# THE GENESEE RIVER BASIN ACTION STRATEGY



US Army Corps of Engineers

GENESEE/FINGER LAKES Regional Planning Council

# The Genesee River Basin Action Strategy

*A report prepared for the New York State Department of Environmental Conservation and United States Army Corps of Engineers by the Genesee/Finger Lakes Regional Planning Council to address priority water quality and natural resource needs throughout the Genesee River Basin*

**October, 2004**


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GENESEE/FINGER LAKES
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## Mission Statement

*The Genesee/Finger Lakes Regional Planning Council (G/FLRPC) will identify, define, and inform its member counties of issues and opportunities critical to the physical, economic, and social health of the region. G/FLRPC provides forums for discussion, debate, and consensus building, and develops and implements a focused action plan with clearly defined outcomes, which include programs, personnel, and funding.*


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## TABLE OF CONTENTS

**Chapter One: Introduction ..... 1**
Significance of Issue ..... 1
The Genesee River Basin Action Strategy (GRBAS) ..... 1
Mandate for Conducting a Strategy ..... 2
The Genesee River Basin Sediment Transport Model ..... 2
Report Overview and Organization ..... 2
*Chapter Two: Basin Overview* ..... 3
*Chapter Three: Basinwide Recommendations and Commitments* ..... 3
*Chapter Four: Watershed Prioritization* ..... 3
*Chapter Five: Natural Resource and Heritage Data* ..... 3
*Appendices* ..... 4

**Chapter Two: Basin Overview ..... 5**
General Overview ..... 5
Land Use ..... 8
Water Quality ..... 8
*Extent of Impairment* ..... 9
Lakes, Ponds and Reservoirs ..... 9
Rivers and Streams ..... 10
*Sources of Impairment* ..... 10
Lakes, Ponds and Reservoirs ..... 10
Rivers and Streams ..... 11

**Chapter Three: Basinwide Recommendations and Commitments ..... 13**
Introduction ..... 13
Explanation of Chapter Components ..... 13
*Source Categories* ..... 13
*Problem Description* ..... 14
*Key Goals* ..... 14
*Desired Outcomes* ..... 14
*Actions Needed* ..... 14

*Commitments and Recommendations* ..... 14
Rochester Embayment Remedial Action Plan ..... 14
*Assessment and Compliance* ..... 15
Source Categories ..... 16
*Agriculture* ..... 16
*Streambank Erosion* ..... 21
*Stormwater Runoff and Other Nonpoint Sources* ..... 24
*Hydromodification and Habitat Modification* ..... 27
*Failing Onsite Wastewater Treatment Systems* ..... 30
*Municipal Drainage and Industrial Discharge* ..... 33
*Toxic and Contaminated Sediments* ..... 35
*Assessment* ..... 37
*Compliance* ..... 38

**Chapter Four: Watershed Prioritization ..... 39**
Introduction ..... 39
*The Watershed Approach* ..... 39
Prioritization Methodology ..... 39
*High Priority Watersheds* ..... 40
*Medium Priority Watersheds* ..... 40
*Low Priority Watersheds* ..... 40
Watershed Identification ..... 40
Watershed Descriptions and Rankings ..... 41
Restoration versus Protection ..... 41
*Upper and Lower Genesee Watershed Rankings* ..... 42
2040 -- Direct PA Drainage ..... 45
2050 – Cryder Creek ..... 47
2060 – State Line to Dyke Creek ..... 48
2070 – Dyke Creek ..... 50
2080 – Van Campen Creek ..... 52
2090 – Dyke Creek to Angelica Creek ..... 53
2100 – Angelica Creek at West Almond, NY ..... 55
2110 -- Angelica Creek ..... 56
2120 – Angelica Creek to Caneadea Creek ..... 57
2130 – Caneadea Creek ..... 58
2140 – Caneadea Creek to Wiscoy Creek ..... 60

2150 -- Wiscoy Creek ..... 63
2160 – Wiscoy Creek to Canaseraga Creek ..... 66
2170 – Canaseraga Creek ..... 69
*Lower Genesee Watershed Rankings* ..... 73
3010 – Beards Creek ..... 74
3020 – Conesus Creek ..... 76
3030 – Upper Honeoye Creek ..... 78
3040 – Middle Honeoye Creek ..... 79
3050 – Lower Honeoye Creek ..... 83
3060 – Canaseraga Creek to Oatka Creek ..... 84
3070 – Oatka Creek ..... 86
3080 – Black Creek ..... 90
3090 – Red Creek ..... 95
3100 – Oatka Creek to Mouth ..... 97

**Chapter Five: Natural Resource and Heritage Data ..... 101**
Introduction ..... 101
*Basin Ecozones* ..... 102
*Important Bird Areas* ..... 103
*Furbearer Management Considerations* ..... 106
*River Otter and Mink Data* ..... 108
*NYS Natural Heritage Program* ..... 111
*NYS DEC Herpetofauna ("Herp") Database* ..... 114
*Fish Stocking Data* ..... 123

**Appendices ..... i**
A. Implementation Schedule and Budget ..... ii
B. Sediment Transport Model ..... viii
C. Supplemental Maps ..... x
Map C-1: Aquifers ..... xi
Map C-2: Agricultural Districts ..... xii
Map C-3: Concentrated Animal Feeding Operations ..... xiii
Map C-4: Drinking Water Supply Sites ..... xiv
Map C-5: Flood Plains ..... xv
Map C-6: Gauging Stations ..... xvi
Map C-7: Miscellaneous Monitoring Sites ..... xvii
Map C-8: Multi-Resolution Landscape Characteristics ..... xviii
Map C-9: Parks and Recreation ..... xix

Map C-10: Potential Sources of Contamination ..... xx
Map C-11: Resource Conservation and Recovery Sites ..... xxi
Map C-12: Designated Scenic River Area ..... xxii
Map C-13: Designated NYS Freshwater Wetlands ..... xxii
D. Institutional and Program Assessment ..... xxiv
*Allegany County* ..... xxiv
*Genesee County* ..... xxvi
*Livingston County* ..... xxvii
*Monroe County* ..... xxix
*Ontario County* ..... xxxiv
*Potter County* ..... xxxvii
*Steuben County* ..... xxxviii
*Wyoming County* ..... xxxix
E. Water Education Collaborative ..... xlii
F. List of Acronyms ..... xliii

## Figures

**Figure 2-1:** Genesee River Basin Land Use ..... 8
**Figure 2-2**: 2001 PWL Water Quality Assessment for Lakes, Reservoirs and Ponds of the Genesee River Basin (Percentage of Total Surface Water Acres) ..... 9
**Figure 2-3:** 2001 PWL Water Quality Assessment for River and Stream Segments of the Genesee River Basin (Percentage of Total River Miles) ..... 10
**Figure 2-4**: Sources of Impairment within Priority Lakes, Ponds and Reservoirs of the Genesee River Basin ..... 11
**Figure 2-5**: Sources of Impairment within Priority Lakes, Ponds and Reservoirs of the Genesee River Basin ..... 12
**Figure 5-1:** 2004 Late Winter Otter/Mink Survey Summary, NYSDEC Region 8 ..... 110
**Figure 5-2:** Herp Data ..... 114
**Figure 5-3:** 2004 Stocking Summary of the Genesee River Basin ..... 123

## Maps

**Map 1:** Overview of the Genesee River Basin ..... 6
**Map 2:** Genesee River Basin Hydrography ..... 7
**Map 3:** Genesee River Basin Priority Watersheds ..... 43
**Map 4:** Upper Genesee River Basin PWL Waterbodies and River/Stream Segments ..... 44
**Map 5:** Lower Genesee River Basin PWL Waterbodies and River/Stream Segments ..... 71
**Map 6:** Genesee River Basin Ecozones ..... 100
**Map 7:** Important Bird Areas in the Genesee River Drainage Basin ..... 101

**Maps 8 and 9:** Furbearer Data ..... 106
**Map 10:** Otter Sightings ..... 107
**Map 11:** Lower Genesee Basin: Rare Species and SignificantNatural Communities ..... 110
**Map 12:** Upper Genesee Basin: Rare Species and Significant Natural Communities ..... 111
**Map 13:** Listed Herps of the Lower Genesee River Basin Based on Atlas Project 1990-1999 ..... 115
**Map 14:** Listed Herps of the Upper Genesee River Basin Based on Atlas Project 1990-1999 ..... 116
**Map 15:** Fish Stocking Data ..... 123

# Chapter 1: Introduction

## Significance of Issue

The Genesee River Basin is a resource of intense historical, ecological and cultural value. The lands and waters of the Basin have always been a source of great wealth to its inhabitants, both in terms of production and beauty. The Basin has at times been a source of great turmoil, however, as exemplified by destructive flooding, rapid industrial expansion and decline and continuous fluctuations in human settlement patterns. Throughout its 10,000 year geologic history, the Genesee River—the primary drainage channel of the Basin—has continued its steady journey north to Lake Ontario, carving deep trenches through the highlands of the Allegany Plateau and routinely depositing fertile soils throughout the Genesee Valley below. The Basin itself is divided into two primary drainage basins, together containing a total of twenty-four separate watersheds, each with its own unique physical, environmental and social characteristics. As the River meanders northward, an enormous volume of water is gathered from these catchments, creating a flow of significant volume and strength by the time it reaches the City of Rochester and exits into the immense holding tank that is Lake Ontario, one of the five lakes that comprises the Great Lakes Basin.

