

Schuyler County Water Resource Strategy



Lamoka Lake (foreground) and Waneta Lake (background). Photograph by Paul Giometti.

6th Edition

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**By the Schuyler County
Water Quality Coordinating Committee**

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INTRODUCTION

Schuyler County is a small rural county covering 330 square miles. The county's principle resource is its water – on the surface and underground. The major lakes are Seneca Lake, Cayuta Lake, Waneta Lake, Lamoka Lake, and Tobehanna Lake. These lakes are a key natural resource for the county, drawing tourists and providing recreation for county residents.

Schuyler County is situated in two major river basin systems: the Seneca River Basin (which includes Seneca and Cayuga Lakes) and the Susquehanna River Basin (which includes the Chemung and Upper Susquehanna Rivers). These basins were divided into the watersheds for this strategy (as shown in the following maps). This strategy addresses water resource issues in the context of these watersheds in order to integrate the evaluation of water resources with the land area that drains into each water body.

WATER QUALITY COORDINATING COMMITTEE

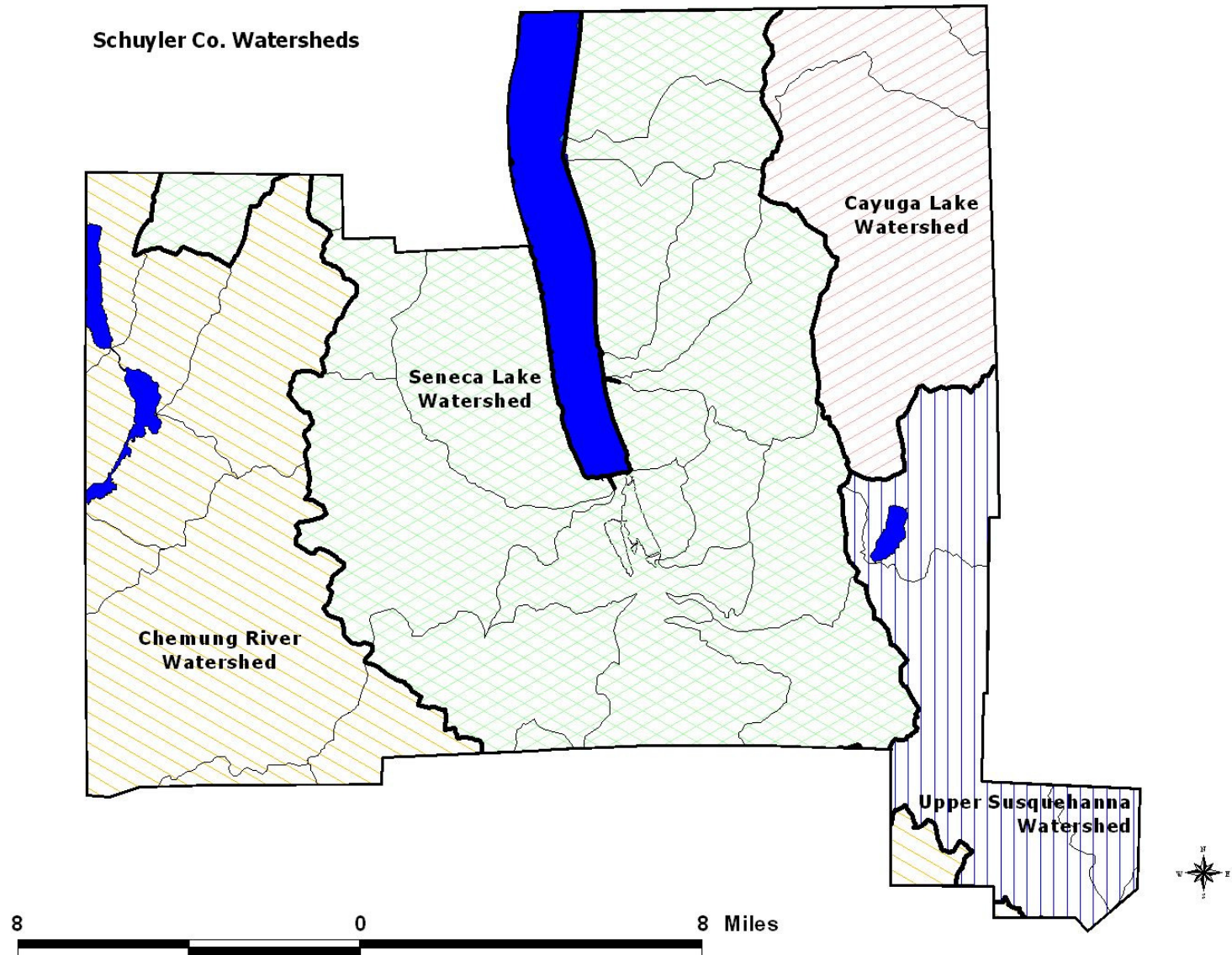
Purpose

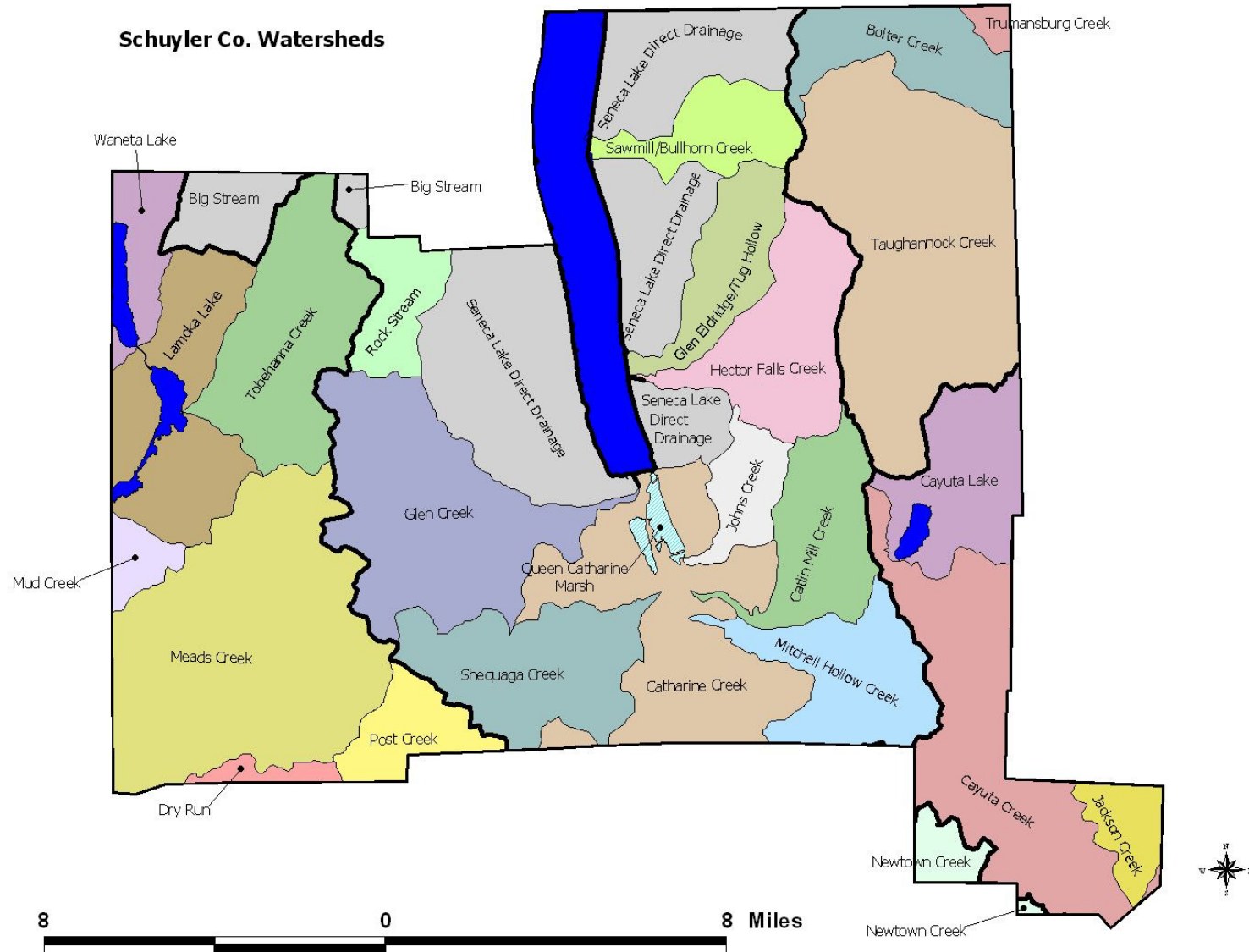
The Schuyler County Water Quality Coordinating Committee (WQCC) was established in 1992 to serve as a forum for discussion of water quality concerns in the county. The scope of the Committee's concerns has subsequently expanded to include flooding, habitat, and other water-related issues, in addition to water quality. On November 1, 2006, the Committee recommended that the scope of this strategy and the Committee's purpose be expanded to address all water resource issues in Schuyler County.

The WQCC provides a forum where specific water resource problems can be discussed and potential solutions can be identified. It is the purpose of the Committee to generate interest and pursue funding to address specific water resource problems and issues in the county. This includes educating the public about watershed management and its importance for maintaining high water quality and reducing flood damage. The Committee, acting as a facilitator and a forum for communication, will report only to itself, rather than to another governing body.

Membership

The Schuyler County Water Quality Coordinating Committee is comprised of a diverse group of people who have interest and knowledge about water resources in Schuyler County. It includes federal, state, and local agencies, municipalities, private organizations, and individual residents. Committee members are listed in Appendix A.





Each August, the Committee evaluates and confirms its membership and elects a Chair, Vice Chair, and Secretary. The Soil and Water Conservation District (SWCD) serves as the Treasurer. All funds received for the Committee are maintained and disbursed by the Schuyler County Soil and Water Conservation District (or Cornell Cooperative Extension) at the direction of the Committee.

Meetings

The Schuyler County Water Quality Committee meets every other month, with special meetings as needed. The individuals present at any meeting are deemed sufficient to conduct business. When a funding decision is to be made at a meeting, then all members would be notified two weeks in advance and given the chance to vote by proxy if desired. For votes related to budget and funding issues, each agency is granted one vote. A simple majority of those represented is needed to make any final decision.

Committee Functions

The WQCC functions as an educational forum by providing an opportunity for public and private individuals to learn about water resource problems and solutions. The Committee also supports individual agencies and organizations with developing and implementing water resource programs. More specifically, the Committee's functions are:

1. to provide an arena for discussing potential water resource problems with agencies that may assist in addressing and resolving these problems;
2. to provide a framework for pursuing funding for member agencies and organizations to implement water resource management projects and programs; and
3. to provide a means for coordinating water resource activities to maximize their benefits to the public.

Committee members with technical expertise are able to provide a scientific evaluation of potential problems and serve as leaders in developing potential solutions. Members from the legislature and municipalities aid in bringing residents' concerns to the Committee and are an important focal point for informing the public on the condition of Schuyler County's water resources. Members from private organizations are leaders in tracking water quality concerns in their areas of interest. Attachment B summarizes the functions of agencies and organizations on the Committee.

The Committee functions in several ways. Members report to the Committee on their water resource programs and projects. Water resource problems are discussed and potential solutions evaluated. When the Committee and its members identify projects that require a multi-agency approach, the Committee facilitates coordinated implementation. The Committee is also a forum for disseminating information about potential funding sources to its members.

WATER RESOURCE ISSUES IN SCHUYLER COUNTY

Schuyler County's principal resource is its water. Lakes, waterfalls, gorges, wetlands, and streams provide scenic beauty and recreational opportunities for residents and visitors. In the center of the county is Seneca Lake, which is the largest of New York's Finger Lakes. Catharine Creek and Cayuta Creek are noted for their fishing and wildlife opportunities. Water-based recreation, sport fisheries, wildlife habitat, agriculture, and the tourist industry all rely on the county's abundant water resources. Groundwater is also important, forming the water source for most county residents.

Schuyler County's principal hazard is also water, with flash flooding identified as the highest priority hazard in the county (*Draft Schuyler County Hazard Mitigation Plan*, February 2007). The soils and topography of the county make it very susceptible to flash flooding, which occurs somewhere in the county almost every year.

The Waterbody Inventory/Priority Waterbodies List (PWL) prepared by the New York State Department of Environmental Conservation (DEC) includes 12 "impaired" segments, 2 segments with minor impacts, and one segment that requires verification (located in Schuyler County or for which the watershed is partially within the county). In addition, the entire Susquehanna and Chemung River Basins, which constitute about a third of the county, are included in the Priority Waterbodies List due to nutrient contamination of the Chesapeake Bay. These waterbody segments are listed in Table 1, along with the impairments, pollutants, and pollution sources identified by DEC.

