacks to minimize disturbance of land adjacent to streambanks and shorelines		0
3-10	Prevent discharges to waterbodies in amounts that would adversely affect the taste, color or odor of the waters, or would impair the waters for their best usages		0
3-11	Consider wetlands and riparian areas and their non-point source (nps) control potential on a watershed scale		0
3-12	Identify existing functions of those wetland and riparian areas with significant nps control potential when implementing nps management practices. Do not alter wetlands or riparian areas to improve their water quality at the expense of their other functions		0
3-13	Conduct permitting, licensing, certification and nonregulatory nps pollution activities in a manner that protects wetland functions		0
3-14	Special zoning considerations to protect wetland areas		0
3-15	Use appropriate pretreatment practices such as vegetated systems or detention or retention basins to prevent adverse impacts to wetland functions that affect nps pollution abatement from hydrologic changes, sedimentation, or contaminants		0
3-16	All projects should require wetlands certification.		0

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4-01	Clean maintenance areas regularly preferably by vacuuming to remove trash, sandings, paint chips, etc.		n/a
4-02	Prevent residue from being carried into surface waters by performing abrasive blasting within plastic tarp enclosures on windless days or within spray booths		n/a
4-03	Provide proper disposal/recycling facilities to marina patrons, preferably covered receptacles		n/a
4-04	Establish fish cleaning areas, and implement rules governing the conduct of fish cleaning operations		n/a
4-05	Educate boaters on the importance of proper fish cleaning practices		n/a
4-06	Implement fish composting where appropriate		n/a
4-07	Store materials in areas impervious to the type of material stored. Build curbs, berms, or other barriers around the areas to contain spills		n/a
4-08	Use separate, clearly labeled containers for the disposal of oil, gasoline, antifreeze, diesel, kerosene, and mineral spirits		n/a
4-09	Target outreach programs about proper disposal at marina patrons through the use of signs, mailings, and other means		n/a
4-10	Promote the use in bilges of oil-absorbing materials, and replace them as necessary, preferably recycling, or disposing of them in accordance with petroleum disposal regulation		n/a
4-11	Use a container under the air vent while refueling inboard tanks if the tank vents are not equipped with a fuel/air separator		n/a
4-12	Prohibit in-water hull scraping or any underwater process to remove paint from boat hulls		n/a
4-13	Wash the boat hull above the waterline by hand, using only necessary amounts of detergents and cleaning compounds that are phosphate-free and biodegradable		n/a

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4-14	Prohibit the use of detergents and cleaning compounds containing ammonia, sodium hypochloride, chlorinated solvents, petroleum distillates, alcohol, or lye		n/a
4-15	Educate individuals about the importance of trash reduction and recycling through: interpretive and instructional signs placed at marinas and boat-launching sites, pamphlets or flyers, newsletters, inserts in billings, meetings and presentations, workshops, and certification programs		n/a
4-16	Inspect pumpout facilities regularly, and repair them, if practical, under a maintenance contract with a competent contractor		n/a
4-17	Add language to slip lease agreements mandating the use of pumpout facilities and specifying penalties for failure to comply		n/a
4-18	Place dye tablets in holding tanks to identify and discourage illegal disposal		n/a
4-19	Prohibit motorized vessels from areas (define areas) that contain important shallow-water habitats		n/a
4-20	Establish and enforce no-wake zones to decrease turbidity and reduce erosion potential from boat wakes		n/a
4-21	Design and site marinas to maximize exchange of marina basin water. Limit basins and channels with square corners that tend to trap flotsam, and place dock structures in a manner that promotes circulation		n/a
4-22	Perform a preconstruction assessment, which includes a water quality monitoring and modeling methodology, to predict post-construction water quality conditions		n/a
4-23	Monitor water quality during construction to protect ambient water quality to the maximum practicable extent		n/a

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4-24	Develop a marina siting policy to discourage development in areas containing important habitat designated by local, State, or federal agencies		n/a
4-25	Conduct surveys and employ rapid bioassessment techniques to assess historic habitat function (e.g. spawning, nursery, and migration pathways) and potential impacts to these and other biological functions and resources		n/a
4-26	Encourage the redevelopment or expansion of existing marina facilities that have demonstrated minimal environmental impacts instead of developing new marina facilities		n/a
4-27	Consider alternative sites with minimal potential environmental impacts when the use of previously disturbed sites is not feasible		n/a
4-28	Minimize disturbance of indigenous vegetation in the riparian area		n/a
4-29	Use soil bioengineering or plants, wherever conditions allow, to restore damaged habitat along shorelines and streambanks		n/a
4-30	Use properly designed and constructed engineering practices that minimize shoreline disturbance in areas where soil bioengineering and plants are ineffective		n/a
4-31	Use appropriate shore erosion control methods, such as returns or return walls, in areas where existing protection methods are being flanked or are falling		n/a
4-32	Plan and design all steambank, shoreline, and navigation structures so that they do not transfer erosion energy to or otherwise cause visible loss of surrounding streambanks or shorelines		n/a
4-33	Locate and design fuel stations so that spills can be contained in a limited area		n/a