The Genesee River Basin has yielded enormous benefits to its residents, embodied by a variety of land and water uses such as navigation, recreation, energy production, wildlife habitat, and fresh water for drinking, irrigation, industrial uses and sanitation. Unfortunately, a general atmosphere of neglect coupled with the steady increase in the intensity of human activities on the land and water in the Basin has steadily led to the degradation of these and other uses to varying degrees. Agricultural and industrial activities, stormwater runoff, inadequate waste treatment, hydrologic and habitat modification, and invasive species are a sample of the types of issues that inhabitants and their local, state, and federal governments and associated agencies have been grappling with in recent time.

Disjointed, reactionary measures have proven to be inadequate means of addressing variant forms of pollution and their cumulative impacts on local human and wildlife communities. If the uses that are enjoyed in the Genesee River Basin are to be sustained over a prolonged period of time, an active and focused planning and management effort will be required across all relevant organizational and administrative levels. The Genesee River Basin Action Strategy (GRBAS) is intended to help implement and guide this effort.

## The Genesee River Basin Action Strategy (GRBAS)

The GRBAS is based on the general format developed for Watershed Restoration and Protection Action Strategies (WRAPS), first implemented for the Susquehanna and Chemung River Basins in 2001.[1] Like the WRAPS, the GRBAS is intended to be a concise, action-oriented document

[1] See "Watershed Restoration and Protection Action Strategies," online at the NYS DEC website, http://www.dec.state.ny.us/website/dow/wrap/.

that compiles currently available information about the state of the watershed and ongoing assessment, outreach and implementation activities in a "State of the Basin" report. Such a report proposes environmental and natural resource priorities or goals in the Basin, along with measurable objectives as a strategy for achieving those goals. The process seeks to bring together all appropriate agencies and stakeholders to focus support in the form of grant dollars, technical assistance, and other resources to address the priority water quality and natural resource needs in that watershed.

The strategy creates an opportunity to strike an appropriate balance between controls over discharges and polluted runoff, and to consider other water-related problems in the watershed such as wetland loss, sediment contamination, aquatic species habitat degradation, drinking water protection and overall riparian health.

## Mandate for Conducting a Strategy

In 1998 the federal government introduced the Clean Water Action Plan, designed to accelerate the pace for achieving the original national goal of a fishable, swimmable and safe waters that was established under the Clean Water Act of 1972. New York State completed the Unified Watershed Assessment (UWA) required by the Clean Water Action Plan and submitted it to the United States Environmental Protection Agency on October 1, 1998. As part of the UWA, states were required to set priorities and a schedule for restoring their watersheds, coordinating with existing restoration priorities beginning in 1999-2000.[2]

A related component of the Clean Water Action Plan was to update the state's Nonpoint Source (NPS) Management Program and to provide statements of vision, goals and specific objectives ("Nine Key Elements") for achieving the program. New York State's updated NPS Management Program was approved in August of 2000. The next step required the development of Watershed Restoration Action Strategies to address those watersheds identified in the UWA as most in need of attention, that is, those not meeting clean water and other natural resource goals (i.e., Category I watersheds). New York State originally had taken the opportunity presented by this process to include those watersheds of good quality that are most in need of protection to maintain natural resource and water quality.

In January of 2002, the Genesee/Finger Lakes Regional Planning Council (G/FLRPC) began the process of producing a WRAPS for the Genesee River Basin in association with the New York State Department of Environmental Conservation (DEC) and various county agencies in the Basin. Due to shifting priorities and resources, the WRAPS process was temporarily discontinued in the middle of 2002. In 2003, the US Army Corps of Engineers (USACE) began the process of developing the Sediment Transport Model for the Genesee River Basin. In order to capitalize on work and research that had already been completed for the WRAPS, the USACE

[2] The entire UWA and schedule of restoration efforts is available on the NYS DEC web site at http://www.dec.state.ny.us. A comprehensive review of NYS water quality management efforts can be found in the NYSDEC Div. of Water report *New York State Water Quality Monitoring Strategy 2000,* http://www.dec.state.ny.us/website/dow/305b98.pdf.

chose to continue the Action Strategy process with G/FLRPC. The GRBAS, incorporating the output data from the Genesee River Sediment Transport Model, will be a direct extension of these efforts.

## Genesee River Basin Sediment Transport Model

Under the authority of Section 516(e) of the Water Resources Development Act (WRDA) of 1996, as amended, the United States Army Corps of Engineers agreed to assist the G/FLRPC, along with State and local watershed managers, with their evaluation, prioritization and implementation of alternatives for soil conservation and non-point source pollution prevention in the Genesee River Basin. As stated above, the Genesee River Basin Sediment Transport Model is a major component of this collaborative process. A sediment transport model is a computerized environmental analysis tool that can be used to predict the erosive behavior of a range of soil types under a variety of climactic and/or hydrological conditions. When implemented, it is anticipated that the model will yield important data relative to the prevention of soil erosion, thus facilitating the implementation of Best Management Practices (BMPs) throughout the Basin.

## Report Overview and Organization

### *Chapter 2: Basin Overview*

Chapter 2 of the GRBAS, entitled *Basin Overview*, presents a general overview of the present conditions in the Genesee River Basin. Subjects such as Basin geography, demographic and environmental characteristics, land use and political jurisdictions are summarized therein. Current data regarding water quality within the Basin is then presented in detail. Information is given both in narrative and chart form in order to provide clarity and accuracy regarding current technical data.

### *Chapter 3: Basinwide Recommendations and Commitments*

Chapter 3 of the GRBAS presents the primary issues of concern that are experienced throughout large portions of the Genesee River Basin. These include issues such as agricultural runoff and hydromodification, for example. For each issue of concern, programmatic and/or institutional arrangements that are either currently in place or applicable to the issue of concern are listed and explained. Specific commitments and/or recommendations for addressing these issues are then provided.

### *Chapter 4: Watershed Prioritization*

Chapter 4 of the GRBAS is a series of matrices that summarize, by watershed, the status, pollutants, source and recommended actions or commitments for implementation in the watersheds of the Genesee River Basin. Individual watersheds have been assigned priority

levels for action based upon the severity of impacts that have been found to exist therein. Many items detailed in Chapter 3 are cross-referenced here under their corresponding watershed.

## Chapter 5: Natural Resource and Heritage Data

A variety of maps, inventories and other current data sets regarding public lands, access, and natural heritage data in the Genesee River Basin are included in Chapter 5. This data will be extremely useful in the development of individual watershed restoration programs.

## Appendices

The Appendices of the GRBAS serve as a repository for important reference and ancillary information relevant to the report. Items such as an implementation budget and schedule for watershed restoration projects, supplementary maps, an inventory of Basin programs and agencies, as well as a list of common acronyms can be found here.

# Chapter 2: Basin Overview

## General Overview[1]

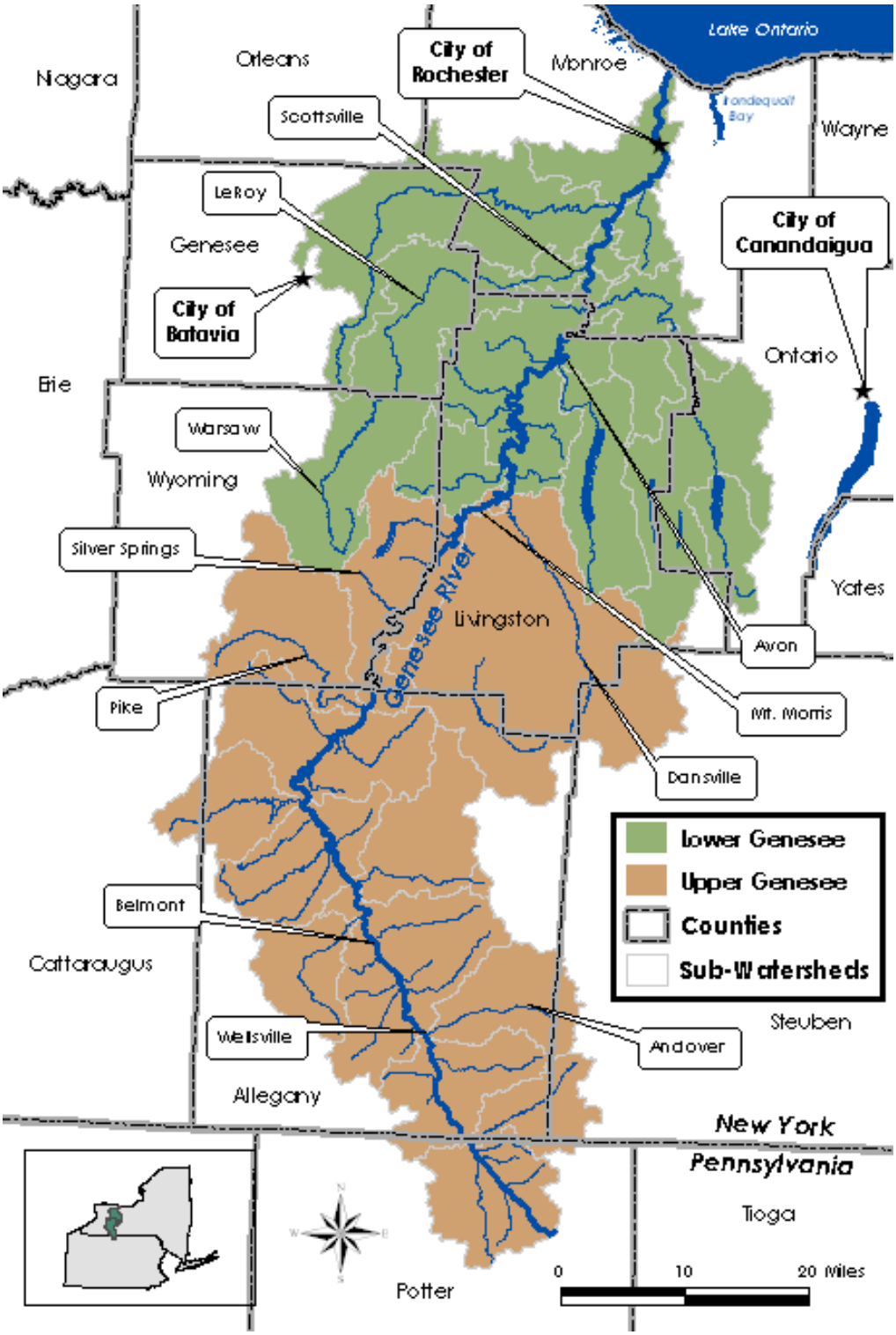
The Genesee River drains about 2,500 square miles in the states of New York and Pennsylvania (See Map 1, page 6). Roughly elliptical in shape, with a major north-south axis of about 100 miles and a maximum width of about 40 miles, its drainage area encompasses parts of nine counties in New York and one in Pennsylvania. The basin is split into two primary hydrologic units—Upper and Lower—at the Mount Morris Dam, built and operated by the US Army Corps of Engineers in 1952. The Genesee River has a total length of about 157 miles, originating in the Allegany Mountains in Potter County, Pennsylvania, at an elevation of about 2,500 feet. It flows generally northwest to approximate river mile 106 near Houghton, New York, and then shifts to the northeast to its mouth on Lake Ontario, entering the lake at an elevation of about 247 feet.