The Water Quality Coordinating Committee is concerned with a wide range of water resource issues, in addition to the water quality problems documented by DEC. The problems addressed by this strategy include: poor water quality, stream instability, flooding, habitat loss, and invasive species. The primary issues of concern include: urban runoff, septic systems, roads, agriculture, timber harvesting, stream disturbance, wildlife/invasive plants, and point discharges. The scope of these concerns encompasses both surface waters (lakes, wetlands, streams, and runoff) and groundwater resources. In 2006, the Committee compiled available data and the knowledge of Committee members for each watershed and aquifer in the county. After identifying the primary water resource problems and issues, the Committee assigned each watershed a priority for restoration of existing problems and a separate priority for protection high value resources. These results (problems, issues, and Committee priorities) are summarized in Table 2. The priorities will be used to maximize the benefits of available manpower and funding. Because this strategy is a flexible working document, the water resource information and priorities will be revised as conditions change and more information becomes available.

Additional information about the high priority watersheds is presented below.

TABLE 1: Schuyler County Segments on the DEC Priority Waterbodies List (PWL) (page 1 of 4)

| Segment Name | Segment Size | Use(s) Impacted/Severity* | Type of Pollutant(s) | Source(s) of Pollutant(s) |
|--|---------------------|--|--|--|
| Seneca Lake Entire lake within Schuyler County | 7,136 acres | Water supply – Threatened Fish propagation – Threatened | Salts Pesticides Nutrients Silt (sediment) Oxygen demand Pathogens | Industrial Contaminated sediment Agriculture Silviculture De-icing agents Streambank erosion Road bank erosion Natural salt deposits |
| Hector Falls Creek Upstream of County Route 4 & Route 79 | 2 miles | Fish propagation – Stressed Fish survival – Stressed Aesthetics – Stressed | Unknown toxicity Nutrients Silt (sediment) | Land disposal Agriculture |
| Catharine Creek From Chemung County line to Seneca Lake | 8.5 miles | Boating – Stressed Fish propagation – Stressed Fish survival – Stressed | Silt (sediment) Pesticides Nutrients Oxygen demand | Agriculture Silviculture Land disposal Streambank erosion Road bank erosion |
| Upper Dam Lake | 12 acres | Bathing – Stressed Fish survival – Stressed Aesthetics – Stressed Boating – Stressed | Silt (sediment) Nutrients Oxygen demand | Streambank erosion Agriculture |
| Whites Hollow Lake | 13 acres | Bathing – Stressed Fish survival – Stressed Aesthetics – Stressed Boating – Stressed | Silt (sediment) Nutrients Oxygen demand | Streambank erosion Agriculture |
| Punch Bowl Lake | 13 acres | Bathing – Stressed Fish survival – Stressed Aesthetics – Stressed Boating – Stressed | Silt (sediment) Nutrients Oxygen demand | Streambank erosion Agriculture |
| Bolter Creek From County Route 1 south for ¼ mile | 0.3 miles | Fish propagation – Threatened | Silt (sediment) | Resource extraction |

TABLE 1: Schuyler County Segments on the DEC Priority Waterbodies List (PWL) (page 2 of 4)

| Segment Name | Segment Size | Use(s) Impacted/Severity* | Type of Pollutant(s) | Source(s) of Pollutant(s) |
|---|--|--|--|--|
| Bolter Creek Tributary (watershed partially in Schuyler County) | 0.5 miles (Seneca County) | Fish propagation – Threatened Fish survival – Threatened | Metals | Land disposal |
| Cayuta Creek and minor tributaries From mouth to Cayuta Lake and selected tributaries | 347 miles (partially in Schuyler County) | Impacted Segment: Aquatic life – Stressed Habitat/hydrology – Stressed Aesthetics – Stressed | Silt/sediment Aesthetics (flood debris) Nutrients | Streambank erosion Agriculture Resource extraction |
| Cayuta Lake | 371 acres | Impacted Segment: Public bathing – Stressed Recreation – Stressed Aesthetics – Stressed | Aesthetics (aquatic vegetation) Nutrients (phosphorus) D.O./oxygen demand Silt/sediment | Failing on-site septic systems Agriculture Nutrient-rich sediment |
| Susquehanna and Chemung River Basins (in NY) | 6,250 square miles (partially in Schuyler County) | Aquatic life – Threatened Natural resources habitat/hydrology – Threatened | Nutrients | Point sources: Municipal and combined sewer overflows (CSOs) Nonpoint sources: Agriculture Atmospheric deposition (nitrogen) |
| Meads Creek, Upper and tributaries (above Meads Creek in Steuben County) | 61 miles (partially in Schuyler County) | Minor Impacts: Habitat/hydrology – Stressed | Silt/sediment Thermal changes | Habitat modification Streambank erosion Road bank erosion Hydrological modification Agriculture |
| Dry Run and Tributaries (watershed partially in Schuyler County) | 33 miles (Steuben County) | Minor Impacts: Habitat/hydrology – Stressed | Silt/sediment Restricted passage | Streambank erosion Road bank erosion Hydrological modification Agriculture |

TABLE 1: Schuyler County Segments on the DEC Priority Waterbodies List (PWL) (page 3 of 4)

| Segment Name | Segment Size | Use(s) Impacted/Severity* | Type of Pollutant(s) | Source(s) of Pollutant(s) |
|--|--------------|--|--|--|
| Lamoka Lake and Mill Pond | 826 acres | Impaired Segment: Recreation – Impaired Public bathing – Stressed Aquatic life – Stressed | Algal/weed growth Aesthetics Dissolved oxygen/oxygen demand Nutrients Pathogens Silt/sediment | Habitat modification Agriculture On-site septic systems Nutrient-rich sediment Roadbank erosion Streambank erosion |
| Waneta Lake | 781 acres | Impaired Segment: Public bathing – Stressed Aquatic life – Stressed Recreation – Impaired | Algal/weed growth Aesthetics Dissolved oxygen/oxygen demand Nutrients Pathogens Silt/sediment | Habitat modification Agriculture On-site septic systems Nutrient-rich sediment |
| Tobehanna Creek and tributaries | 31 miles | Needs Verification: Recreation – Stressed Aesthetics – Stressed | Algal/weed growth Nutrients Silt/sediment Aesthetics Dissolved oxygen/oxygen demand | Agriculture Landfill/land disposal On-site septic systems |

*Precluded: Use is not possible. This category indicates the most severe impacts.

Impaired: Use cannot be fully met. These waters have severe impacts.

Stressed: Water quality problem is evident, but impairment is not clearly demonstrated.

Threatened: Water quality is presently supporting designated use and ecosystems show no obvious signs of stress, but changing land use may result in water quality problems.

TABLE 1: Schuyler County Segments on the DEC Priority Waterbodies List (PWL) (page 4 of 4)

Sources:

The 1996 Priority Waterbodies List for the Oswego-Seneca-Oneida River Basin, prepared by New York State Department of Environmental Conservation, September 1996.

The 1998 Susquehanna River Basin Waterbody Inventory and Priority Waterbodies List, prepared by New York State Department of Environmental Conservation, August 2001.

The 2004 Chemung River Basin Waterbody Inventory and Priority Waterbodies List, prepared by New York State Department of Environmental Conservation, May 2007.

PWL data sheet for Susquehanna and Chemung River Basins, December 2005.

Table 2: Water Resource Problems, Issues, and Priorities for Schuyler County Watersheds (page 1 of 3)

¹Severity of problem or issue specified as follows: x isolated or minor

| Watershed | Problems ¹ | | | | | | Issues ¹ | | | | | | | | | | Priority | |
|--------------------------------|-----------------------|--------------------|----------|--------------|------------------|----------------|---------------------|----------------|-------|-------------|-------------------|--------------------|--------------------------|------------------|--|-------------|------------|--|
| | Poor Water Quality | Stream Instability | Flooding | Habitat Loss | Invasive Species | Other | Urban Runoff | Septic Systems | Roads | Agriculture | Timber Harvesting | Stream Disturbance | Wildlife/Invasive Plants | Point Discharges | Other | Restoration | Protection | |
| Seneca Lake Basin | | | | | | | | | | | | | | | | | | |
| Seneca Lake | X | | X | X | XX | | XX | XX | XX | XXX | | X | X | XX | X - residual nutrients | High | High | |
| Seneca Lake Direct Drainage | X | X | | | | | XX | X | XX | XX | | X | | | XXX - sprawl development | High | High | |
| Big Stream | | | | | | | | | | X | | | | | | Low | Medium | |
| Rock Stream | | | | | | | | | | | X | | | | | Low | Medium | |
| Saw Mill/Bullhorn Creek | XX | | | | | X - pesticides | X | X | | XX | | X | | X | XXX - drinking water supply XX - fuel storage | High | High | |
| Glen Eldridge/Tug Hollow Creek | | XX | XX | | | | X | | | | | | | | X - mining X - natural glacial deposits | Medium | Medium | |
| Hector Falls Creek | X | XX | | XX | | | | XX | X | XXX | | | | | XXX - trout stream XX - abandoned landfill | High | High | |
| Queen Catharine Marsh | X | | | XXX | | X - siltation | X | | XX | | | | | X | | High | High | |
| Catharine Creek | | XX | XX | X | | | XX | X | X | XX | | | | | XX - abandoned landfill | High | High | |
| Glen Creek | | XXX | | | | | | | X | X | X | | | | XX - natural glacial deposits X - dams | High | High | |
| Johns Creek | | | | | | X - reservoir | | | | | XX | X | | | | High | Medium | |
| Shequaga Creek | | X | | | | | | | | X | | X | | | X - natural glacial deposits xx- junk yard | Low | Medium | |
| Catlin Mills Creek | | X | | X | | | | | X | | | X | | | | Medium | Low | |
| Mitchell Hollow Creek | | X | | | | | | | X | | | X | | | | Medium | Medium | |

xx moderate

xxx severe and/or widespread

Table 2: Water Resource Problems, Issues, and Priorities for Schuyler County Watersheds (page 2 of 3)

| Watershed | Problems ¹ | | | | | | Issues ¹ | | | | | | | | | Priority | |
|--------------------------------|-----------------------|--------------------|----------|--------------|------------------|-----------------|---------------------|----------------|-------|-------------|-------------------|--------------------|--------------------------|------------------|---|-------------|------------|
| | Poor Water Quality | Stream Instability | Flooding | Habitat Loss | Invasive Species | Other | Urban Runoff | Septic Systems | Roads | Agriculture | Timber Harvesting | Stream Disturbance | Wildlife/Invasive Plants | Point Discharges | Other | Restoration | Protection |
| Cayuga Lake Basin | | | | | | | | | | | | | | | | | |
| Trumansburg Creek | | | | XX | | | XX | X | | | | | | | X - new residential development | Low | Low |
| Taughannock Creek | | | | XX | | | | X | | XXX | | | | | XXX - new residential development | Medium | High |
| Bolter Creek | | XX | | XX | | | | X | | X | | XX | | | X - new residential development | Medium | Medium |
| Upper Susquehanna Basin | | | | | | | | | | | | | | | | | |
| Cayuta Creek | | | | | X | | | | | | X | | X | | | Medium | High |
| Jackson Creek | | XXX | XXX | X | | | | | XX | | | XXX | | | | High | Medium |
| Cayuta Lake | XX | | | | X | XXX - nutrients | | XX | X | | | | XX | | | High | High |
| Chemung Basin | | | | | | | | | | | | | | | | | |
| Newtown Creek | | | | | | | | | | | | | | | | Low | Low |
| Post Creek | | X | XX | | | | X | X | | | | X | | | X - recycling center X - drainage blockage | Medium | Medium |
| Meads Creek | | XXX | XXX | XX | | | X | X | XX | | XXX | XXX | | | X - new residential development | High | High |
| Dry Run | | | | | | | | | | | | | | | | Low | Low |
| Mud Creek | | | | | | | | | | | | | | | | Low | Low |
| Lamoka Lake & Mill Pond | XX | X | X | | XXX | XXX - nutrients | | XXX | XX | X | | | XXX | | X - herbicide treatment | High | High |
| Waneta Lake | XX | X | X | | XX | XXX - nutrients | | XXX | XX | X | | | X | | X - herbicide treatment | High | High |
| Tobehanna Creek | | | | | | | | | XX | | | X | XXX | | | Medium | Medium |

¹Severity of problem or issue specified as follows: x isolated or minor
 xx moderate
 xxx severe and/or widespread

Table 2: Water Resource Problems, Issues, and Priorities for Schuyler County Watersheds (page 3 of 3)

| Watershed | Problems ¹ | | | | | | Issues ¹ | | | | | | | | | Priority | |
|-------------------------|-----------------------|--------------------|----------|--------------|------------------|-------|---------------------|----------------|-------|-------------|-------------------|--------------------|--------------------------|------------------|-------|-------------|------------|
| | Poor Water Quality | Stream Instability | Flooding | Habitat Loss | Invasive Species | Other | Urban Runoff | Septic Systems | Roads | Agriculture | Timber Harvesting | Stream Disturbance | Wildlife/Invasive Plants | Point Discharges | Other | Restoration | Protection |
| Groundwater | | | | | | | | | | | | | | | | | |
| Seneca Lake Basin | | | | | | | X | XX | | XX | | | | X | | Low | High |
| Cayuga Lake Basin | | | | | | | | XX | | XX | | | | | | Low | High |
| Upper Susquehanna Basin | | | | | | | | XX | | | | | | | | Low | High |
| Chemung Basin | | | | | | | | XX | | | | | | | | Low | High |

¹Severity of problem or issue specified as follows: x isolated or minor
 xx moderate
 xxx severe and/or widespread

Seneca Lake

Seneca Lake is the central scenic and recreational feature of Schuyler County. It contains 50% of the water in the Finger Lakes and has the longest water residence time (20 years compared to a few years in the smaller Finger Lakes). This means that if the water quality is degraded, it will take generations to recover. A recent study found that the water quality in Seneca Lake is among the worst in the Finger Lakes (based on bacteria counts, nutrient concentrations, chlorophyll-a concentrations, and water clarity). Seneca Lake also shows elevated sodium levels, possibly from natural sources, road salt or salt mining operations. Large sediment loads are commonly deposited in the lake after heavy rains. Zebra mussels and other invasive species have altered the lake's ecosystem.