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4-34	Design and install underground fuel storage tanks according to State regulations, including the provision of detection systems and automatic fuel tank and pump leak shut-offs		n/a
4-35	Provide aboveground fuel tanks and fueling areas with a curbed or diked storage area to handle containment volumes meeting State (and local) codes and inspect regularly		n/a
4-36	Use preferred pumpout systems: fixed-point, portable, dedicated slipside, and pumpout boats		n/a
4-37	Design onsite wastewater treatment systems to specifically handle waste from vessels		n/a
4-38	Post pumpout facility location and regulations at the marina. Charge fees that encourage rather than discourage facility use. Consider offsetting the cost of maintaining pumpout facilities by fuel sales where these facilities are conveniently located in close proximity to one another		n/a
4-39	Restrict boat repair and maintenance activities to clearly marked designated areas to prevent debris from falling into the water and preventing invasive species		n/a
4-40	Secure all fueling facilities and storage areas with appropriate shut-off devices and security locks and inspect regularly		n/a
4-41	Design fueling stations with spill containment equipment that is stored in a clearly marked location, accessible to work and storage areas. Post emergency phone numbers in a prominent location		n/a
4-42	Design a spill contingency plan		n/a
4-43	Inspect and maintain all containment berms or devices in accordance with State regulations. Investigate immediately signs of leakage or spillage, and undertake cleanup in accordance with applicable best management practices		n/a

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4-44	Have a trained operator present and prepared to respond to accidental spills		n/a
4-45	Maintain daily inventory records to identify abnormal loss or gain of liquid		n/a
4-46	Prohibit the cleaning of hoses, fittings, pumps, and other accessory equipment on piers, docks or adjacent upland to prevent runoff into the marina basin or other surface or groundwater		n/a
4-47	Create and/or maintain a dedicated fund for maintenance in the case of government-owned facilities		n/a
4-48	Restrict the operation of pumpout facilities to trained marina personnel only		n/a
5-01	Conduct road and bridge maintenance (de-icing material usage and storage, pot-hole repair, bridge washing, scraping and painting, etc) according to best management practices		0
5-02	Conduct right-of-way activities (mowing, brush removal, pesticide and fertilizer use, etc) - according to best management practices		0
5-03	Include high percentage of indigenous plants in new landscaping on public-owned properties (excluding arboretums, horticultural gardens, and site requiring turf grasses)		0
5-04	Implement a regular inspection and maintenance plan of existing structures		0
5-05	Develop and identify erosion/sediment control areas (examples include steep slopes, easily erodible soils, and nearby sensitive areas) and retrofit opportunities		0
5-06	Require percentage of roads to be tested with non-ice and non-sand de-icing.		0
5-07	Minimize the amount of land disturbed and the duration of disturbance		0

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5-08	Preserve natural features and conform substantially with the natural boundaries and alignment of waterbodies		0
5-09	Retain and protect trees and other natural vegetation on and near disturbed sites		0
5-10	Retain additional runoff sites		0
5-11	Minimize the creation of impervious areas		0
5-12	Treat increased runoff caused by changed surface conditions to minimize the danger of flooding, erosion and pollutants entering waterbodies prior to, during and after construction		0
5-13	Use temporary vegetation and mulching to protect exposed and critical areas during development		0
5-14	Redistribute topsoil within the boundaries of the disturbed land for seeding and planting		0
5-15	Stabilize disturbed soils as soon as possible		0
5-16	Minimize the use of cut and fill operations. Conform such operations to topography and soils to minimize erosion potential and adequately accommodate runoff		0
5-17	Control erosion and sedimentation prior to, during and after site preparation and construction		0
5-18	Require long term stormwater management plan.		0
5-19	Require long term sedimentation control & maintenance.		0
5-20	Target existing public holdings, such as parks, for removing unnecessary impervious surfaces		0
5-21	Incorporate New York State Department of Transportation design and guidance documents, standard specifications, and procedural manuals (<i>Highway Design Manual</i> , <i>Environmental Procedures Manual</i> , <i>Maintenance Guidelines</i> , etc) into local laws and operating procedures		0

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5-22	Ensure application of appropriate solid and hazardous waste generation and disposal practices including source controls and recycling		0
5-23	Ensure proper operation and maintenance of runoff management facilities		0
5-24	Participate in Cornell Local Roads Program activities and training		0
5-25	Target training programs at highway officials, contractors, construction workers, inspectors, zoning and planning officials		0
5-26	Target training and outreach programs about the proper handling of materials, leakage and spill prevention and spill response procedures at maintenance staff and workers		0
6-01	Conduct regular inspections of OWTS at a frequency adequate to determine failure and undertake required maintenance		0
6-02	Institute setback guidelines		0
6-03	Promulgate plumbing codes that require practices that are compatible with OWTS		0
6-04	Target outreach programs at homeowners, contractors and developers	Practice: Cornell Cooperative Extension, Soil and Water Conservation Districts, Livingston County Health Dept. all conduct education and outreach programs and/or offer technical assistance	2
6-05	Inspection of all OWTS at property transfer or within 1 year prior to transfer	Livingston County Sanitary Code, Article II, Sec. 7.1-7.4: [Inspections to occur at time of construction and at property transfer]	2
6-06	Require all properties within 500' of municipal service to connect.	Livingston County Sanitary Code, Article II, Sec. 3.3: No individual sewage treatment system shall be installed on property accessible to a public or municipal sanitary sewer.	2
6-07	Set goals for effluent limits (nitrogen, phosphorous, BOD, etc)		0