The topography of the southern portion of the basin (Upper Basin), upstream of the dam, is steep and rugged, while the northern portion (Lower Basin) is gently rolling. Geologically, the Upper Basin is in an early stage of development, while the Lower Basin has reached a relatively mature stage with considerable meandering, a wide flood plain, and numerous oxbows. Upstream of the Mount Morris Dam the river drops from an elevation of about 1,080 feet to 768 feet over three successive falls. Known as the "Grand Canyon of the East," the land surrounding this portion of the river has been preserved as the 14,350-acre Letchworth State Park, offering visitors spectacular views of the gorge and falls below. After exiting the park, the river flows through narrow valleys and gorges to enter the broad Genesee Valley in the village of Mount Morris. From this point to the City of Rochester, the river valley is a flat alluvial plain up to three miles wide, an area that was subject to frequent flooding before the construction of the Mt. Morris Dam. At Rochester, the river drops over three falls from an elevation of 513 to 247 feet. Between Letchworth State Park and the headwaters, the average stream slope is 8.9 feet per mile, while between Rochester and Mount Morris the average stream slope is 0.8 feet per mile.

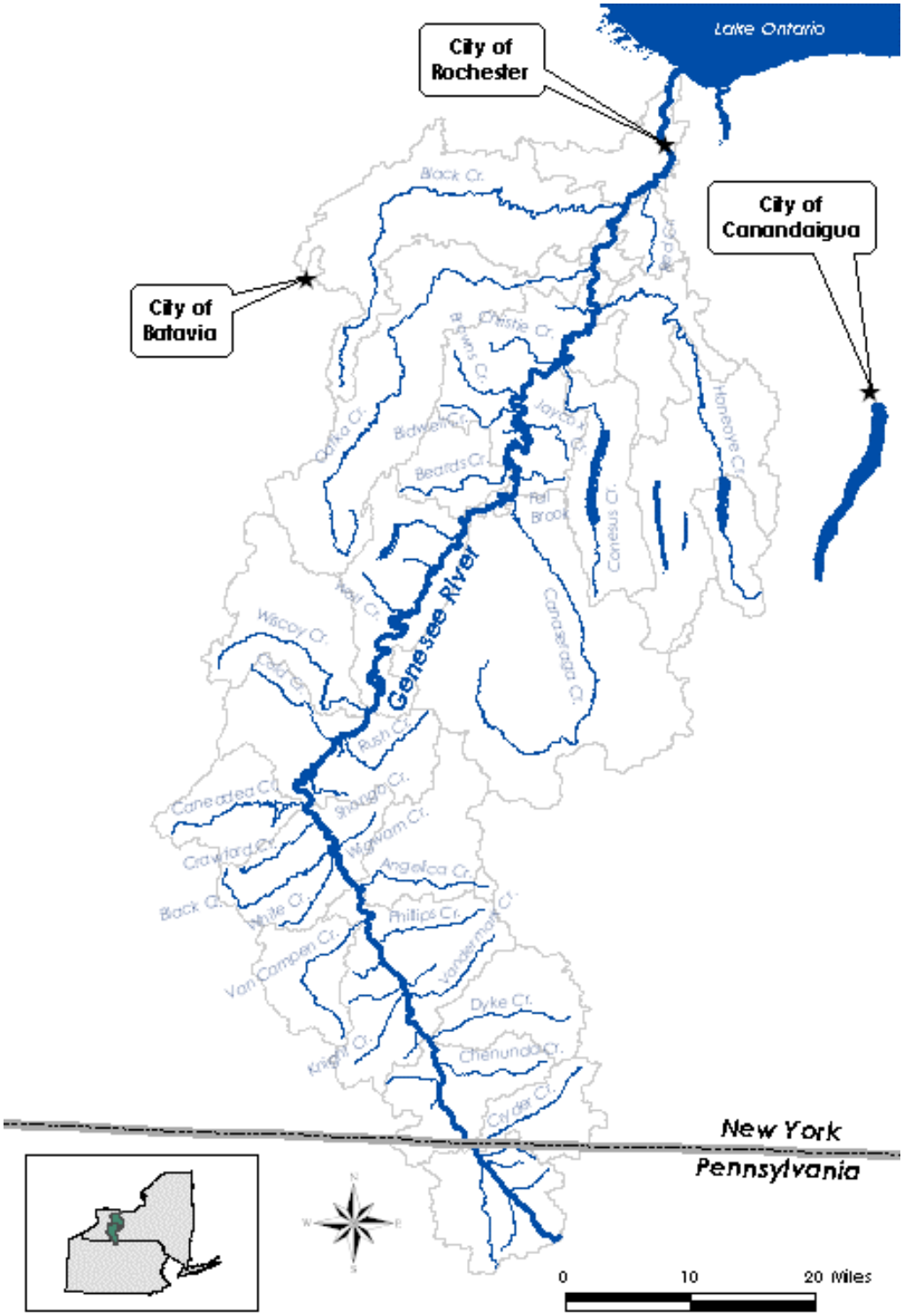
The largest tributary of the Genesee River is Canaseraga Creek (See Map 2, page 7). It has a drainage area of 334 square miles and joins the Genesee River near Jones Bridge, just downstream of Mount Morris at approximate river mile 62. It resembles the Genesee River in that its upper reaches, above the Village of Dansville, are steep and rugged, while its lower valley is a flat alluvial plain that is frequently flooded for long durations of time. Above Dansville, the main stem of the creek has a slope of about 40 feet per mile, while from Dansville to its mouth the slope is about 3 feet per mile. The Canaseraga Creek basin is roughly square in shape, about 20 miles across at its widest point. The main stem, which rises at an approximate elevation of 1,900 feet, has a length of 42 miles and joins the Genesee River at approximate

[1] Adapted from US Army Corps of Engineers, Anthony Friona, *Scoping Report for the Genesee River 516(e) Sediment Transport/Delivery Model*, 2003.

***Map 1: Overview of the Genesee River Basin***



***Map 2: Genesee River Basin Hydrography***



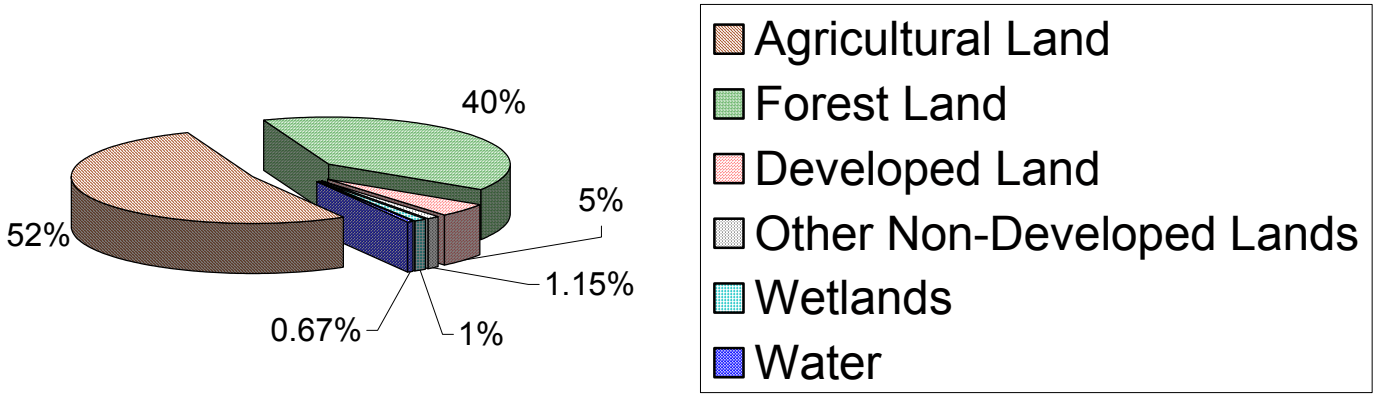
elevation of 548 feet. Other tributaries of the Genesee have a wide range in size and topographic characteristics. For example, Angelica Creek, located in the upper basin, has a drainage area of 85 square miles and is topographically rugged, with a main- stream slope of 38 feet per mile. Conversely, Black Creek, located in the lower basin, has a drainage area of 214 square miles. Its basin is relatively level and marshy with a main- stream slope of 6.5 feet per mile. Similar variations can be found throughout the entire Genesee River Basin.