Saw Mill/Bullhorn Creek

The Hector public water supply well is located in the Saw Mill/Bullhorn watershed in an area surrounded by vineyards. The groundwater supply for this well is designated as being under the direct influence of surface water. Water quality monitoring at the mouth of Saw Mill/Bullhorn Creek by the U.S. Geological Survey (USGS) has detected low levels of a pesticide that is commonly used in vineyards.

Hector Falls Creek

Hector Falls Creek is a trout stream that may be adversely impacted by an abandoned landfill, agriculture, stream instability, and septic systems.

Queen Catharine Marsh

This 900-acre cattail marsh is one of the largest of its type in New York State, providing habitat for many plant and animal species including rare plants along the eastern edge. Lying adjacent to Seneca Lake (as part of the Catharine Creek drainage), this wetland acts as a natural filter for waters entering the lake. Stresses on this site include development along the western shore, urban runoff from bordering villages, road runoff/maintenance along the eastern shore, and dredging within the wetland to keep the Seneca Canal open to boat traffic.

Catharine Creek

Catharine Creek is a world-class trout stream. Existing problems and threats include: heavy sediment loads from surrounding uplands, flooding, excessive algae growth (possibly from septic systems in Millport), possible contamination from an abandoned landfill (near Dug Road), stream instability, and floodplain encroachment.

Glen Creek

Extensive streambank erosion impacts the streams and manmade lakes in this watershed. It has resulted in a 90% reduction in the depth of Punch Bowl Lake (dam built in mid-1930's), a 50% reduction in the depth of Upper Dam Lake (75-foot high dam built in 1953), and a complete absence of pooling waters in Whites Hollow Lake. All three dams are periodically inspected for potential problems by New York State. Glen Creek has numerous high exposed banks in locations where the stream cuts into glacial deposits. These natural escarpments are thought to be a major source of the high sediment loads in this watershed.

Johns Creek

Johns Creek is an unstable stream system with extensive bank erosion. This may be caused by timber harvesting and agricultural practices that have altered the hydrology and thus increased the amount of water and sediment delivered to the stream. An old water supply reservoir for the Village of Montour Falls is filled with sediment. The dam for this impoundment is over 100 years old. Failure of this structure could pose a potential risk to a downstream trailer park. The Village is considering selling the reservoir and dam to a private owner. The Water Quality Coordinating Committee is concerned about ongoing operation and maintenance of the dam and the water quality impacts of possible future dredging within the impoundment.

Taughannock Creek

Water resources in the Taughannock Creek watershed are threatened by agricultural activities, unstable streambanks, a junkyard, septic systems, and a used car business. Expansion of a large dairy farm increases the potential for nutrient releases. Runoff from cornfields is also a concern due to the absence of riparian buffers and filter areas. In addition, a slaughterhouse and animal compost facility is located next to the creek.

Cayuta Creek

Cayuta Creek is a trout stream that is threatened by development (in the hamlet of Alpine Junction), planned gravel mining, agricultural activity, and wetland encroachment.

Jackson Creek

Steep slopes along Jackson Creek are subject to very high erosion rates, resulting in heavy sediment loads in the creek. This erosion threatens the road and bridges. Although numerous bank protection projects have been implemented, it remains a very unstable stream system. Bridge and culvert locations are a particular concern due to the limited capacity of some structures and the absence of floodplain flow at these locations. Agricultural activities are also a

concern, particularly where cows have access to the stream, which damages streambanks and introduces pollutants.

Cayuta Lake

Cayuta Lake is a shallow lake (depths less than 24 feet) that has been filling with sediment and organic debris for many years. It has a high density of rooted aquatic vegetation (primarily Eurasian watermilfoil) and occasional heavy algae blooms that severely impair recreational activities. The major sources of nutrients responsible for this aquatic weed growth are thought to be septic tanks on lakeshore lots, lake bottom sediments, and possible agricultural runoff.

Meads Creek

Very high erosion along Meads Creek and its tributaries causes sediment accumulation in the stream. Some streamside development is threatened by erosion and/or flooding. Extensive logging of steep slopes on state and private land in the watershed has altered the hydrology and increased sediment loads. Removal of gravel from the stream also contributes to increased instability. A large auto recycling operation in Coon Hollow may impact water quality and quantity.

Lamoka and Waneta Lakes

Lamoka and Waneta Lakes are shallow, interconnected lakes in which a high density of rooted aquatic vegetation has severely impacted recreational activity. This vegetation is primarily Eurasian watermilfoil and curly-leafed pondweed. The probable primary sources of nutrients responsible for the growth are septic tanks on lakeshore lots, lake bottom sediments, and agricultural runoff. Chemical herbicides have been used for temporary control of aquatic weeds, with full-lake treatment of Waneta Lake in 2003 and partial-lake treatment of Lamoka Lake in 2004. These treatments adversely impacted the populations of native species. The lakes are experiencing increased pressure from lakeshore cottages, many of which have been enlarged and/or converted to year-round use. High sediment loads are delivered to the lakes from steep roadside drainage ditches.

Groundwater

When an aquifer becomes polluted, the process of cleaning up the contamination can be technically difficult and extremely expensive. The cost-effective approach to managing groundwater resources is thus to prevent contamination. Any potential problem should thus be taken quite seriously and efforts made to implement groundwater protection strategies before problems arise. The source areas for municipal water supplies are a particular concern, leading to adoption of wellhead protection regulations in some areas.

COUNTYWIDE WATER RESOURCE CONCERNS

Many water quality and flooding problems occur throughout Schuyler County. The Water Quality Coordinating Committee has identified the following countywide water resource concerns.

Water Resource Issues

- Need for **education** about nonpoint source pollution, flood hazards, strategies for protecting water quality, and the importance of healthy ecosystems.
- Need for ongoing **assessment** and verification of water quality, stream stability, and the condition of watersheds and subwatersheds.
- Need for **land use** decisions that protect wetlands, riparian buffer zones, infiltration areas, agricultural lands, unique natural areas, and flood storage areas. In particular, residential expansion into rural areas and expansion of the tourism infrastructure should incorporate smarter design principles.
- Need for **watershed-based management plans** to protect water quality, reduce flood risks, and maintain stable stream systems.

Water Resource Problems

- Excessive **sedimentation** in streams and lakes due to high flows, streambank and shoreline erosion, highway maintenance, dirt and gravel driveways, urban construction, agricultural erosion, logging, and mining. Additional natural sources result from erosion of glacial deposits (terminal moraines), which form high escarpments of poorly consolidated material adjacent to many county streams.
- **Nutrient** runoff from agriculture, onsite wastewater systems, and urban areas (especially from sites draining directly into lakes).
- **Pesticide** runoff from agriculture and urban areas.
- **Salt** runoff from salt storage areas, prior salt storage locations, and use on roads.
- **Invasive species** that disrupt aquatic and riparian habitat (Eurasian watermilfoil, zebra and quagga mussels, spiny water flea, Japanese knotweed, etc.) and watchlist plants/species (waterchestnut, European frogbit, etc.).
- Release of **hazardous substances** due to spills, landfills, unsafe disposal, and point discharges.
- **Drainage changes** (including increased runoff, concentrated flow, and decreased infiltration) due to poor management of runoff from new development, existing development, roadways, and timber harvesting sites.

- **Flooding** (including flash flooding and urban flooding), which causes water damage, erosion (of roads, culverts, streambanks, and other areas), and increased potential for septic system failure, spills, contaminated agricultural runoff, and other water quality problems.
- **Disturbance of stream systems** by alteration of in-stream or floodplain conditions in a manner that disrupts the stream's energy. Disruption of a stream's dynamic equilibrium may trigger stream responses that result in increased erosion and/or increased deposition.

Activities of Concern

- **Roadway construction and maintenance**, including private driveways and stream crossings.
- **New and existing development**, including housing, commercial development, industrial development, gas wells, pipelines, etc.
- **Agriculture**, including crop fields, barnyard runoff, milk house waste, manure spreading, pesticide application, pesticide mixing, and animals in streams. Pollutants include sediment, nutrients, pesticides, and pathogens.
- **Timber harvesting**, including construction of access roads, skid trails, stream crossings, and activities in riparian areas. Logging operations can contribute increased flow and sediment to roadside drainage systems and streams.
- **Mining**, which can alter drainage patterns and release sediment.
- **Disturbance of stream channels and banks**, which can contribute to stream instability, erosion, and sedimentation.
- **Development of floodplains and riparian areas**, which places development at risk of flooding and/or erosion damage and may also threaten the stability of the stream system.
- **Onsite wastewater systems**, which can be a source of nutrients, pathogens, and other contaminants.
- **Hazardous material handling and disposal**, including spills, illegal disposal, and inactive landfills.
- **Salt storage and use** for deicing.
- **Point discharges**, which may have cumulative impacts on the receiving waters even when each discharge is in compliance with permit limits.

WATER RESOURCE GOALS

The strategy for addressing water resource issues in Schuyler County involves four major goals. Tasks to implement each goal are conducted by various Committee members. The WQCC provides guidance, help, and inspiration wherever possible. These goals are:

Goal A: Promote public education on water resource issues

A key ingredient for successful management of water resources is an informed public. The WQCC seeks to increase public awareness of the importance of our water resources as they relate to economics, the environment, and human health. In addition, the Committee seeks to change specific behaviors and attitudes toward water resources and water resource management.

Goal B: Monitor and evaluate the condition of water resources and watersheds

Ongoing efforts are needed to assess the status of the county's water resources and identify existing and potential problems. It is also important to determine where water quality and channel stability are high, so that measures can be taken to ensure that those waterbodies remain unpolluted and undisturbed.

Goal C: Implement projects and programs to resolve water resource problems

In order to resolve water resource problems, the WQCC supports implementation of projects and programs that enhance water quality, alleviate problems, enhance stream stability, prevent flood damage, and minimize erosion damage. The Committee provides a framework for pursuing funding sources for member agencies or organizations and a forum for coordinating water quality activities.

Goal D: Evaluate the program to determine if it has met its objectives

Ongoing evaluation of water resource outreach, assessment, and implementation efforts is needed to maintain an effective program that responds to local issues, concerns, and needs.

PROPOSED TASKS

Goal A: Promote public education on water resource issues

Methods: Several methods have been employed for public education. Programs have been developed for schools to foster increased understanding of water resource issues. Outreach to adults provides the information needed to make improved water management decisions. This takes the form of newsletter articles, distribution of literature, workshops on specific topics, signs, and response to questions. Targeted outreach is focused on elected officials and community leaders, as well as property owners in priority areas. In addition, the WQCC supports the promotion of water-based recreation and tourism in order to engender increased public appreciation of the county's water resources.

Objective: Provide the public with the information needed to make sound water management decisions.

Because the cumulative impact of individual actions can alter the hydrology and have significant water quality impacts, ongoing efforts are needed to cultivate an appreciation of the value of Schuyler County's water resources and promote actions that protect and improve the quality of those resources. The WQCC and its member organizations sponsor a variety of public information activities to inform targeted audiences about relevant water resource concerns. Topics addressed in recent years include: storm water management, erosion and sediment control, forest management, rural design, care of septic systems, and private wells.

Task A-1: Newsletter and other outreach by Soil and Water Conservation District

The Schuyler County Soil and Water Conservation District (SWCD) uses its quarterly newsletter and direct contact with landowners to provide the public with information about water resource issues in the county. Topics addressed in the newsletter include: watersheds, cover crops, stream management, septic tanks, riparian buffers, storm water management, local drainage, floodplain management, state and federal funding sources, etc. The SWCD works with lake associations, watershed groups, landowners, and community leaders (in cooperation with Cornell Cooperative Extension and other members of the Water Quality Coordinating Committee) to provide information on a variety of water resource topics. The SWCD has assisted with development of a booklet about how streams work (*Stream Processes – A Guide to Living in Harmony with Streams* by Chemung County SWCD and STCRPDB), which will be disseminated to municipalities and property owners.

Responsible agency: SWCD

Time frame: Ongoing

Potential funding sources: FL-LOWPA, NYS SWCC Mini-grants

Estimated cost: \$1,500/year

Task A-2: Outreach by Cornell Cooperative Extension

Cornell Cooperative Extension of Schuyler County (CCE) provides information on watershed management, pesticide and nutrient control, recycling, forest management, and other water related topics. Additional topics of interest include septic systems and water well management.