## Land Use

A wide range of land use patterns may be found in the Genesee River Basin. As one travels north-to-south through the Basin, the predominant urban land use typology gradually gives way to more rural/agrarian uses. The City of Rochester and its surrounding suburbs, concentrated in the northern-portion of the Basin, comprise the most significant area of urban/developed land. The suburban fringe gradually gives way to agricultural land in the fertile Genesee River Valley, which is the predominant land use throughout much of Livingston, Genesee, Wyoming and Allegany Counties. Further south near the New York/Pennsylvania border, forested lands gradually become more common. Numerous enclaves and population centers provide exceptions to these land use typologies throughout the Basin.

Approximately 52 percent of the land in the Basin is used for agriculture, while 40 percent is forested (Figure 2-1).[2] Approximately 4.6 percent of land in the watershed is classified as developed land, falling within either *residential*, *commercial*, *industrial*, *transportation/utilities*, *industrial/commercial*, or *mixed urban* categories. The final major land use/land cover categories are wetlands and water, comprising just under 2 percent of the total coverage area. There are about 42,000 acres of state regulated wetlands, 5,048 miles of rivers and streams and 13,288 acres of significant lakes, ponds and reservoirs within the basin.[3]

***Figure 2-1: Genesee River Basin Land Use (GIRAS, 1998)***




[2] Data obtained from the Geographic Information Retrieval and Analysis System (GIRAS), 1998 data. For more information on GIRAS, refer to http://gis.esri.com/library/userconf/proc03/p0904.pdf. Retrieved 13 August 2004.
[3] NYSDEC, Division of Water. *The 2001 Genesee River Basin Waterbody Inventory and Priority Waterbodies List*. 2001. Available online at http://www.gflrpc.org/GeneseeRiver.htm. Retrieved 13 August 2004.

## Water Quality

The summary below uses data derrived from the *2001 Genesee River Basin Waterbody Inventory and Priority Waterbodies List* (WI/PWL). As stated in the New York State Water Quality Monitoring Strategy:

> The *Waterbody Inventory* (WI) refers to the listing of all waters, identified as specific individual waterbodies, within the state that are assessed…The *Priority Waterbodies List* (PWL) is the subset of waters in the WI that have documented water quality impacts, impairments or threats. The PWL provides the candidate list of waters to be considered for inclusion on the [federal] Section 303(d) List.

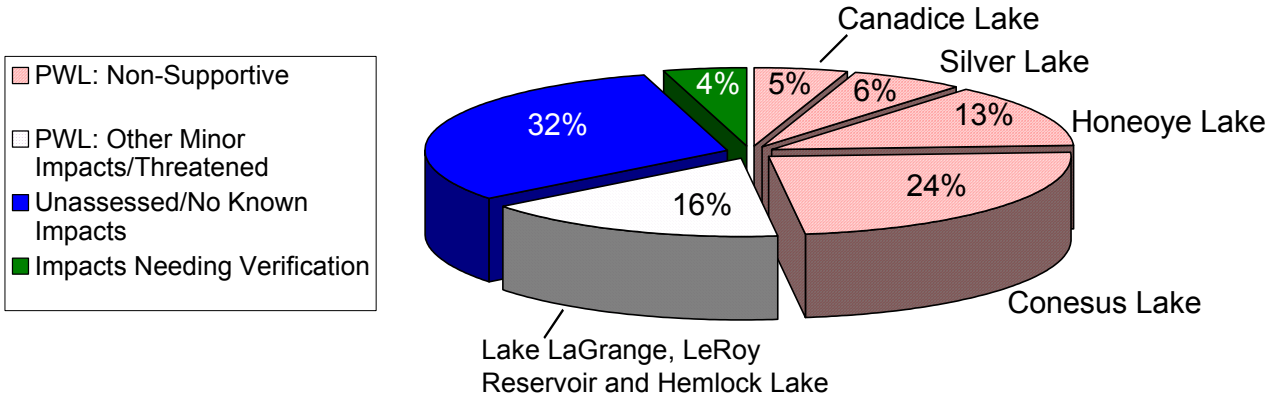
The WI/PWL is periodically drafted by the DEC in order to fulfill the requirements mandated by the Federal Clean Water Act. Data used in the WI/PWL is drawn from information provided by a number of programs and sources both within and outside the DEC.[4]

### *Extent of Impairment*

#### Lakes, Ponds and Reservoirs

Of the 31 large water bodies located within the basin (i.e. lakes, reservoirs and large ponds), nine are listed in the PWL, six of which require *Total Maximum Daily Load* (TMDL) development. There are a total of 13,288 lake acres within the Genesee River basin, 64% of which are included on the PWL (Figure 2-2). The majority of PWL water acres are classified as *not supporting uses* and are dispersed among four relatively large lakes: Canadice, Silver, Honeoye, and Conesus. Two large water bodies are listed as having *other minor impacts*—Lake LaGrange and the LeRoy Reservoir. Hemlock Lake is listed as *threatened*, placing it within this PWL category as well.

***Figure 2-2: 2001 PWL Water Quality Assessment for Lakes, Reservoirs and Ponds of the Genesee River Basin (Percentage of Total Surface Water Acres)***

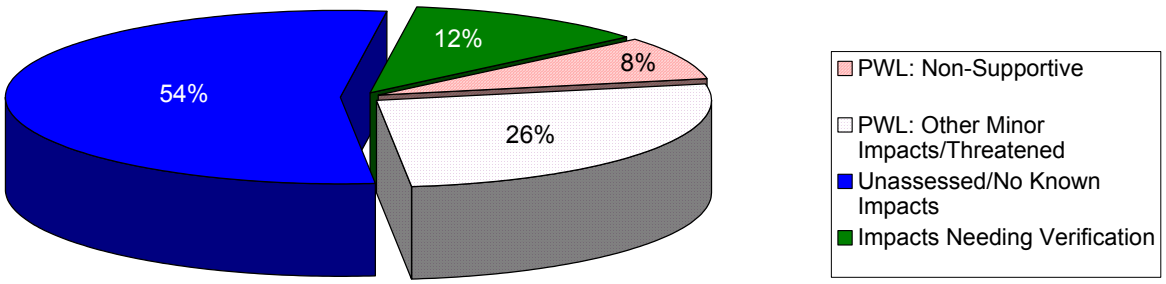



[4] Visit http://www.gflrpc.org/GeneseeRiver.htm. for the WI/PWL and supplemental Basin water quality data.

Rivers and Streams

Of the 5,048 stream miles in the Genesee River basin, 1,733 miles (34%) are included on the DEC's 2001 PWL, 8% of which is listed as *non-supportive* (i.e. not supporting one or more appropriate uses, such as bathing or fishing) and the remaining 26% is listed as having *other minor impacts* or as *threatened* (Figure 2-3). The majority of these segments are along the Genesee River, Black Creek, Oatka Creek and the Canaseraga Creek. The vast majority of river and stream miles in the basin, 2,723.9 miles (54%), have either not been assessed or have no known impacts. There are 591.3 miles (12%) of river and stream segments in the basin listed as *needing verification*. These segments are thought to have water quality problems or impacts but lack sufficient or definitive documentation necessary for verification.

***Figure 2-3: 2001 PWL Water Quality Assessment for River and Stream Segments of the Genesee River Basin (Percentage of Total River Miles)***




## *Sources of Impairment*[5]

Lakes, Ponds and Reservoirs

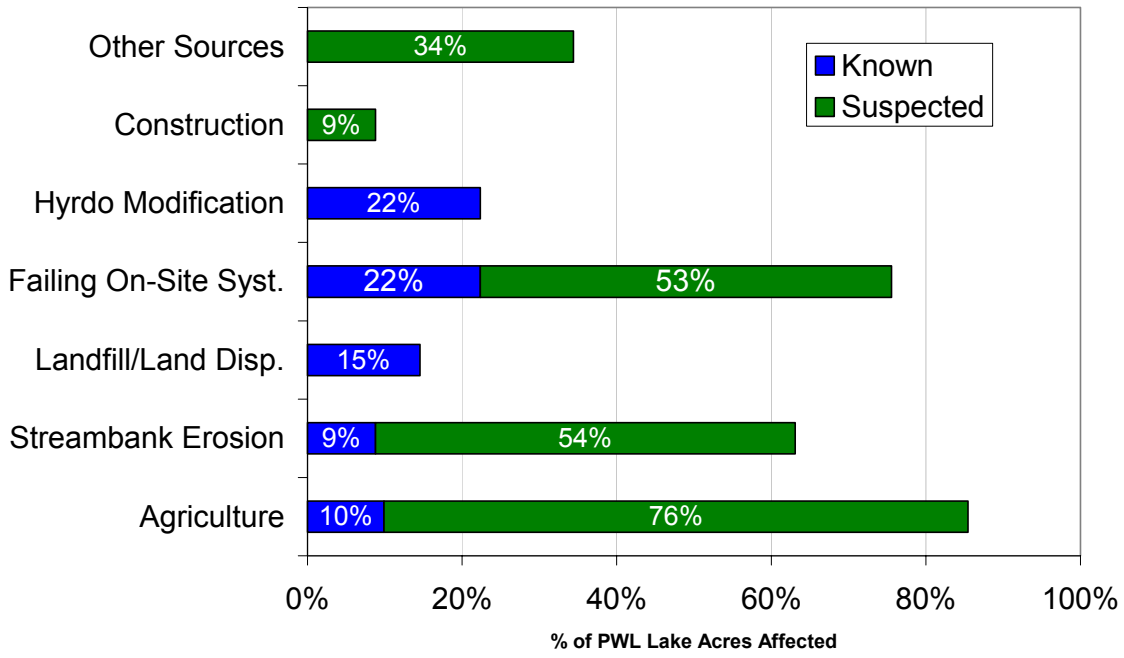
Shoreline development is intense around certain area lakes. For example, almost the entire shoreline of Conesus Lake has been converted to residential development. This 70 square mile watershed encompasses four towns (Geneseo, Livonia, Conesus, and Groveland), the village of Livonia and the Hamlet of Lakeville. Much of the lake development and recreational pressures occurred relatively early, and the lake consequently served as a sink for municipal wastes and septage as well as agricultural runoff.[6] Other area lakes have not experienced the density of development seen on Conesus Lake. For example, land use in the Hemlock Lake watershed is strictly regulated by the City of Rochester, which owns the entire lake shoreline, and uses the lake as a drinking water supply. Hemlock Lake experiences impairments as a result of water