Methods of disseminating information include: responding to requests, literature distribution, displays, newsletter articles, news releases, etc.

Responsible agency: CCE

Time frame: Ongoing

Potential funding sources: County appropriation, DEC, EMC, grants as available

Estimated cost: \$10,000/year

Task A-3: Outreach by Environmental Management Council

Environmental Management Council (EMC) conducts community education on environmental issues. In 2002, the EMC completed a reference guide entitled “Environmental Directory.” The directory is a comprehensive list of agencies that the public may contact about specific environmental issues. An ongoing project involves preparation of a brochure about the wildlife and ecology along Rock Cabin Road, which borders Queen Catharine Marsh. When completed, this will be used as an educational tool to support preservation of this road as a narrow, unimproved, low traffic roadway used for walking, biking, and wildlife observation.

Responsible agency: EMC

Time frame: Ongoing

Potential funding sources: EMC budget (from Schuyler County)

Estimated cost: Staff and volunteer time; additional expenses for printing, etc.

Task A-4: Finger Lakes Institute Community Outreach and Public Service

The Finger Lakes Institute (FLI) hosts public lecture series, seminars, workshops, presentations, conferences, and other educational forums that support awareness of environmental issues of the Finger Lakes region. Community Outreach focuses on current issues facing Finger Lakes watersheds and presents results from scientific research conducted by Hobart and William Smith Colleges’ faculty and numerous regional academic institutions. Topics of outreach include, but are not limited to: Finger Lakes water quality, geology, wildlife, energy conservation, alternative energy, economic development, natural history, and land use management. Information and publications are made available to the public through the FLI Clearinghouse, a library of over 1,500 environmentally related documents pertaining to the Finger Lakes. The Institute provides information through meetings, the FLI website and newsletter, publications, fact sheets, visits and tours, press releases, public meetings, and special events.

Responsible agency: Finger Lakes Institute at Hobart and William Smith Colleges

Time frame: Ongoing

Potential funding sources: FLI operating budget

Estimated cost: Varies

Task A-5: Seneca Lake Pure Waters Association outreach programs

Seneca Lake Pure Waters Association (SLPWA) informs members and the public about ways to conserve, improve, and protect the water resources and the environment of Seneca Lake and its watershed. This is accomplished through a newsletter, a website, programs for the public, workshops for target audiences, and a library of reference materials. Past topics have included: water quality, zebra mussels, lake level, rain gardens, wetlands, and septic systems.

Responsible agency: SLPWA

Time frame: Ongoing

Potential funding sources: Various

Estimated cost: About \$4,000/year plus \$1-2,000 per workshop

Task A-6: Chesapeake Bay Program outreach

Because the Chesapeake Bay does not meet water quality standards, the U.S. Environmental Protection Agency may require regulation of sediment and nutrient sources throughout the watershed. Current efforts in the New York portion of the watershed focus on voluntarily measures to reduce sediment and nutrient loads, with community outreach to help develop and implement an effective strategy.

Responsible agency: USC and DEC, in cooperation with WQCC

Time frame: Ongoing

Potential funding sources: Chesapeake Bay Program grant

Estimated cost: \$25,000 per year for basin-wide outreach

Task A-7: Lake Steward Program

Cornell Cooperative Extension of Schuyler County has proposed a three-year lake steward program to educate lakefront property owners on the impact they have on water quality and the actions they can take to mitigate those impacts. This program will focus on Seneca, Lamoka, Waneta, and Cayuta Lakes. Water quality information will be disseminated through a best management practices booklet, workshops, fact sheets/brochures, and a project website. Proposed topics include: well maintenance, septic maintenance, lake-friendly landscaping/drainage, storm water runoff/erosion control, and identification of aquatic vegetation.

Responsible agency: CCE

Time frame: When funding is available

Potential funding sources: Grants as available (National Fish and Wildlife Foundation, NYS Great Lakes Protection Fund, NYS EPF)

Estimated cost: About \$15,000

Task A-8: Well water clinics

In the 1990's a water clinic provided the public with information about private wells, problems, and treatment methods. Participants received a discount on the cost of water testing. Recent expansion of residential development into rural areas has resulted in many new homeowners who are not aware of the risks and issues associated with private wells. The WQCC proposes that well water clinics be offered periodically.

Responsible agency: CCE

Time frame: Goal – Every 2 to 3 years

Potential funding sources: Grants as available (such as NYS Water Quality Mini-Grant)

Estimated cost: \$5-7,000/clinic

Task A-9: Septic clinic for real estate agents and the public

A workshop for real estate agents and others about onsite wastewater treatment systems and other water resource issues was conducted in 2006. The WQCC proposes that this type of training be repeated periodically.

Responsible agency: Watershed Protection Agency, SLAP-5, SLPWA

Time frame: Goal – Every 3 years
Potential funding sources: Grants as available
Estimated cost: \$1-2,000/workshop

Task A-10: Forestry workshops

Workshops for forest owners have provided valuable information about both timber management and managing drainage during logging.

Responsible agency: Finger Lakes RC&D, CCE, SWCD
Time frame: Goal – Every 2 or 3 years
Potential funding sources: Grants as available
Estimated cost: \$1-2,000/workshop

Task A-11: Annual Finger Lakes Research Conference

The Annual Finger Lakes Research Conference highlights Finger Lakes scientific research and provides opportunities for information sharing among students, faculty, scientists, and others interested in environmental science and scholarship. The Finger Lakes Institute coordinated a similar conference pertaining to economic development and regional planning in 2006.

Responsible agency: Finger Lakes Institute at Hobart and William Smith Colleges
Time frame: Annually
Potential funding sources: FLI operating budget, foundation support
Estimated cost: Varies

Task A-12: Watershed signs

Road signs announcing entry into a watershed or labeling a stream or river can help raise public awareness about water resource issues. Signs obtained in recent years include one on Rock Cabin Road and a Chesapeake Bay Watershed informational sign. Additional road signs at watershed boundaries have been proposed.

Responsible agency: WQCC
Time frame: When resources permit
Potential funding sources: To be determined
Estimated cost: Approximately \$300 each for road signs

Objective: Provide local government officials with water resource information.

Ongoing communication with local elected officials is necessary to foster support for projects and programs that protect and improve water quality and mitigate flood damages.

Task A-13: Reports to the County Legislature

The WQCC and member agencies keep the Schuyler County Legislature informed about water quality and flooding issues in the county, as well as WQCC accomplishments.

Responsible agency: WQCC, member agencies/organizations
Time frame: Annually or when issues arise
Potential funding sources: N/A
Estimated cost: N/A

Task A-14: Provide local decision-makers with water resource information

The WQCC facilitates timely delivery of information that helps civic and political leaders to incorporate flood hazards and water quality issues into planning and decision-making. A recent example involved bringing experts to Schuyler County to provide information and recommendations concerning alternative techniques for sewage treatment.

Responsible agency: WQCC

Time frame: When issues arise

Potential funding sources: To be determined

Estimated cost: To be determined

Task A-15: Drainage and stream management training for highway department staff

Using mini-grant funds, the WQCC has developed a *Water Quality Strategy for Highway Operations in Schuyler County*, updated the *Highway Superintendent Road and Water Quality Handbook*, provided training for highway department staff, and implemented demonstration projects. The Strategy recommends additional training, demonstration projects, and technical assistance to facilitate implementation of recommended management practices. Recommended training topics include: dirt/gravel road maintenance, roadway/roadside drainage, off-right-of-way issues, drainage law, erosion and sediment control, stream management, deicing practices, environmentally sound dust control practices, and chemical management. The SWCD provides ongoing technical assistance.

Responsible agency: STCRPDB, SWCD, with instruction provided by Cornell Local Roads Program and Upper Susquehanna Coalition

Time frame: Training goal – one workshop at Southern Tier Central Regional Leadership Conference and one longer training session each year; technical assistance is ongoing; demonstration projects as funding permits

Potential funding sources: SWCD operating budget, grants as available (NYS EPF)

Estimated cost: About \$4,000/year for training; other costs vary

Task A-16: Southern Tier Central Regional Leadership Conference

Flood hazard and water quality issues are included in the presentations offered at the day long Regional Leadership Conference for local government officials conducted by Southern Tier Central Regional Planning and Development Board (STCRPDB). Recent presentations have included: deicing practices, storm water management, road bank stabilization, septic systems, and flooding.

Responsible agency: STCRPDB

Time frame: Annual conference

Potential funding sources: STCRPDB

Estimated cost: Approximately \$1-2,000/workshop

Task A-17: Storm water management training for municipal officials

The SWCD, STCRPDB, SLAP-5, and SLPWA provide storm water education, training, and technical assistance for municipal Code Enforcement Officers, Planning Boards, and elected officials. Using mini-grant funds, the WQCC is conducting a gap analysis of local land use regulations to assess existing storm water management policies and identify opportunities for increased local government involvement in protecting water quality. Follow-up activities will

include development of model ordinances and training to encourage adoption of municipal land use policies that reduce hydrologic and water quality impacts from development.

Responsible agency: SWCD, STCRPDB, SLAP-5, SLPWA, CCE (Director of Planning and Community Development)

Time frame: Training goal – Workshop every 1 to 2 years

Potential funding sources: CWA 604(b); grants as available (NYS EPF, NYS Quality Community grants)

Estimated cost: \$1-2,000/workshop; other costs to be determined

Task A-18: Floodplain management training for municipal officials

Development encroaching on streams and floodplains can have significant water quality impacts as well as increased risks from flooding and streambank erosion. All municipalities in Schuyler County participate in the National Flood Insurance Program and have local laws regulating development in mapped floodplains. Ongoing training and technical assistance is required for effective implementation of floodplain development regulations and management of riparian areas. The WQCC will request that DEC provide this training in a Schuyler County location.

Responsible agency: DEC, STCRPDB, Emergency Management Office

Time frame: Local training every 2 to 3 years

Potential funding sources: DEC

Estimated cost: \$1–2,000/workshop

Objective: Engender public appreciation of water resources by promoting water-based recreation and tourism.

People who use, enjoy, and profit from the county's water resources have a strong incentive to protect and improve water quality. The WQCC thus supports efforts to promote water-based recreation and tourism as a means for increasing public awareness of and concern about the county's water resources. Recreational assets include: lakes (Seneca, Cayuta, Waneta, and Lamoka), streams (including Catharine Creek, which is a world class trout stream), waterfalls, gorges, wetlands, Finger Lakes National Forest, Watkins Glen State Park, Catharine Valley Trail, North Country National Scenic Trail, Finger Lakes Trail, Rock Cabin Road, Catharine Creek Marsh State Wildlife Management Area, Sugar Hill State Forest, Connecticut Hill State Wildlife Management Area, and Arnot Forest.

Task A-19: Ecotourism Initiative

Spectacular water resources are central to the tourist industry in Schuyler County. The county's "Ecotourism Initiative" was formulated to promote economic development in an ecologically sensitive manner. Local economic development activities include efforts to enhance the natural environment and increase recreational opportunities in order to both attract resource-based tourism and improve the quality of life. Projects include the Catharine Valley Trail, which is partially completed and will eventually extend from Watkins Glen into Chemung County. A proposed project involves development of an "Agri-Tourism Trail" (in addition to the existing wine trails) to promote agricultural products (such as grapes, apples, and cheese) and help people appreciate the role of agriculture in environmental protection. Additional efforts and coordination with regional organizations are needed to attract tourists to the region for birding, biking, hiking, archeology, etc.

Responsible agency: Chamber of Commerce, SCOPED, and CCE; in coordination with Watkins Glen State Park, USDA Forest Service, Friends of the Catharine Valley Trail, Finger Lakes Trail Association, North Country Trail Association, and others

Time frame: Ongoing

Potential funding sources: Appalachian Regional Commission, NYS, other sources to be determined

Estimated cost: To be determined

Objective: Promote water resource education for children

Task A-20: Earth Day Festival

Schuyler County's Earth Day celebration is a fun-filled public event at which many organizations provide activities, displays, and literature on various water quality themes.

Responsible agency: EMC, CCE, many participating organizations

Time frame: Annually

Potential funding sources: EMC, WQCC, fund raising, grants as available

Estimated cost: Approximately \$2,000/year; volunteer time

Task A-21: Envirothon

Envirothon is a program in which teams of high school students study environmental subjects for competition at regional, state, and national levels. All three high schools in Schuyler County participate, typically forming 6-7 teams each year.

Responsible agency: SWCD

Time frame: Ongoing

Potential funding sources: Local businesses and individuals

Estimated cost: \$1,200-1,400 annually; additional funding desired for educational materials

Task A-22: Conservation Field Days

Conservation Field Days provides a day of outdoor education for every 6th grade student in the county. The goals of the program are to educate students about careers available in the environmental field and increase awareness of environmental issues.