[5] "Sources of Impairment" data considers only *Priority Waterbodies*; i.e. those listed as *non-supportive*, with minor impacts, or as *threatened*

[6] Bloomfield, J.A., Ed, Lakes of New York State: Volume 1. Ecology of the Finger Lakes. NewYork. Academic Press, 1978.

level fluctuations, accounting for all of the 22% of the total lake acres impaired by hydrological modification in this basin (Figure 2-4).

***Figure 2-4: Sources of Impairment within Priority Lakes, Ponds and Reservoirs of the Genesee River Basin[7]***

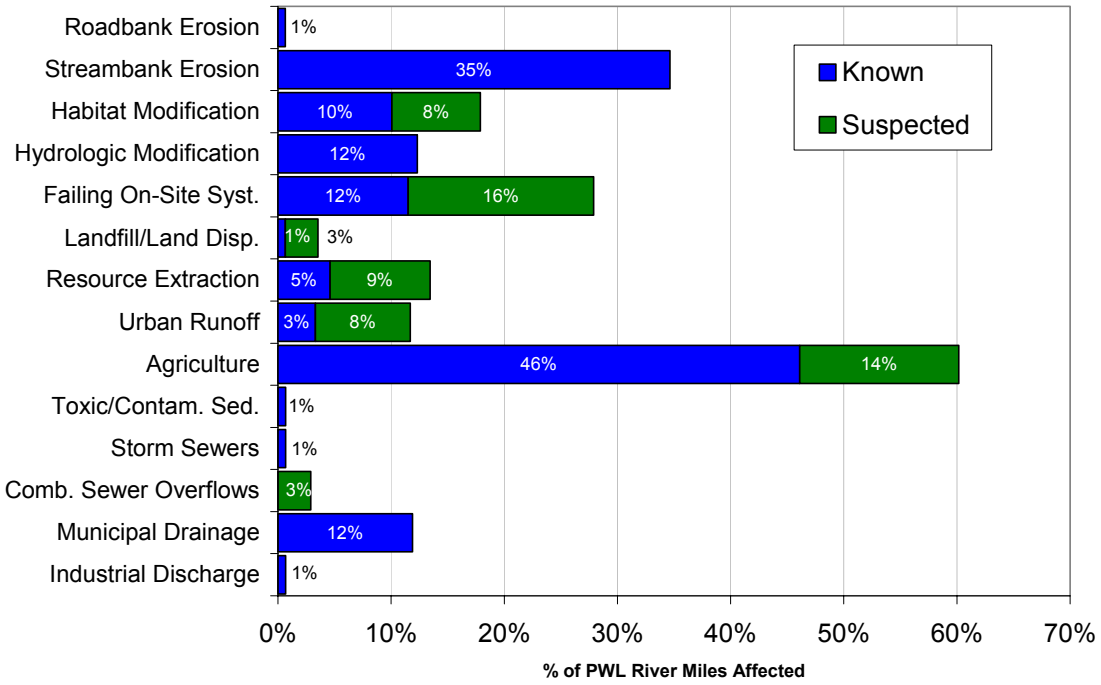



## Rivers and Streams

Given that 52% of the land within the Genesee River Basin is devoted to agriculture, it is not surprising that this is the most significant source of impairment in the basin. Included among the stream segments most heavily impaired as a result of agricultural activities are Black Creek (194 total miles impaired), Jaycox Creek (34 miles impaired) and Bigelow Creek (11.8 miles impaired) (Figure 2-5, following page). High levels of nutrients and silt/sedimentation adversely affect a range of uses in these water bodies to varying degrees, primarily recreation, aquatic life and aesthetics. As with impaired water bodies, those with known minor impacts attributable to agricultural activities tend to be on smaller tributaries (e.g. Oatka Creek, East Koy Creek, and Wiscoy Creek).

[7] In Figure 2-4, the category "Other Sources" refers to pollutants of an unknown source or of a specific, anomalous source.

***Figure 2-5: Sources of Impairment within Priority River and Stream Segments of the Genesee River Basin***



# Chapter 3: Basinwide Recommendations and Commitments

## Introduction

Chapter 3 of the GRBAS provides an inventory of Basinwide water protection and restoration commitments and, where needed, recommendations that effectively address macro-level water quality pollutants and their sources.

The primary pollutant sources that exist in the Genesee River Basin have been documented to various degrees of intensity by a number of state and local agencies and organizations over time. For the purposes of clarity and consistency, water quality pollutant sources have been summarized here using the findings put forth in the 2001 NYSDEC Waterbody Inventory/Priority Waterbodies List (WI/PWL).

**THE WATERBODY INVENTORY/PRIORITY WATERBODIES LIST**

"The *Waterbody Inventory* refers to the listing of all waters, identified as specific individual waterbodies, within the state that are assessed…The *Priority Waterbodies List* is the subset of waters in the *Waterbody Inventory* that have documented water quality impacts, impairments or threats. The *Priority Waterbodies List* provides the candidate list of waters to be considered for inclusion on the [federal] Section 303(d) List."

*~NYS DEC, New York State Water Quality Management Strategy 2000, 12*

While the WI/PWL is utilized as a guide for obtaining the status of water quality in the Basin, further background data regarding pollutant sources, specific agency commitments and proposed recommendations were solicited from regional stakeholders during a public forum held in March of 2004. Specific operational details and progress of local programs have therefore been added at the discretion of Action Strategy stakeholders.

## Explanation of Chapter Structure and Components

### Source Categories

Data contained in Chapter 3 has been organized by pollution source categories. A tabular assessment was conducted which focused on the pollution source categories of the 43 waterbodies/segments included in the *2001 Priority Waterbodies List* for the Genesee River Basin.[1] From this, seven primary pollutant source categories were derived. These are considered to be the most pervasive water quality pollutant sources presently found in the Genesee River Basin.

**PRIMARY BASINWIDE POLLUTION SOURCES**

- *Agriculture*
- *Streambank Erosion*
- *Stormwater Runoff*
- *Hydrologic and Habitat Modification*
- *Failing On-Site Wastewater Treatment Systems*
- *Municipal Drainage/Industrial Discharge*
- *Toxic and Contaminated Sediments*

[1] The full *2001 Genesee River Basin WI/PWL* is available for viewing and download at http://www.gflrpc.org/GeneseeRiver.htm.

Tabulation of source categories by this means provides insight to the most severely polluted waterbodies in the Basin; however, it is not an entirely comprehensive means of illustrating the pervasiveness of source pollutants. For example, a waterbody may be found to support its primary uses (fishing, bathing, drinking source, etc.) while being subjected to sporadic periods of significant stress from a pollution source (stormwater runoff, for example). Because its uses are only impacted temporarily, such a waterbody would fall short of the PWL threshold. This is a relatively common occurrence throughout the Basin, one that is difficult to track due to fluctuating annual and seasonal trends in water quality and the expenses associated with providing accurate and up-to-date monitoring data.

The method used herein nonetheless provides a useful benchmark for assessing the sources of pollution in the Basin, their severity, and the means of addressing them on a broad scale. Where available, more specific information relative to localized pollution sources is provided at the watershed level in Chapter 4.

## Problem Description

Details regarding the source pollutant and its impact(s) within the Basin are provided here.

## Key Goals

Realistic and measurable short- and long-term goals are summarized for each pollution source category. Details relating to the programs specified and progress toward meeting those goals are contained in the sections that follow.

## Actions Needed

Specific institutional and programmatic actions that should be implemented in order to resolve the issue are listed within this section. General measures have been provided in instances where no definitive program exists to address the source.

## Commitments and Recommendations

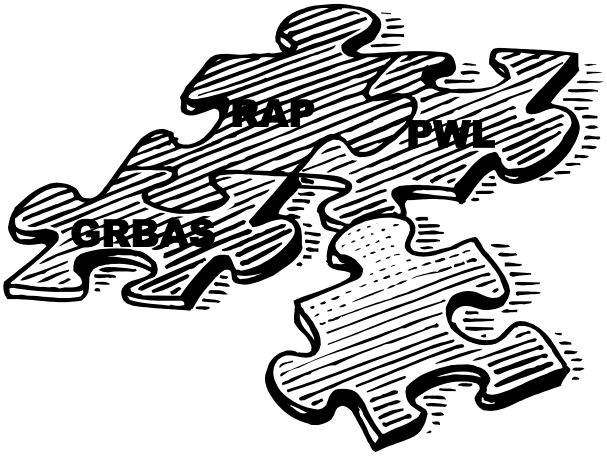
Throughout the Basin, federal, state and local agencies are either actively addressing pollutant sources or developing programs and strategies that will do so. Details regarding the status of programs currently in effect are provided under the *Commitments* section; *Recommendations* include those that may be scheduled, partially underway or under discussion.

### *The Rochester Embayment Remedial Action Plan (RAP)*

Beginning in 1993, the RAP was developed over a ten-year period in order to advance the Great Lakes Water Quality Agreement between the United States and Canada. The purpose of the RAP is to: "1) identify water quality problems and outline specific actions that need to be taken

to address these problems; 2) to prevent further pollution of water resources; and 3) to protect human health."[2] The RAP process continues to be active and has created an immense volume of detailed data regarding the physical, chemical and environmental characteristics of the Rochester Embayment. The study, however, focuses attention primarily on problems within the Embayment and does not contain explicit courses of action to address upstream activities. In conjunction with this GRBAS, the two reports comprise a comprehensive approach to addressing water quality concerns throughout the entire Genesee River Basin.

RAP data has been referenced under the Commitments and Recommendations sections and includes terse descriptions of suggested and ongoing remedial measures in the Basin. Furthermore, RAP information has been listed under "Agencies" because there are a number of partner agencies and subcommittees charged with monitoring and implementing RAP action items. Readers should refer to the full RAP report for greater details on referenced items.[3]




## Assessment and Compliance

The final section of Chapter 3 lists actions and recommendations relative to the continued monitoring of Genesee River Basin waterbodies and enforcement and compliance activities among federal, state and local agencies regarding related laws and regulations.

[2] *Rochester Embayment Remedial Action Plan, Stage II*. September 1997: 3

[3] General information regarding RAP status, use impairments, study area and contact information may be found online at the following address: http://epa.gov/greatlakes/aoc/rochester.html. Retrieved 8/13/04.

## Agriculture

***PWL WATERBODY SEGMENTS IMPACTED BY AGRICULTURE***

| Rivers and Streams | | Lakes, Ponds and Reservoirs | |
|---|---|---|---|
| *Impaired* | *Minor Impacts* | *Impaired* | *Minor Impacts* |
| **5** | **16** | **3** | **2** |

### *Problem Description*

Empirical data indicates that agricultural practices constitute a major threat to water quality in the Genesee River Basin, the pollutants of which are known to cause both short- and long-term water quality problems. These problems often begin as temporary and isolated issues, gradually becoming cumulative and pervasive across a large area of land and water. Poor practices in barnyard and feedlot design, silage storage, manure storage and spreading, and grazing can ultimately lead to problems such as organic enrichment and streambank erosion, resulting in an overall degradation of area lakes and tributaries. Short and long term effects of these pollutants may include depleted oxygen levels, increased pathogens (attributing to beach closures and drinking water contamination), sedimentation and eutrophication. Furthermore, the improper storage and use of hazardous materials, such as chemical pesticides, herbicides and fertilizers, can be a major detriment to surface and groundwater supplies, the bio-accumulative effects of which pose serious threats to human and animal populations.

Mitigating this source of pollution presents a myriad of challenges given the diversity in size, capacity, and nature of private agricultural operations, as well as the strict regulatory protection afforded to such operations in New York State. Proper management of agricultural lands and related facilities requires complex coordination and cooperation in order to ensure that environmental goals are met without inflicting an undue financial burden on landowners.

Key Goals for Addressing Source Pollutant:

- *The NYS Agriculture Environmental Management (AEM) approach to whole farm planning will be pursued and implemented by farms within the NYS portion of the Genesee River Basin (GRB) to address and mitigate water quality and other environmental concerns. Specifically:*
  - *AEM is initiated on all farms in GRB watersheds that are found to pose a real or potential nonpoint source threat to area waterbodies*
  - *Where AEM has already been initiated, all farms will complete through Tier III (planning stages) and continue to Tiers IV and V (implementation and evaluation stages, respectively)*
- *Conditions under the 2004 SPDES CAFO permits are met with full compliance by all medium and large CAFOs in the basin; specifically, the NYS DEC will ensure that implementation schedules are being met on or ahead of schedule.*
- *Components of the Genesee River Basin Sediment Transport Model will be used to address agricultural erosion and nutrient and pesticide loading concerns of GRB stakeholders*

## Actions Needed

- **Agriculture Environmental Management (AEM)**: AEM is a voluntary, watershed-based approach to farm planning and implementation in regions where agriculture has been identified as a known or high-potential non-point source pollutant. The program is implemented in five successive stages:
  *Tier 1*: Questionnaire designed to solicit information on farm practices
  *Tier 2*: Worksheets that assess the farm's actual and potential impact on the environment
  *Tier 3a/3b*: Plans are developed to mitigate specific environmental concerns (3a); if proposed solutions are likely to have a substantial impact on farm viability, a more comprehensive "Whole Farm Plan" is developed (3b)
  *Tier 4*: Plan implementation through the use of Best Management Practices (BMPs)
  *Tier 5*: Evaluation of the AEM initiative and success of meeting environmental goals

- **Natural Resources Conservation Service (NRCS) Comprehensive Nutrient Management Plans (CNMPs):** Conservation planning is a natural resource problem-solving process. The process integrates ecological (natural resource), economic, and production considerations in meeting both the owner's/operator's objectives and the public's natural resource protection needs. This approach emphasizes identifying desired future conditions, improving natural resource management, minimizing conflict, and addressing problems and opportunities. Comprehensive nutrient management plans (CNMPs) are developed in accordance with NRCS conservation planning policy and rely on the planning process and established conservation practice standards. CNMPs are often used to meet AEM Tier 3 requirements.[4]

- **State Pollution Discharge Elimination System (SPDES) 2004 General Permit for Concentrated Animal Feeding Operations (CAFOs)**: In February, 2003 the EPA released new rules for guiding state CAFO permits; NY's new permit took effect on July 1, 2004. As of June 30th, 2004 all large and medium sized CAFOs in NYS were required to have a *Notice of Intent* (NOI) filed with the NYSDEC regarding the development of a CNMP for their farm; CNMPs must then be completed within 2 years or less of NOI filing. Implementation of CNMPs for large CAFOs must be completed by the end of 2004; for medium CAFOs, CNMP implementation is incremental and must be completed by June, 2009.[5]

- **Environmental Quality Incentives Program (EQIP):** EQIP offers contracts with a minimum term that ends one year after the implementation of the last scheduled practices and a maximum term of ten years. These contracts provide incentive payments and cost-shares to implement conservation practices. Persons who are engaged in livestock or agricultural production on eligible land may participate in the EQIP program. EQIP activities are carried out according to an environmental quality incentives program plan of operations developed

[4] NRCS: National Planning Procedures Handbook. Retrieved 13 August, 2004 from: http://www.nrcs.usda.gov/programs/afo/cnmp_guide_index.html.
[5] NYSDEC, SPEDES General Permit for CAFOs: *CAFO Fact Sheet No. 1*. Retrieved 13 August, 2004 from: http://www.dec.state.ny.us/website/dow/cafohome.html.

in conjunction with the producer that identifies the appropriate conservation practice or practices to address the resource concerns. The practices are subject to NRCS technical standards adapted for local conditions. The local conservation district approves the plan.[6]

- **Conservation Reserve Enhancement Program (CREP):** A voluntary program that pays participant farm owners to implement conservation practices on environmentally sensitive lands. Enrollment for the latest extension of CREP contracts began in December of 2003 and extends to the end of 2007. During this contract period the USDA will contribute an estimated $52 million to NYS watersheds with an additional $10 million put forth by the state. Contracts for lands enrolled in the program are generally written to last between 10 to 15 years. Areas targeted for CREP include cropland and marginal pastureland adjacent to streams and wellhead areas that provide drinking water to rural municipalities, to include projects such as buffer strip construction and moving grazing areas away from water sources. Specific CREP goals in NYS include the annual reduction of phosphorous by 73,000 pounds, nitrogen by 29,000 pounds and sedimentation by 109,000 tons.[7]

- **Genesee River Basin Sediment Transport Model:** The Sediment Transport Model for the Genesee River Basin is designed to simulate water and sediment yields in large, complex watersheds that feature varying soils and land use patterns. The model consists of two primary components. The first is used as a tool for predicting the impact of land management practices on water, sediment, and agricultural chemical yields. The second component can evaluate the design efficiency of efforts to reduce sedimentation, stabilize stream channels and improve local habitat conditions.

- **Information, Education and Outreach for Landowners and Farm Operators:** Farm operators need to be aware of the latest developments in agricultural BMPs that can reduce soil loss and nutrient loading in area waterbodies and, more importantly, the programs available to assist with implementation of such BMPs and the costs associated therein.

## *Commitments*

### Counties

**Allegany**

- Agricultural pollution control listed as a high priority issue in the Water Quality Strategy for Allegany County (2002)
- Rushford Lake Watershed - AEM, BMPs being implemented
- Prescribed Grazing Management Project: $24,976 awarded from The Great Lakes Commission to the Seneca Trail Resource Conservation and Development Council, Inc. Contact: JoAnn Kurtis
- AEM: 13 CAFOs in the Basin being assisted in developing BMPs conjunction with FL/LOWPA to develop CNMPs in 2003; cost sharing to assist a minimum of 3 farms with BMP implementation

[6] USDA, Environmental Quality Incentives Program. Retrieved 13 August, 2004 from: http://www.nrcs.usda.gov/programs/eqip/.
[7] USDA, Conservation Reserve Enhancement Program: *State Updates*. Retrieved 13 August, 2004 from: http://www.fsa.usda.gov/dafp/cepd/state_updates.htm#ny.