Responsible agency: CCE, SWCD, with presentations by numerous organizations

Time frame: Annually

Potential funding sources: Operating budgets of participating organizations

Estimated cost: Staff and volunteer time; bus transportation provided by the schools

Task A-23: Wetland programs in schools

In 1992 the Friends of Queen Catharine Marsh initiated a countywide 2nd grade marsh education program. Despite the popularity of this program and a proposal to expand it to include 3rd grade students, it was discontinued due to a shortage of volunteers. The WQCC proposes a renewed effort to recruit volunteers to resume this wetlands education program and provide these volunteers with the necessary training and support.

Responsible agency: Friends of Queen Catharine Marsh, SWCD, USC

Time frame: Currently inactive; re-start when volunteers are identified and trained

Potential funding sources: To be determined (possibly local schools or BOCES)

Estimated cost: \$500/year/school, volunteer time

Task A-24: Finger Lakes Institute Education Outreach

The educational resources and opportunities offered by the FLI include:

- Developing innovative curricular materials, resources and educational opportunities for K-12 students and teachers. Examples include Science On Seneca (an outdoor classroom with hands-on, standards based lessons and units for school teachers and students) and Environmental Studies Summer Youth Institute (a two-week, college-level interdisciplinary program for high-school students to explore the scientific, social, and humanistic perspectives of environmental issues).
- Offering professional development programs for teachers and other educators. Examples include Project WET and Project WILD, GIT Ahead (Geospatial Information Technology), and CORSE (Conference On Remote Sensing Education).
- Hosting school groups and participating students involved with Science on Seneca and other outreach programs.
- Contributing to K-12 schools through participation in school advisory boards and committees.

Responsible agency: Finger Lakes Institute at Hobart and William Smith Colleges

Time frame: Ongoing

Potential funding sources: FLI operating budget

Estimated cost: Varies

Task A-25: Student monitoring of Lamoka and Waneta Lakes

For several years, Earth Science classes at Bradford School conducted monitoring on Lamoka and Waneta Lakes, reporting abiotic and biotic factors from both lakes and tagging turtles for the NYS HERP ATLAS project. The program was a collaborative effort involving many people from the community (water safety training by Sheriff Department, communications network by amateur radio operators, etc.). The WQCC recommends that this program be re-established at Bradford School and used as a model for other schools to study other freshwater habitats.

Responsible agency: Bradford School (Head Science teacher), SWCD

Time frame: Annually

Potential funding sources: Bradford School District, Teacher's Center (Bath, NY), Southern Tier Coalition for Learning, WQCC and/or member organizations

Estimated cost: Expenses for test kits, transportation, and substitute teachers

Task A-26: 4-H GIS Club – Computer Mapping Program

The CCE has received grant funding for ArcView Geographic Information System (GIS) software to be used by the 4-H Schuyler County GIS Club. Although specifics of the program will be youth driven, the Club will likely focus on using GIS software and Global Positioning System (GPS) equipment to map trail information and youth tourism interests in the county. There is a strong desire for computer hardware upgrades and club GPS units (5 of each).

Responsible agency: CCE (4-H Youth Program Director)

Time frame: 1 year for initial grant, plan to continue the program

Potential funding sources: ESRI 4-H grant, other grants as available

Estimated cost: \$15,000 (initial grant); additional funding needed to continue the program

Goal B: Monitor and evaluate the condition of water resources and watersheds

Methods: The process of identifying water resource concerns or problems often occurs during the course of other operations. Additional assessment is done to document the nature and extent of the problems, as well as identify non-impacted areas that should be protected. These efforts encompass surface water quality, flooding, erosion, groundwater quality, groundwater flow patterns, and the watershed activities that may impact surface and groundwater resources.

Objective: Establish and expand programs to assess surface water quality

Task B-1: FL-LOWPA water quality monitoring program

Limited water quality testing is conducted on Lamoka, Waneta, and Cayuta lakes. The parameters monitored include: dissolved oxygen, water temperature, pH, clarity (secchi disk measurements), nitrates, and phosphorus.

Responsible agency: SWCD, Lamoka-Waneta Lakes Association, Cayuta Lake Association

Time frame: Ongoing

Potential funding sources: FL-LOWPA, Lamoka-Waneta Lakes Association

Estimated cost: Approximately \$2,000/year

Task B-2: Water quality monitoring in Seneca Lake

Hydrological and water quality research on Seneca Lake is supported through the Finger Lakes Institute (FLI) and Seneca Lake Pure Waters Association (SLPWA). Hobart and William Smith (HWS) Colleges regularly monitor Seneca Lake and key tributaries for total coliform, E. coli bacteria, dissolved nutrients (phosphates, nitrates, and silica), dissolved oxygen, pH, conductivity (specific conductance), chlorophyll a, total suspended solids, and major ions. Additional research projects provide background information and insights about the local environment, and include, but are not limited to: exotic species introductions and their ecological impacts; watershed/limnology, hydrogeochemistry, and ecology; hydrology and water resource issues; human interactions and the effects on water quality; records of environmental and climatic change; and energy generation, utilization and environmental impact. Additional monitoring is recommended to assess the cumulative impacts of permitted point discharges into Seneca Lake.

Responsible agency: FLI, HWS Colleges, SLPWA

Time frame: Ongoing

Potential funding sources: FLI operating budget, HWS research funds, SLPWA

Estimated cost: Varies

Task B-3: Water quality monitoring in priority streams

Hobart and William Smith Colleges sample Seneca Lake tributaries (Rock Stream, Glen Creek, Hector Falls Creek, Glen Eldridge Creek, Sawmill Creek, and Bullhorn Creek) once or twice a year. The WQCC recommends additional monitoring of key streams in other watersheds and encourages volunteer monitoring efforts. The Seneca Lake Pure Waters Association has tested water leaching from the Dug Road landfill; additional analysis of this location is needed.

Responsible agency: Finger Lakes Institute at Hobart and William Smith Colleges, SWCD, SLPWA

Time frame: HWS monitoring is ongoing; initiate additional efforts when funding and staff resources permit

Potential funding sources: FLI operating budget, HWS research funds, FL-LOWPA, other funding as available, SLPWA

Estimated cost: FLI/HWS costs vary; SWCD seeking about \$2,000/year

Task B-4: Finger Lakes Institute Research Program

The Finger Lakes Institute at Hobart and William Smith Colleges' faculty and students conduct research projects in collaboration with watershed management and environmental protection programs currently in place throughout the Finger Lakes Region. Projects are interdisciplinary and focus on topics relevant to the Finger Lakes region. Ongoing research includes:

- Exotic species
- Watershed/lake limnology
- Hydrogeochemistry and ecology
- Environmental monitoring
- Watershed management
- Hydrology and water resource issues
- Human impacts on water quality
- Environmental and climate change
- Land use planning and development
- Water quantity and quality
- Energy generation, conservation and environmental impact
- Assessment of pharmaceuticals and personal care products

Responsible agency: Finger Lakes Institute at Hobart and William Smith Colleges

Time frame: Ongoing

Potential funding sources: FLI operating budget

Estimated cost: Varies

Objective: Identify priority sites for erosion control

Many of the water quality problems in Schuyler County are attributed, in part, to the erosion of sediment, with associated contaminants, into wetlands, streams, and lakes.

Task B-5: Conduct stream stability assessments

The Upper Susquehanna Coalition has hired interns to assess the conditions of streams in the Meads Creek and Mud Lake Watersheds (includes Lamoka and Waneta Lakes). The data collected includes visual assessment of stream condition, streambank sediment loading estimates, extent of riparian zone, and wetland assessment. This information was input into a map-based

GIS database to facilitate its use. These assessments have enabled identification of priority sites for streambank restoration and wetland development. The WQCC recommends that all streams in the county be assessed, with updated assessments as needed when conditions change.

Responsible agency: SWCD, USC, SLAP-5

Time frame: Ongoing

Potential funding sources: Grants as available

Estimated cost: \$40,000 for countywide assessment

Task B-6: Conduct road bank and roadside drainage assessments

The condition of roadside drainage has been assessed in many parts of the county (Seneca Lake Watershed in 1999 and Chemung/Susquehanna River Basins in 2002). These efforts provide a snapshot assessment of road ditch and road bank conditions, which can be used to identify high priority sites for roadside stabilization projects. Because conditions change, the WQCC recommends that roadside drainage assessments be conducted on all roads in the county about every three years.

Responsible agency: SWCD, highway departments, USC, SLAP-5

Time frame: Goal – every three years

Potential funding sources: Grants as available (NYS EPF)

Estimated cost: Approximately \$6-8,000 to assess all roads in the county

Objective: Conduct groundwater studies

An understanding of local groundwater systems is needed to effectively manage and protect groundwater resources. Initial tasks include: an inventory of existing private and public wells, synoptic water-level measurements, and development of a potentiometric surface map.

Task B-7: Conduct groundwater study in Sawmill Creek area

The Hector water supply well is located in a highly agricultural area. The potential for water supply contamination from pesticide use in vineyards is a concern. An evaluation of groundwater flow patterns and identification of recharge areas would enable an assessment of the potential threats and implementation of proactive measures to protect this public water source.

Responsible agency: USGS

Time frame: To be determined

Potential funding sources: To be determined

Estimated cost: To be determined

Task B-8: Conduct groundwater study in Catharine Valley

Existing and potential development in Schuyler County is concentrated along the Catharine Valley, with the Villages of Watkins Glen and Montour Falls situated on either end of the Queen Catharine Wetland. Groundwater conditions in this valley can impact Seneca Lake, Queen Catharine Wetland, public water supplies for the villages, and private water supplies. It is recommended that a groundwater study of the Catharine Valley be conducted in coordination with Chemung County.

Responsible agency: USGS

Time frame: To be determined

Potential funding sources: To be determined

Estimated cost: To be determined

Task: B-9: Conduct groundwater study in the Meads Creek Watershed

Grant funding to collect “state of the watershed” information for the Meads Creek Watershed includes an inventory of groundwater wells, synoptic water-level measurements, and stream gain-loss measurements.

Responsible agency: USGS, SWCD

Time frame: Ongoing

Potential funding sources: Current funding from the Chesapeake Bay Small Watersheds Grants Program with matching funding from USGS; additional data collection will require additional funding

Estimated cost: \$34,000 for current project

Task B-10: Conduct groundwater study in Burdett area

Concentrated development and agricultural activity has raised concerns about potential groundwater impacts in the Burdett area.

Responsible agency: USGS

Time frame: To be determined

Potential funding sources: To be determined

Estimated cost: To be determined

Objective: Collect “state of the watershed” information

The first step in developing a watershed management plan is to assemble data regarding the conditions, systems, and threats in the watershed.

Task B-11: Meads Creek Watershed – data collection and analysis

Data collection and analysis in the Meads Creek Watershed has been initiated as an initial step toward development of a watershed management plan. Data to be collected with existing grant funding include: streambank erosion mapping, water quality monitoring, high flow measurement, stage-discharge relation analysis, groundwater well inventory, synoptic water-level measurements, and stream gain-loss measurements.

Responsible agency: SWCD, Meads Creek Watershed Citizens’ Committee, Steuben County SWCD

Time frame: Ongoing

Potential funding sources: Current funding from the Chesapeake Bay Small Watersheds Grants Program with matching funding from USGS, EES and other partners; additional data collection will require additional funding

Estimated cost: \$35,000 plus local match for current project; additional funding needed to complete the data collection and analysis

Task B-12: Lamoka and Waneta Lakes Watershed – data collection and analysis

Although a variety of aquatic data have been collected in Lamoka and Waneta Lakes, additional watershed information and analysis are needed to prepare a scientifically based watershed management plan.

Responsible agency: SWCD, Lamoka-Waneta Lakes Association

Time frame: Ongoing

Potential funding sources: Grants as available, Lamoka-Waneta Lakes Association

Estimated cost: To be determined

Task B-13: Cayuta Lake Watershed – data collection and analysis

Although water quality data have been collected in Cayuta Lake, additional watershed information and analysis are needed to prepare a scientifically based watershed management plan.

Responsible agency: SWCD

Time frame: Ongoing

Potential funding sources: Grants as available, Cayuta Lake Association

Estimated cost: To be determined

Task B-14: Sawmill Creek Watershed – data collection and analysis

Hydrologic analysis of the Sawmill Creek Watershed would enable an evaluation of potential threats to the Town of Hector water supply well from agriculture and other land uses. If warranted, a watershed management plan could then be developed to protect this public water supply.

Responsible agency: SWCD

Time frame: When funding is available

Potential funding sources: Grants as available, Town of Hector

Estimated cost: To be determined

Objective: Support citizen monitoring

The WQCC encourages interested citizens to monitor local water bodies. The Committee will provide technical expertise and other support for citizen monitoring programs whenever local interest and citizen commitment warrants.

Task B-15: Macroinvertebrate monitoring in Meads Creek watershed

The Meads Creek Watershed Citizens Committee sponsored a workshop on macroinvertebrate monitoring and has initiated a monitoring program at selected sites in the watershed.

Responsible agency: Meads Creek Watershed Citizens' Committee, with training by the Isaac Walton League

Time frame: Ongoing

Potential funding sources: Workshop funding from Steuben County WQCC and Schuyler County WQCC; monitoring done by volunteers

Estimated cost: Approximately \$2,000 for training workshop; volunteer time for monitoring

Task B-16: Water quality monitoring of Taughannock Creek

In the past, citizen volunteers have conducted water quality monitoring of Taughannock Creek. Although this effort has lapsed in recent years, there is interest in renewing this project. The group is proposing to collect samples 6 times per year, using monitoring kits to conduct water quality analyses.

Responsible agency: Taughannock Creek citizen group, SWCD

Time frame: Beginning when funding is available

Potential funding sources: To be determined

Estimated cost: \$20,000/year

Task B-17: Finger Lakes Institute at Hobart and William Smith Colleges World Water Monitoring Sites

The Finger Lakes Institute conducts water monitoring events to communicate to the public the value in understanding the health of streams within the Finger Lakes region. At each site (chosen at random) participants test four key indicators of water quality: temperature, pH, dissolved oxygen, and turbidity. The World Water Monitoring Program helps focus public appreciation on the importance of our water resources, builds a better understanding of remaining challenges and solutions, promotes public stewardship, and supports watershed protection programs. One objective of these FLI events is to spark interest in establishing citizen monitoring programs.

Responsible agency: Finger Lakes Institute at Hobart and William Smith Colleges

Time frame: Ongoing

Potential funding sources: FLI operating budget

Estimated cost: Varies

Task B-18: Cultivate and support local interest in citizen monitoring

The WQCC members will seek opportunities to establish additional citizen monitoring programs for lakes and streams. When local interest is expressed, the WQCC will provide training and other support.

Responsible agency: WQCC, SWCD

Time frame: Ongoing

Potential funding sources: WQCC, grant funding; monitoring done by volunteers

Estimated cost: Will vary; basic monitoring can be done for about \$2,000/year/stream

Objective: Maintain and expand water resource databases

Task B-19: Expand GIS database

Schuyler County is currently developing a coordinated county GIS program. Map-based GIS data that can be used for water resource initiatives include: watershed boundaries, hydrogeography, aerial photographs, roads, road ditches, culverts, regulatory floodplains, land use, state-regulated wetlands, national wetland inventory, digital elevation models, DEC permitted facilities, soils (digitized for the entire county), public water supplies, unique and sensitive areas (identified by the EMC), etc. Ongoing effort is required to maintain, update, and expand the existing database, as well as make the information accessible to public and private sector users.

Responsible agency: Schuyler County, SWCD, STCRPDB

Time frame: Ongoing

Potential funding sources: Grants as available (NYS EPF)

Estimated cost: \$150,000 initially, then \$20,000 annually

Task B-20: Improve database on septic systems

The septic system database for the county should be updated and expanded. Computer hardware upgrades and database software would facilitate data storage and manipulation, accounting for spatial relationships. One use for this database would be to investigate the possibility of developing “package systems” for high problem areas where small semi-public systems may prove to be cost effective

Responsible agency: Schuyler County Watershed Protection Agency

Time frame: Ongoing

Potential funding sources: WQCC mini-grant for initial funding

Estimated cost: \$35,000 initially; \$10,000 annually

Goal C: Implement projects and programs to resolve water resource problems

Methods: The methods for addressing water quality problems vary widely and are specific to the problem at hand. The objectives presented below address the countywide water resource concerns identified by the Committee. Some of the proposed tasks are countywide; others focus on the priority watershed areas.

Objective: Promote land use decisions and project design that preserve and restore hydrologic functions (wetlands, riparian buffer zones, infiltration areas, and flood storage areas)

Provisions that municipalities can enact to protect water resources include: classification of sensitive areas as undevelopable (stream buffers, floodplains, wetlands, steep slopes, etc.), stream setback provisions, driveway/road specifications, stormwater management standards, erosion and sediment control standards, regulation of development density, cluster development, steep slope provisions, open space requirements, use of conservation districts, etc. In addition, wetlands, riparian buffers, and other projects can restore hydrologic functions that have been lost.

Task C-1: Implement water resource recommendations from *Schuyler County Comprehensive Plan*

Following completion of the *Schuyler County Comprehensive Plan* in 2004, efforts are underway to identify steps for implementation. These include (1) development of resource maps for municipalities, (2) training (site plan training, SEQR, etc.), and (3) identification of best practices and development of model ordinances applicable to rural development.

Responsible agency: CCE (Director of Planning and Community Development)

Time frame: Ongoing

Potential funding sources: Schuyler County, grants as available

Estimated cost: To be determined

Task C-2: Incorporate water resource considerations into municipal planning and land use regulations

In order to promote sound planning practices, the Director of Planning and Community Development provides planning assistance to municipalities. A Rural Design Workbook with examples of good design principles was prepared by Southern Tier Central Regional Planning and Development Board.

Responsible agency: CCE (Director of Planning and Community Development), WQCC, STCRPDB

Time frame: Ongoing

Potential funding sources: CCE

Estimated cost: Staff time for planning assistance

Task C-3: Support farmland protection programs

The *Schuyler County Agriculture Development and Farmland Protection Plan* was adopted in 1999. The goal of maintaining agricultural land use is generally consistent with the water resource objectives of this strategy. The three Agricultural Districts in Schuyler County are reviewed every eight years.

Responsible agency: Agriculture and Farmland Protection Board, CCE (Director of Planning and Community Development)

Time frame: Ongoing

Potential funding sources: NYS Department of Agriculture and Markets

Estimated cost: \$5,000 to update plan; implementation funding varies

Task C-4: Chemung Basin Wetland Program

The Upper Susquehanna Coalition has an ongoing program to identify, prioritize, and implement wetland projects in the Chemung and Susquehanna Basins.

Responsible agency: USC, SWCD

Time frame: Ongoing

Potential funding sources: EPA, WRP, Ducks Unlimited, U.S. Fish & Wildlife Service

Estimated cost: Varies

Task C-5: Wetland Reserve Program

The U.S. Department of Agriculture initiated a Wetland Reserve Program (WRP) in 1994 to provide waterfowl habitat on agricultural land. The program funds projects that enhance existing wetlands or restore wetland functions to prior wetland areas. Wetland areas are protected by purchasing easements that restrict future uses.

Responsible agency: NRCS, FSA

Time frame: Ongoing

Potential funding sources: WRP

Estimated cost: Variable

Task C-6: Conservation easements/purchase of development rights

Acquisition of conservation easements or development rights can preserve environmentally significant areas and maintain important buffers between urban development and waterbodies.

The Finger Lakes Land Trust, based in Ithaca, has been accepting donations of land rights on hundreds of acres in the Finger Lakes region. The Farmland Protection Board also implements a plan supporting applications for the purchase of development rights and conservation easements.

Responsible agency: FLLT, Agriculture and Protection Board, NYS Dept. of Agriculture & Markets, NRCS

Time frame: Ongoing

Potential funding sources: Voluntary landowner donations, NYS Open Space Plan, NYS Department of Agriculture & Markets, NRCS

Estimated cost: Depends on specific site

Objective: Develop watershed-based management plans that protect water quality, reduce flood risks, and maintain stable stream systems

Task C-7: Develop watershed management plan for Seneca Lake

A “state of the lake” report for Seneca Lake was completed in 1999 (*Setting a Course for Seneca Lake*). Building on this information, develop a watershed management plan for the Seneca Lake watershed.

Responsible agency: SLAP-5, with assistance from SLPWA, SWCD, STCRPDB, Genesee-Finger Lakes Regional Planning Council

Time frame: When funding is available

Potential funding sources: NYS EPF

Estimated cost: \$100,000

Task C-8: Develop watershed management plan for Lamoka and Waneta Lakes

Utilizing existing data and collecting additional information as needed, develop a watershed management plan for the Lamoka and Waneta Lakes watershed.

Responsible agency: Lamoka-Waneta Lakes Association, SWCD, STCRPDB

Time frame: When funding is available

Potential funding sources: Chesapeake Bay Small Watershed Grant Program, NYS EPF

Estimated cost: \$50,000

Task C-9: Develop watershed management plan for Cayuta Lake

Utilizing existing data and collecting additional information as needed, develop a watershed management plan for the Cayuta Lake watershed.

Responsible agency: Cayuta Lake Association, SWCD, STCRPDB

Time frame: When funding is available

Potential funding sources: Chesapeake Bay Small Watershed Grant Program, NYS EPF

Estimated cost: \$35,000

Task C-10: Develop watershed management plan for the Meads Creek Watershed

Building on the data collection and analysis currently underway in the Meads Creek Watershed, develop a watershed management plan. This effort will be coordinated with municipal governments in both Steuben and Schuyler Counties.

Responsible agency: Meads Creek Watershed Citizens’ Committee, SWCD, STCRPDB

Time frame: When funding is available

Potential funding sources: Chesapeake Bay Small Watershed Grant Program, NYS EPF

Estimated cost: \$50,000

Objective: Maintain roads in a manner that prevents erosion, protects streams, and maintains stable drainage patterns.

Roadside drainage systems are typically more extensive than stream systems and can thus have a significant impact on drainage patterns and sediment loads. Stream crossings can threaten the stability of stream systems by altering stream channels and floodplains. The road system is susceptible to extensive and repeated damage from drainage problems and flood events.

Task C-11: Implement highway management recommendations

The WQCC has developed a strategy to promote and facilitate the use of erosion control and maintenance techniques that save money while protecting and enhancing the county's lakes and streams (*Water Quality Strategy for Highway Operations, Schuyler County*, January 2007). Each highway department in the county will be provided a copy of this strategy, a poster (*Protecting Roads / Protecting Water Quality*), and an updated *Highway Superintendent Roads and Water Quality Handbook* (Edition III, 2007). These resources will assist with implementation of practices to manage drainage, prevent erosion, and protect streams. The SWCD provides technical assistance with implementing road ditch stabilization, bank stabilization, and stream management projects.

Responsible agency: Municipal and county highway departments, SWCD

Time frame: Ongoing

Potential funding sources: Municipal and county highway budgets, CHIPS, FL-LOWPA, NYS EPF

Estimated cost: Varies

Objective: Promote sustainable drainage patterns for new and existing development in order to minimize the impacts on water quality and quantity

Many human activities contribute to decreased infiltration of surface water and increased volumes of runoff. The removal of vegetation, installation of impervious surfaces, or concentration of flow can contribute to erosion and flooding problems in downhill locations. Streams respond to increased flow with morphological adjustments, which may include bank erosion and sediment deposition. In addition, the contaminants carried by storm water runoff contribute to water quality impairment. New York State regulates storm water management practices at construction sites that disturb more than an acre of soil.

Task C-12: Strategy for improving storm water management practices

Reconvene the ad hoc Storm Water Management Subcommittee of the WQCC with the objective of developing a strategy for improving the implementation of storm water management and timber harvesting practices. In addition to addressing storm water management during project design and construction, the committee will also evaluate mechanisms for ensuring adequate maintenance of privately owned storm water drainage systems.

Responsible agency: WQCC, SWCD, STCRPDB, CCE (Director of Planning and Community Development)

Time frame: Reconvene existing committee in 2007 (after Gap Analysis is completed)

Potential funding sources: Grants as available (NYS EPF)

Estimated cost: Varies

Task C-13: Technical assistance and training for stormwater management

The SWCD and STCRPDB provide technical assistance to developers, property owners, and municipalities for implementation of good stormwater management practices at development sites. This assistance includes general information, project review, drafting of local regulations, and grants writing assistance to remediate existing stormwater problems. The Schuyler County Watershed Protection Agency is involved with new construction project and provides information and referrals when stormwater management concerns arise. Local agencies will continue to work with DEC to improve compliance with State Pollutant Discharge Elimination System (SPDES) General Stormwater Permits.

Responsible agency: SWCD, STCRPDB, DEC, SLPWA, SLAP-5, Watershed Protection Agency

Time frame: Ongoing

Potential funding sources: SWCD, CWA 604(b)

Estimated cost: Staff time, training expenses

Objective: Control agricultural non-point sources of pollution

Agricultural runoff can be a significant source of sediment, nutrient, and pesticide contamination. Contaminants can originate from cropland, orchards, vineyards, and livestock operations. An additional source of pesticide contamination is leakage of banned materials that are still stored on farms. Agricultural lands near lakes warrant special attention.

Task C-14: Agricultural Environmental Management (AEM)

The New York State Agricultural Environmental Management program (AEM) is a voluntary, incentive based program designed to assist farmers in meeting environmental goals for their farms. The program has five tiers: (I) inventory assessment, (II) on-site assessments, (III) conservation planning, (IV) implementation of Best Management Practices (BMPs), and (V) evaluation. The farmers receive technical assistance with assessment, but are not obligated to implement any recommended measures. The SWCD assists farmers with Tier I and Tier II assessments, conducting a complete environmental audit of the farm (water management, nutrient management, pesticide management, etc.) In Schuyler County, AEM provides a coordinated framework for addressing natural resource concerns on farms of all sizes and products. The AEM implementation strategy and priorities are presented in the *Schuyler County Agricultural Environmental Management Strategic Plan, 2005-2010*.