**Genesee**

**SWCD:**

- All CAFO plans complete (through Tier IIb); CNMP ongoing in cooperation with Monroe County in the Oatka Creek Watershed
- AEM: Tier I and II set to begin on 14 farms in the Oatka and 17 in the Black Creek Watersheds, pending Round X grant funding

**Livingston**

Planning:

- *Conesus Lake Watershed Restoration and Protection Plan* was completed in March, 2003 and is currently undergoing incremental implementation. Visit **http://co.livingston.state.ny.us/conesus.htm** for more information.
- Study *Experimental Manipulation of Entire Watersheds through Best Management Practices (BMPs): Nutrient Fluxes, Fate, Transport and Biotic Responses* being conducted in Conesus Lake; Project leader: SUNY Brockport; website: http://www.envsci.brockport.edu/Conesus_Project/index.htm.

**SWCD:**

- AEM: 9 plans to be completed through Tier 3
- EQIP: Priority areas established throughout the county; three farms receiving EQIP funding
- CREP: Vegetative buffer strips being constructed on area farms

**Monroe**

**SWCD:**

- AEM- Multi-county project being conducted in the Oatka Creek watershed in conjunction with Genesee and Wyoming counties; one CAFO in Monroe completed through Tier III(b) using a CNMP

**Ontario**

**SWCD:**

- AEM - Northern Watersheds Agriculture Program providing funds for planning and implementation activities

**Potter (PA)**

- Potter County Conservation District implementing agricultural BMP's, specifically nutrient management plans for compliance with the PA Nutrient Management Act
- Selection of priority landowners based on severity of problems; survey, design, implementation and inspection of BMPs therein

**Wyoming**

**SWCD:**

- Silver Lake Monitoring Report completed; implementation of recommendations underway
- All CAFO plans complete (through Tier IIb)
- AEM: underway in the Wiscoy and East Koy watersheds; 10 farms to be identified for plan completion through Tier III; multi-county project being conducted in the Oatka Creek watershed in conjunction with Genesee and Monroe

## Agencies

**FL/LOWPA**

- Committed to channeling funds from the NYS Environmental Protection Fund to county SWCD offices and other organizations for the purposes of AEM cost sharing and BMP implementation. See http://www.fllowpa.org/County.htm for specific county programs and project schedules.

**NYS DEC**

- Inspection of CAFOs occurring (20%/yr)
- ArcView coverage of CAFOs being produced

**RAP**

- Addendum, Sec. 2.1: *Provide technical services to property owners in the area below the dam where erosion rates are the highest* - **High Priority**
- Rural Remedial Measures

**USACE**

- Working in conjunction with G/FLRPC, development and implementation of the Genesee River Basin Sediment Transport Model to assist in evaluating alternatives for soil conservation and non-point source pollution prevention in the Basin

## Recommendations

- **The DEC must strictly enforce and, if possible, expedite implementation schedules among all CAFOs in the Basin. County SWCDs can and should provide assistance when and where possible.** Primary emphasis should be focused on implementing CNMPs among both medium and large CAFOs. Large CAFOs are required to have all aspects of their CNMP in place by December 31, 2004. Medium CAFOs are required to adhere to the following incremental implementation schedule:
    - All non-structural practices in place by October 1, 2007
    - "High risk conditions" addressed by October 1, 2008
    - Complete implementation by June 30, 2009[8]

- **Agricultural pollution prevention mechanisms such as AEM and CREP should continue to be expanded to high-risk farms in the Basin, particularly those that are not covered under the CAFO General Permit.** All farms that are located near waterbodies impacted by agricultural pollution sources should be implementing BMPs to mitigate pollution and the potential to pollute. Adequate sources of funding for planning and cost sharing should be actively sought by local, county and regional agencies.

[8] NYSDEC, SPEDES General Permit for CAFOs: *CAFO Fact Sheet No. 1*. See footnote #5 above for web address.

## Streambank Erosion

***PWL WATERBODY SEGMENTS IMPACTED BY STREAMBANK EROSION***

| Rivers and Streams | | Lakes, Ponds and Reservoirs | |
|---|---|---|---|
| *Impaired* | *Minor Impacts* | *Impaired* | *Minor Impacts* |
| **1** | **13** | **0** | **0** |

### *Problem Description*

Streambank erosion involves the removal of bank material and supporting sediments during periods of high or normal water flows. The problem can be attributed primarily to the removal of protective vegetative cover in riparian areas or by altering land uses in upland areas in a manner that increases stormwater runoff velocities during high flow events. In this regard, streambank erosion is often the end result of a number of contributing factors. The direct end results of streambank erosion include: the loss of lands in upstream areas, particularly fertile and productive farmland; increased levels of sedimentation and turbidity, which act to disrupt critical habitat for fish and other native plant and animal communities; deposition and accumulation of materials in downstream areas; considerable alterations in channel courses; damage to nearby structures such as bridges and road embankments; and an overall reduction in water quality.

Key Goals for Addressing Source Pollutant:

- *The Genesee River Basin Sediment Transport Model will be used to identify critical areas within Basin watersheds where excessive erosion is occurring. Output from the model will be used as a decision support mechanism for watershed organizations and government agencies in cooperation with local landowners.*
- *Streambank inventories will be conducted on all river and stream segments within the Basin that are identified to have significant water quality impacts resulting from streambank erosion.*
- *Structural and riparian controls, BMPs, bioengineering and regulatory controls deemed to be the most effective and appropriate will be implemented within priority riparian corridors that have been identified to be impacted from streambank erosion.*

### *Actions Needed*

- **Genesee River Basin Sediment Transport Model:** See model description under *Agricultural Actions Needed*, page 19 and in Appendix D.

- **Streambank Inventories:** High detailed analyses should be conducted in areas heavily or moderately impacted by streambank erosion in order to determine the location and extent of damage.

- **Erosion and Sediment Control:** Upon completion of detailed streambank analyses, effective mechanisms to control streambank erosion in affected areas should be explored and implemented. These may include the revision or creation of local laws based on information gathered through streambank inventories or through other means of assessing local impacts, such as a stream segment analysis or watershed characterization report.

- **Initiate Model Riparian Corridor and Shoreline Practices:** Model riparian corridor and shoreline practices can provide a number of immediate benefits to lakes, rivers and streams and, when initiated consistently throughout a watershed, can also have a positive, cumulative affect on regional water quality. Vegetated buffer strips comprise the core of such practices. Buffer strips can work to reduce rates of shoreline and streambank erosion, absorb nutrients, decrease thermal pollution and provide critical wildlife habitat to a diverse array of animal species.

## Commitments

### Counties

**Genesee**
- Streambank Inventory of Black, Oatka Creeks

**Livingston**
- *2001 State of Conesus Lake, Watershed Characterization Report* details problems associated with erosion and sedimentation and presents general recommendations for controlling source pollutants

**Monroe**
- Streambank Erosion Assessment Program is being implemented by the SWCD in order to assess severity of impact(s) and prioritize implementation projects

**Ontario County**

**SWCD:**
- Timber Harvest Local Ordinance - standardize for municipal adoption
- Roadbank Stabilization occurring on Honeoye, Canadice, and Hemlock Lakes

**Wyoming County**

**SWCD:**
- 2 log crib walls on Wiscoy with stream fencing and bridge
- East Koy stream stabilization
- Streambank Inventory of Black, Oatka Creeks

### Agencies

**RAP**
- Addendum, Sec. 2.1: *Provide technical services to property owners in the area below the dam where erosion rates are the highest* - **High Priority**
- Stage II RAP Sec. 7.16: *Institute streambank erosion control programs as part of developing watershed-based drainage plans* – **Ongoing**
- Study, Stage II RAP Sec. 4.4: *Genesee River erosion study focusing on the area between the Letchworth Park flood control dam and Geneseo* - **Phase I report completed;**[9] **Phase II ongoing** (i.e. sediment transport model)

[9] Young, Dr. Richard A. *Postglacial to Modern Channel Erosion and Overbank Deposition Rates Mt. Morris to Geneseo Reach, Genesee River, NY*. Dept. of Geological Sciences, SUNY Geneseo: 1997.

**G/FLRPC**

- Great Lakes Commission grant of $99,450 awarded for study *Controlling Sediment in the Black and Oatka Creek Watersheds* to be completed by December, 2005

**USACE**

- Genesee River Basin Sediment Transport Model (complete and ready for implementation by fall 2004)

## Recommendations

- **A streambank inventory should be conducted for the entire main stem of the Genesee River,** as well as any other tributaries known or suspected to be experiencing impairments from streambank erosion.

## Stormwater Runoff and Other Nonpoint Sources

***PWL WATERBODY SEGMENTS IMPACTED BY STORMWATER RUNOFF OR OTHER NONPOINT SOURCES***

| Rivers and Streams | | Lakes, Ponds and Reservoirs | |
|---|---|---|---|
| *Impaired* | *Minor Impacts* | *Impaired* | *Minor Impacts* |
| **3** | **3** | **1** | **0** |

### *Problem Description*

Stormwater is excess water from precipitation or thawing events that is unable to infiltrate into the ground, thereby entering nearby waterbodies. Stormwater flows can be exacerbated by impervious surfaces such as roads, parking lots, and rooftops. As stormwater travels across the landscape, materials such as animal waste, soils, garbage, fertilizers, pesticides, and petroleum products are collected and ultimately deposited into receiving waterbodies. The quality and rate of stormwater runoff is dependent upon a variety of factors, including the season, amount of precipitation, local geography and the types of on-land activities that are occurring in the area.