Responsible agency: SWCD

Time frame: Ongoing

Potential funding sources: NYS SWCC for AEM assessment; BMP funding sources identified in Strategic Plan; other grant sources as available

Estimated cost: Base funding currently \$40,000/year; additional funding for BMP implementation

Task C-15: Provide technical and financial support for implementation of agricultural best management practices

The USDA Natural Resources Conservation Service funds various programs for cost sharing water quality protection measures on farms. The SWCD administers the Agricultural Environmental Management program, provides technical assistance, and assists with procuring financial assistance. CCE provides technical assistance.

Responsible agency: SWCD, NRCS, agricultural community

Time frame: Ongoing

Potential funding sources: USDA (various programs), NYS EPF

Estimated cost: Varies

Task C-16: Cost-share best management practices for vineyards

With funding assistance from the WQCC, the SWCD purchased a no-till drill, which is used on seeding projects in vineyards for erosion control.

Responsible agency: SWCD

Time frame: Ongoing

Potential funding sources: AMA, EQIP

Estimated cost: To be determined

Task C-17: Aid in selected barnyard and pasture improvements

Under the federal Clean Water Act, livestock farms that meet the definition of Concentrated Animal Feeding Operations (CAFOs) must prepare and implement Comprehensive Nutrient Management Plans. The SWCD and NRCS provide technical assistance with this program and seek financial support for BMP implementation.

Responsible agency: SWCD, NRCS

Time frame: Ongoing

Potential funding sources: Farmers, NYS EPF, EQIP, AMA, GRP

Estimated cost: To be determined

Task C-18: Integrated Crop Management Program

In the past, the SWCD has provided a comprehensive Integrated Crop Management Program for agricultural crops (primarily corn and alfalfa) to minimize nutrient and pesticide contributions to surface and groundwater. Additional staff could revive this effort. Farmers would do more if cost sharing were available to help with the additional expense of scouting for pests.

Responsible agency: SWCD, CCE

Time frame: Ongoing since 1992

Potential funding sources: SWCD, DEC, EQIP

Estimated cost: \$30,000 per year when program was active

Task C-19: Support agricultural use of onsite weather stations

In order to facilitate improved pesticide management, the SWCD is seeking funding to establish weather stations on farms, which are connected to the NYS Integrated Pest Management (IPM) Network for Environment and Weather Awareness. This will enable optimized timing of pesticide application.

Responsible agency: SWCD

Time frame: When funding is available

Potential funding sources: NYS SWCC, USDA

Estimated cost: \$60,000 for 15 weather stations

Objective: Promote timber harvesting practices that prevent erosion and protect streams and wetlands

Soil erosion from logging operations can contribute large amounts of sediment to nearby ditches and streams. If not properly designed and constructed, logging roads and skid paths may concentrate flow and erode exposed soils. Improved timber harvesting practices can be used to protect soils from erosion and limit the impact on streams.

Task C-20: Strategy for improving timber harvesting practices

Reconvene the ad hoc Storm Water Management Subcommittee of the WQCC with the objective of developing a strategy for improving the implementation of storm water management and timber harvesting practices. In evaluating options for reducing the drainage impacts and sediment runoff from logging, the committee will consider registration or regulation of timber harvesting operations, along with education and training.

Responsible agency: WQCC, SWCD, STCRPDB, CCE (Director of Planning and Community Development)

Time frame: Reconvene existing committee in 2007 (after Gap Analysis is completed)

Potential funding sources: Grants as available (NYS EPF)

Estimated cost: Varies

Task C-21: Financial assistance for forest management

Federal funding of the Forest Land Enhancement Program (FLEP) currently provides cost sharing for forest planting and timber stand improvement projects. The WQCC supports continued funding of this or other programs to support improved management of forestland.

Responsible agency: FLEP implemented by DEC and CCE; other federal programs administered by NRCS

Time frame: Ongoing

Potential funding sources: Federal Farm Bill

Estimated cost: Requests for assistance have historically exceeded available funding

Objective: Promote mining and mine restoration practices that minimize drainage and sediment impacts

Objective: Promote stream management practices that maintain or restore the dynamic equilibrium of stream systems

Success in stream management is based on working with the stream, not against it. The resolution of unstable conditions (unusual bank erosion, down cutting of the bed, aggradation, change of channel pattern, etc.) should be based on a clear understanding of the causes of the problem. Because streams are subject to natural movement and flooding, the best solution may involve removing development.

Task C-22: Schuyler County Stream Program

The Schuyler County Stream Program provides technical and cost sharing assistance for projects that prevent streambank erosion, improve water quality, and minimize flooding.

Responsible agency: SWCD, Stream Program Committee

Time frame: Ongoing since 1997

Potential funding sources: Project costs are shared by the county, municipality, and property owner

Estimated cost: Previously funded at various levels, as needed, \$15-50,000/year

Objective: Avoid and mitigate the potential for flood damage

Development in floodplains and adjacent to streams is at risk of flooding and erosion damage. There are also significant safety concerns. Floodplain management and stream setback provisions can be used to protect future development from flood damage. Existing development in flood-prone areas can be protected by removal or other protective measures.

Task C-23: Update and implement flood mitigation recommendations

A *Flood Mitigation Action Plan* was prepared for Schuyler County in 1999. This plan was subsequently updated and incorporated into a countywide *Hazard Mitigation Plan*, which will be updated every five years.

Responsible agency: Emergency Management Office

Time frame: Ongoing

Potential funding sources: Mitigation grants from NY State Emergency Management Office; other funding sources

Estimated cost: To be determined

Task C-24: Technical assistance to protect floodplains and riparian buffers

Natural floodplain and stream bank areas provide multiple water quality and flood protection benefits. Floodplain areas store, slow, and transmit floodwater. Riparian vegetation along streams filters runoff, shades streams, provides habitat, and increases the stability of stream banks. Development located in floodplains and adjacent to stream banks compromises these benefits and is at risk of flood or erosion damage. The STCRPDB and SWCD provide planning and technical assistance to preserve and establish floodplain storage capacity and riparian buffer vegetation. The SWCD sells seedlings suitable for riparian buffer restoration.

Responsible agency: STCRPDB, SWCD

Time frame: Ongoing

Potential funding sources: SWCD, STCRPDB, CWA 604(b)

Estimated cost: Staff time

Task C-25: Financial assistance to protect and enhance riparian areas

The USDA Conservation Reserve Program (Continuous CRP and Enhanced CRP) provides cost sharing for removing stream buffers from agricultural use, planting buffer vegetation, and fencing to exclude livestock.

Responsible agency: NRCS, FSA

Time frame: Ongoing

Potential funding sources: Continuous CRP, Enhanced CRP

Estimated cost: Variable, depending on landowner interest

Task C-26: Remove gravel deposits upstream of Bradford Dam

Water levels in Waneta Lake, Lamoka Lake, and Mill Pond are controlled by Bradford Dam. The Lamoka-Waneta Lakes Association recommends removal of gravel deposits upstream of the dam to allow maximum draw down of the lakes in advance of a major flood event (such as the 1972 Hurricane Agnes event).

Responsible agency: Lamoka-Waneta Lakes Association

Time frame: When funding is available

Potential funding sources: Local taxes for the Lamoka-Waneta Aquatic Vegetation Control and Water Quality District

Estimated cost: \$25-50,000

Objective: Reduce onsite wastewater system failure

Most county residents are served by onsite wastewater treatment systems, many of which are old, undersized by today's standards, and poorly maintained. Inadequate septic systems at lakeshore cottages are thought to be a major contributor to excessive weed growth in the county's lakes.

Task C-27: Monitor septic system installation

The Schuyler County Watershed Protection Agency monitors the installation of septic systems to insure proper designs are used to meet NYS codes and local laws.

Responsible agency: Schuyler County Watershed Protection Agency

Time frame: Ongoing

Potential funding sources: Schuyler County budget, state reimbursement

Estimated cost: \$70,000 annually

Task C-28: Cost share septic tank improvements

Grant funding enabled the Watershed Protection Agency to initiate a successful septic improvement program in which the county purchased concrete septic tanks to replace old steel tanks, with property owners paying for installation. Initial priority was placed on areas around Lamoka, Waneta, and Cayuta Lakes. Demand for this program has exceeded available funding. The WQCC is seeking additional funding to continue this program and expand it to other areas of the county.

Responsible agency: Schuyler County Watershed Protection Agency

Time frame: Ongoing

Potential funding sources: FL-LOWPA, grants as available

Estimated cost: Current program costs approximately \$1,000/tank replaced; funding level of \$20,000 annually is desired for the foreseeable future.

Task C-29: Cost share septic system improvements

The WQCC has recommended a new program to assist property owners with the cost of upgrading various types of antiquated onsite waste disposal systems. The Watershed Protection Agency is currently assessing the need for this type of assistance to determine the required level of funding.

Responsible agency: Schuyler County Watershed Protection Agency

Time frame: When funding is available
Potential funding sources: Grants as available
Estimated cost: To be determined

Task C-30: Lamoka-Waneta Septic Inspection Program

The Lamoka-Waneta Lakes Association and the Schuyler County Watershed Protection Agency are initiating a program to require inspection of septic systems on lakeside property. Municipal laws in the three towns bordering the lake will provide the authority to inspect septic systems every five years and require repairs when needed.

Responsible agency: Lamoka-Waneta Lakes Association; Schuyler County Watershed Protection Agency; Towns of Orange, Tyrone, and Wayne (Steuben County)
Time frame: Initiated in 2007
Potential funding sources: NYS Water Quality Mini-Grant for initial expenses; ongoing funding from local tax payers in the Lamoka-Waneta Aquatic Vegetation Control and Water Quality District; grants as available
Estimated cost: \$10,000 annually

Task C-31: Promote community sewage treatment systems using innovative alternative technologies

The WQCC recommends that areas with small lots or poor conditions for onsite wastewater treatment be served by community systems. Wastewater could be collected and pumped to locations with good soils. Inventories of sanitary systems in areas with suspected problems are recommended to form a basis for future actions.

Responsible agency: Schuyler County Watershed Protection Agency
Time frame: As resources permit
Potential funding sources: Promotion from Watershed Protection Agency budget; sources of funding for implementation to be determined
Estimated cost: To be determined

Objective: Minimize and remediate unsafe disposal and spills of hazardous substances

Task C-32: Hazardous spill response

Rapid and effective response to released hazardous materials is needed to minimize contamination of surface and groundwater supplies when hazardous spills occur. Schuyler County emergency personnel need adequate training, equipment, and information resources for effective spill response efforts. A DEC Spills Engineer also responds to spills.

Responsible agency: EMO, fire departments, DEC
Time frame: Ongoing
Potential funding sources: EMO, fire departments, DEC
Estimated cost: Varies

Task C-33: Hazardous waste collection

Schuyler County holds an annual Household Hazardous Waste Collection Day for county residents. Agricultural hazardous waste is also accepted when the need exists. Used tire collection days have been held alone or in conjunction with Household Hazardous Waste

Collection Day. Beginning in 2004, used electronics were accepted at the Household Hazardous Waste Collection Day.

Responsible agency: CCE

Time frame: Solid Waste Management Plan recommends collection in alternate years

Potential funding sources: DEC cost share

Estimated cost: Latest collection of household hazardous waste and electronics cost \$9,000

Task C-34: Cellular phone collection

The Finger Lakes Institute, a designated Eco-Cell Recycling Center, collects cell phones and accessories for recycling. Generated funds support Finger Lakes environmental research and education. The FLI accepts cellular handsets and all accessories, including batteries, regardless of age or condition.

Responsible agency: Finger Lakes Institute at Hobart and William Smith Colleges

Time frame: Ongoing

Potential funding sources: None

Estimated cost: None

Task C-35: Annual International Coastal Cleanup Sites

In observance of the International Coastal Cleanup, the Finger Lakes Institute holds community beach cleanup events within the Finger Lakes region. In addition to removing debris, participants record the types and quantities of lake debris found. The data collected are used to identify sources of pollution and help find solutions for preventing it.

Responsible agency: Finger Lakes Institute at Hobart and William Smith Colleges

Time frame: Annual

Potential funding sources: FLI operating budget

Estimated cost: Varies

Objective: Reduce salt runoff from roads and storage facilities

Task C-36: Construct salt storage sheds

Many of the municipal highway departments that utilize salt for deicing still lack sheds for safely storing these materials. The WQCC and member agencies will assist with procuring funds for construction of additional salt storage sheds for municipal highway departments.

Responsible agency: Municipal Highway Departments (with assistance from SWCD)

Time frame: Ongoing

Potential funding sources: Municipal highway departments, NYS EPF

Estimated cost: \$100-130,000 per storage shed

Objective: Monitor permitted point discharges

Point discharges are permitted by DEC under the SPDES (State Pollutant Discharge Elimination System) permit program. Although the WQCC is not aware of any permit violations, members are concerned about the cumulative impact on receiving waters when numerous SPDES permits are issued in a single watershed. Of particular concern is the impact on Seneca Lake, which has

seen increased shoreline development in recent years.

Task C-37: Monitor the range of permitted point discharges and the potential for cumulative impacts on receiving waterbodies

WQCC members will continue to monitor the conditions of SPDES permits and any enforcement actions in Schuyler County and assess the potential for cumulative impacts that degrade the quality of receiving waters.

Responsible agency: WQCC, SLPWA, SLAP-5, FLI

Time frame: Ongoing

Potential funding sources: None

Estimated cost: Staff time

Task C-38: New and upgraded sewage treatment facilities

The Schuyler County Partnership for Economic Development (SCOPED) is currently evaluating the county's water and sewage treatment infrastructure and has completed a countywide Comprehensive Water and Sewer Study. In addition to the potential for expanding municipal sewer service, the county is evaluating the recommendation for a centralized and updated plant serving Watkins Glen, Montour Falls, Burdett, and Odessa. John Todd (University of Vermont) was invited to provide information about wetlands and other alternative treatment systems and evaluate the potential applicability of these techniques in Schuyler County.

Responsible agency: SCOPED

Time frame: Ongoing evaluation of needs and opportunities

Potential funding sources: To be determined

Estimated cost: To be determined

Objective: Control invasive species in lakes, streams, and riparian areas

Task C-39: Control aquatic and riparian invasive species

The spread of invasive plants in Schuyler County is increasingly preventing the development of healthy riparian communities, which stabilize soils and filter pollutants. Research is needed to develop and implement a plan to control invasive species in aquatic and riparian areas. Problem species include: Japanese knotweed, purple loosestrife, Eurasian watermilfoil, and other species.

Responsible agency: WQCC

Time frame: As resources permit

Potential funding sources: To be determined

Estimated cost: To be determined

Task C-40: Invasive weed control in Lamoka and Waneta Lakes.

Extensive beds of Eurasian water milfoil have dominated aquatic vegetation in Lamoka and Waneta Lakes. The Lamoka-Waneta Aquatic Vegetation Control and Water Quality District was established in 2002 to provide a taxing authority for aquatic vegetation control. The District encompasses properties with lake frontage on the two lakes. Recent efforts to control invasive weeds have included application of the herbicide fluridone to Waneta Lake in 2003 and to Fleet's Cove in Lamoka Lake in 2005. Due to problems with these applications, the Lamoka-Waneta Lakes Association is evaluating other methods of controlling invasive weeds.

Responsible agency: Lamoka-Waneta Lakes District Commission

Time frame: Ongoing

Potential funding sources: Local taxes for the Lamoka-Waneta Aquatic Vegetation Control and Water Quality District, potential NYS grants from the State's Invasive Species Grant Program

Estimated cost: To be determined

Task C-41: Vegetation management in the canal to Keuka Hydroelectric Power Plant

Following the 2003 herbicide treatment of Waneta Lake, Eurasian watermilfoil began re-infesting the north end of the lake from the penstock canal, which was not treated. The canal was built to enable power generation at the Keuka Hydroelectric Power Plant and is no longer in use. The hydrology of the area is being evaluated to determine the best management option for the canal. It has been suggested that the south end of the canal be filled with gravel to block further re-infestation with Eurasian watermilfoil.

Responsible agency: Lamoka-Waneta Lakes Association, SWCD

Time frame: When funding is available

Potential funding sources: Local taxes for the Lamoka-Waneta Aquatic Vegetation Control and Water Quality District, grants as available

Estimated cost: \$50-100,000 to fill south end of canal

Goal D: Evaluate the program to determine if it has met its objectives

Methods: Evaluation of Schuyler County's water resource program is a dynamic and continual process. Program evaluation is done concurrently with WQCC meetings and during project reviews. This strategy will be periodically updated to incorporate changes to the water resource program. In addition, the public will be informed of this Committee in order to increase public input into the development and implementation of the county's water resource program.

Objective: Educate the public about the Schuyler County Water Quality Coordinating Committee and the "Schuyler County Water Resource Strategy"

Public outreach activities provide opportunities for the Committee to obtain feedback and involvement in water resource efforts.

Task D-1: Presentations to the County Legislature

Responsible agency: WQCC, SWCD

Time frame: Annually or as needed (ongoing)

Potential funding sources: Water Quality Mini-Grant

Estimated cost: \$1,000

Task D-2: WQCC website

A website for the Schuyler County WQCC is being developed by Southern Tier Central Regional Planning and Development Board. The WQCC should periodically review this site to provide updated and additional information as appropriate.

Responsible agency: WQCC, STCRPDB

Time frame: Ongoing

Potential funding sources: CWA 604(b)

Estimated cost: Staff resources

Objective: Implement and evaluate the water resource program

Overall program evaluation is done concurrently with meetings of the Schuyler County Water Quality Coordinating Committee. The Committee provides a forum for monitoring water resource issues (water quality and quantity) in the county, coordinating activities, and recommending proposed actions.

Task D-3: WQCC meetings.

The WQCC meets approximately 6 times per year to share information about water resource issues in Schuyler County and provide guidance for implementation efforts.

Responsible agency: SWCD provides staff support for the Committee

Time frame: Ongoing since 1992; currently meet every other month

Potential funding sources: N/A

Estimated cost: N/A

Task D-4: WQCC funding

Most of the water resource projects in Schuyler County are undertaken by the agencies and organizations represented on the WQCC with funding from a variety of sources. In addition, the Committee has received funding from NYS Water Quality Mini-Grants. Competitive grants have funded specific projects and Level 1 grants have provided a funding stream for other Committee efforts. The WQCC has used these funds to support a variety of water quality-related efforts in the county (often in collaboration with other local organizations). Recent examples include: Earth Day Festival, macroinvertebrate training for volunteers, Low Impact Development project at a Boy Scout camp, expert information/recommendations concerning alternative sewage treatment options, etc. The local education, training, and small-scale implementation projects supported by the WQCC are an important part of the Committee's work and require an ongoing source of funding.

Responsible agency: WQCC

Time frame: Ongoing

Potential funding sources: Water Quality Mini-Grants; seek additional funding

Estimated cost: Varies

Task D-5: Periodically review and update the *Schuyler County Water Resource Strategy*

The Committee will periodically undertake a comprehensive evaluation of Schuyler County's water resource program. This will include updating documentation of water resource concerns (water quality and quantity) and the strategy for addressing the threats and problems.

Responsible agency: WQCC

Time frame: Minimum of every 5 years; more frequently if warranted

Potential funding sources: WQCC

Estimated cost: \$3,000

APPENDIX A: MEMBERS OF THE WATER QUALITY COORDINATING COMMITTEE

Cayuta Lake Association: Vacant

Code Enforcement Officer Representative: Vacant

Cornell Cooperative Extension (Planning and Economic Development): Danielle Hautaniemi*

Emergency Management Office: Bill Kennedy*

Environmental Management Council: Jenna Hicks*

Finger Lakes Institute: Sarah Meyer*

Finger Lakes Resource Conservation & Development Council: Richard Winnett

Friends of Queen Catharine Marsh: Irene Brown

Highway Superintendent Representative: Vacant

Lamoka-Waneta Lakes Association: Paul Giometti*

Meads Creek Watershed Citizens' Committee: Pat Darcangelo

NYS Department of Environmental Conservation: Scott Rodabaugh

NYS Department of Health: Tom Klasius

NYS Soil and Water Conservation Committee: Tom Brace

Schuyler County Legislature Representative: Paul Marcellus*

Schuyler County Partnership for Economic Development (SCOPED): Kelsey Jones

Seneca Lake Area Partners in 5 Counties (SLAP-5): Jerry Verrigni*

Seneca Lake Pure Waters Association: Carol Fitzgerald

Soil and Water Conservation District: Jerry Verrigni*
Elaine Dalrymple*

Southern Tier Central Regional Planning and Development Board: Jennifer Fais*
Janet Thigpen*

Town Supervisor Representative: Vacant

Upper Susquehanna Coalition: James Curatolo*

USDA Farm Services Agency, County Committee: Carl Taber

USDA Natural Resources Conservation Service: Daniel Dostie*

Watershed Protection Agency: Tim Hicks*

*denotes active members

APPENDIX B:
THE ROLE OF ORGANIZATIONS AND AGENCIES
IN THE SCHUYLER COUNTY WATER QUALITY COORDINATING COMMITTEE

| Organization | Outreach/ Public Education | Training | Water Quality Monitoring | Land Use Planning Assistance | Research | Flood Mitigation Assistance | Agricultural/ Landscaping Assistance | Stream Stabilization | Septic System Assistance | Grant Writing |
|---|----------------------------------|----------|--------------------------------|------------------------------------|----------|-----------------------------------|--|-------------------------|--------------------------------|------------------|
| Cayuta Lake Assoc. | X | | | | | | | | X | |
| Code Enforcement | | | | X | | X | | | X | |
| Cornell Cooperative Ext. | X | X | | X | X | | X | | | |
| Emergency Management | X | X | | X | | X | | | | X |
| Environmental Mgt. | X | | | | | | | | | |
| Finger Lakes Institute | X | | X | | X | | | | | |
| Finger Lakes RC&D | X | X | | | | | X | | | X |
| Friends of Queen Catharine Marsh | X | | | | | | | | | |
| Highway Superintendents | | | | | | | | X | | |
| Lamoka-Waneta Lakes Assoc. | X | | X | | X | | | | X | |
| Meads Creek Watershed | X | X | X | X | | X | | X | | |
| NYS DEC | X | X | X | | | X | | X | | |
| NYS Dept. of Health | X | X | X | | | | | | X | |
| NYS SWCC | X | X | | | X | | X | | | |
| Schuyler Co. Legislature | | | | X | | | | | | X |
| SCOPED | X | X | | X | X | | | | | X |
| Seneca Lake Pure Water | X | X | X | X | X | | X | | X | X |
| SLAP-5 | X | X | | X | | | | | | X |
| Soil & Water Cons. Dist. | X | X | X | X | | | X | X | | X |
| Southern Tier Central Reg. Planning & Dev. | X | X | | X | | X | | | | X |
| Town Supervisors | X | | | X | | X | X | X | | X |
| Upper Susquehanna Coal. | X | X | | | | X | X | X | | X |
| USDA – FSA | | | | | | | X | | | |
| USDA – NRCS. | | | | X | | X | X | | | |
| Watershed Prot. Agency | X | | X | X | | | | | X | |

**APPENDIX C:
ADDITIONAL PLANS
RELATED TO WATER RESOURCE ISSUES
IN SCHUYLER COUNTY**

DRAFT Schuyler County Hazard Mitigation Plan (February 2007)

Flood Insurance Rate Maps and Flood Insurance Studies

Flood Mitigation Action Plan, Schuyler County (1999)

Reducing Flood Damage in the Southern Tier Central Region (May 1998)

Schuyler County Agricultural Environmental Management, Strategic Plan 2005-2010 (February 2005)

Schuyler County Agriculture Development and Farmland Protection Plan (1999)

Schuyler County Comprehensive Emergency Management Plan (2003)

Schuyler County Comprehensive Plan 2004

Schuyler County Solid Waste Management Plan

Setting a Course for Seneca Lake, The State of the Seneca Lake Watershed (1999)

Water Quality Strategy for Highway Operations, Schuyler County (January 2007)

APPENDIX D: ACRONYMS FOR AGENCIES AND PROGRAMS

AEM – Agricultural Environmental Management program
AMA – U.S. Department of Agriculture, Agricultural Management Assistance Program
BMP – Best Management Practice
CAFO – Concentrated Animal Feeding Operation
CCE – Cornell Cooperative Extension of Schuyler County
CHIPS – Consolidated Highway Improvement Project System
CRP – U.S. Department of Agriculture, Conservation Reserve Program
CWA 604(b) – Clean Water Act Section 604(b) water quality planning funding
DEC – New York State Department of Environmental Conservation
EMC – Schuyler County Environmental Management Council
EPA – U.S. Environmental Protection Agency
EQIP – U.S. Department of Agriculture, Environmental Quality Incentive Program
Finger Lakes RC&D – Finger Lakes Resource Conservation & Development Council
FLEP – U.S. Department of Agriculture, Forest Land Enhancement Program
FLI – Finger Lakes Institute at Hobart and William Smith Colleges
FL-LOWPA – Finger Lakes-Lake Ontario Watershed Protection Alliance
FSA – U.S. Department of Agriculture, Farm Service Agency
GIS – Geographic Information System
GPS – Global Positioning System
GRP – U.S. Department of Agriculture, Grassland Reserve Program
HWS – Hobart and William Smith Colleges
IPM – Integrated Pest Management
NRCS – U.S. Department of Agriculture, Natural Resources Conservation Service
NYS EPF – New York State Environmental Protection Fund
NYS SWCC – New York State Soil and Water Conservation Committee
PWL – Priority Waterbodies List (developed and maintained by DEC)
SCOPED – Schuyler County Partnership for Economic Development
SLAP-5 – Seneca Lake Area Partners in 5 Counties
SLPWA – Seneca Lake Pure Waters Association
SPDES – New York State Pollutant Discharge Elimination System permit program
STCRPDB – Southern Tier Central Regional Planning and Development Board
SWCD – Schuyler County Soil and Water Conservation District
USC – Upper Susquehanna Coalition
USDA – U.S. Department of Agriculture
USGS – U.S. Geological Survey
WQCC – Schuyler County Water Quality Coordinating Committee
WRP – U.S. Department of Agriculture Wetland Reserve Program