Specific environmental problems associated with stormwater runoff include nutrient loading (particularly phosphorus and nitrogen), which can promote oxygen depletion and eutrophication; toxic chemical and sediment accumulation (from residential yards, parking lots, construction sites, etc.) causing overall water quality and habitat degradation; bacteria and illicit connections to sewerage systems, which can result in beach closings and other serious public health concerns; and general aesthetic degradation.[10]

Other nonpoint sources may include (but are not limited to) runoff/septage from landfills, salt storage facilities, road deicing activities and atmospheric deposition.

### Key Goals for Addressing Source Pollutant:

- *Stormwater management programs that address the "Six Minimum Measures" of Phase II Stormwater Regulations are implemented among all MS4 communities by or before the 2008 deadline.*
- *Construction activities that disturb one or more acres of land are closely monitored by the DEC or other relevant agencies (SWCD staff, for example) to ensure that Stormwater Pollution Prevention Plans are being properly devised and fully implemented by responsible parties, especially within rural communities that lie outside of MS4 communities.*
- *Stormwater compliance among communities and activities that fall below the established Phase II Stormwater thresholds are addressed in a reasonable and timely manner.*

[10] NYS DEC, Division of Water: *NYS Stormwater Information*. Retrieved 13 August 2004 from: http://www.dec.state.ny.us/website/dow/mainpage.htm.

## Actions Needed

- **Phase II Stormwater Regulations**: Adopted by the EPA in 1999, Phase II regulations cover two specific areas: operators of small municipal separate storm sewer systems (MS4s) located in urbanized areas (population of 50,000 or more) and operators of construction activities that disturb greater than 1 acre of land. Basic responsibilities of operators include the control of stormwater from small MS4s and on-site management of stormwater from small construction projects. These responsibilities are to be accomplished through either the development of comprehensive stormwater management plans (MS4 operators submit NOI to the DEC) or the development of Stormwater Pollution Prevention Plans (SWPPP) and compliance with local laws (NOI regarding construction activities submitted to the DEC).

## Commitments

### Counties

**Livingston**

- Model Erosion and Sediment Control Law adopted by the majority of municipalities in the Conesus Lake Watershed

**Monroe**

- Study initiated in 1995 to evaluate the impacts of road deicing materials by the Monroe County Environmental Management Council. Document "Strategy to Initiate a Deicing Task Group, January 31, 2000" Available online (retrieved 8/13/2004) at: http://www.monroecounty.gov/documentView.asp?docID=446. This process is now continued by G/FLRPC; see below.
- Monroe County Stormwater Coalition (MCSC) drafting model ordinances for local municipalities
- MCSC: Small Business Pollution Prevention Program
- Monroe County Planning and Development: A stormwater management training session is offered as part of the Land Use Decision Making Training Program

**SWCD:**

- Phase I & II SPDES Construction Inspection Program/Great Lakes Commission Grant
- Education and Outreach to highway superintendents other relevant agents re: model practices for storage and spreading of de-icing materials

**Ontario**

**SWCD:**

- Timber Harvest Local Ordinance created/standardized for municipal adoption

### Agencies

**G/FLRPC**

- Regional *Road Deicing and Storage Inventory* studies. Surveys conducted in 1999 and 2004. See G/FL website *Water Resources Planning*: http://gflrpc.org/Planning/WQ/wqdata.htm (retrieved 8/13/2004).
- Flood Mitigation Plan for communities in the Oatka Creek watershed
- Facilitation of Stormwater Management and Erosion and Sediment Control technical development and training (in conjunction with Cortland County SWCD)
- Stormwater Phase II Implementation Program: assisting MS4 communities and other regulated entities with the development of Stormwater Management Plans and Construction permits in conjunction with the NYSDEC. Visit http://www.gflrpc.org/Planning/WQ/wqplanning.htm for information on G/FLRPC's Baseline program.

**NYSDEC**

- Phase II Stormwater Regulations: Ongoing Implementation of MS4 and Pre/Post Construction Regulations

- Enforcement efforts regarding permits for stormwater discharges
- Churchville – Leachate from Riga Landfill being addressed. See website http://www.history.rochester.edu/class/MILLSEAT/MILLSEAT.htm for more information on remedial measures (website **NOT** associated with DEC; retrieved 8/13/2004).

**RAP**

- Stage II RAP Sec. 7.10: *Develop created wetlands that manage stormwater quality by instituting intergovernmental agreements* - **Ongoing**
- Stage II RAP Sec. 7.10: *Expand the Highway Projects Task Group effort to include state and municipal departments of transportation and public works* - **High Priority**
- Stage II RAP Sec. 7.10: *Continue the dry basin conversion program to manage stormwater quality* - **Ongoing**
- Stage II RAP Sec. 7.10: *Conduct a demonstration of a swirl concentrator as a stormwater management strategy for urbanized areas* - **Ongoing**
- Stage II RAP Sec. 7.4: *Develop watershed-based drainage plans that identify drainage-related water quality problems and recommend remedial actions such as creation of stormwater wetlands* - **2 plans completed; 3 plans underway**
- Stage II RAP Sec. 7.6: *Stencil storm drains with the message 'Do Not Dump – Drains to Stream'; educate the neighborhoods and others about proper disposal of household haz. substances* - **Ongoing**
- Stage II RAP Sec. 7.5: *Communicate with the NYSDEC about Monroe County sites listed in the NYS Haz. Substance Waste Disposal Site Study to promote remediation of local sites* - **Ongoing**
- Stage II RAP Section 9.17: *Monitor road salt usage* - **See listing above under Monroe County**
- RAP 1999 Adden. 3.10: *Study alternative for the use of herbicides to control roadside vegetation on the Monroe County highway system* - **Some alternatives evaluated in 1999**

## Recommendations

- **Creation of an inventory documenting historic hazardous waste sites.** In certain instances, old co-disposal municipal dumps and brownfield sites have been forgotten over time. An inventory documenting the location, history, and degree of contamination and containment of such sites should be created. Existing inventories of inactive hazardous waste sites produced by the NYSDEC and EPA may be used as useful starting points.

- **Stormwater Phase II Outreach:** Information and assistance regarding implementation of Phase II regulations and requirements should be provided to all municipal boards, contractors, developers, enforcement officers, public works department, municipal engineers, and highway superintendents\

- **Assessment and Revision of Local Laws:** Municipal zoning codes and ordinances should be reviewed and assessed to determine the degree to which they effectively address stormwater management, erosion and sediment control

- **Stormwater Drainage Districts:** The possibility of instituting special jurisdictions (stormwater drainage districts) to facilitate the implementation, maintenance and financing of stormwater BMPs should be explored and encouraged where feasible

- **Stage II RAP Sec. 9.8:** *Determine the status of chemical seeps on the face of the Lower Falls of the Genesee River* – Recommendation put forth as part of Aesthetics delisting criteria

## Hydromodification and Habitat Modification

***PWL WATERBODY SEGMENTS IMPACTED BY HYDRO- AND HABITAT MODIFICATION***

| Rivers and Streams | | Lakes, Ponds and Reservoirs | |
|---|---|---|---|
| *Impaired* | *Minor Impacts* | *Impaired* | *Minor Impacts* |
| **1** | **7** | **0** | **0** |

### *Problem Description*

Examples of hydro- and habitat modification include channel modification, draining or altering wetlands, and the construction of dams and transportation embankments. As stated by the EPA's *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters* report:

> Channel modification activities have deprived wetlands…of enriching sediments, changed the ability of natural systems to both absorb hydraulic energy and filter pollutants from surface waters, and caused interruptions in the different life stages of aquatic organisms (Sherwood et al., 1990). Channel modification activities can also alter instream water temperature and sediment characteristics, as well as the rates and paths of sediment erosion, transport, and deposition. A frequent result of…channel modification activities is a diminished suitability of instream and riparian habitat for fish and wildlife. Hardening of banks along waterways has eliminated instream and riparian habitat, decreased the quantity of organic matter entering aquatic systems, and increased the movement of NPS pollutants from the upper reaches of watersheds into coastal waters.
>
> Channel modification projects undertaken in streams or rivers to straighten, enlarge, or relocate the channel usually require regularly scheduled maintenance activities to preserve and maintain completed projects. These maintenance activities may also result in a continual disturbance of instream and riparian habitat. In some cases, there can be substantial displacement of instream habitat due to the magnitude of the changes in surface water quality, morphology and composition of the channel, stream hydraulics,

Key Goals for Addressing Source Pollutant:

- *Where and when applicable, the Genesee River Basin Sediment Transport Model will be used to help guide stream corridor rehabilitation measures that will improve stream stability and habitat improvement among waterbodies impacts by hydro- and habitat modification.*
- *Continue to develop watershed based wetland and riparian area programs that target issues of concern (flooding, nutrient loading, silt and sediment) and implement in areas adversely affected by hydro/habitat modification with priority given to PWL waterbody segments.*
- *Wetlands and riparian habitats will be improved by working with federal, state, and county partners, as well as other non-governmental agencies.*

and hydrology… Excavation projects can result in reduced flushing, lowered dissolved oxygen levels…loss of streamside vegetation, accelerated discharge of pollutants, and changed physical and chemical characteristics of bottom sediments in surface waters surrounding…channel modification projects. Reduced flushing, in particular, can increase the deposition of finer-grained sediments and associated organic materials or other pollutants.[11]

## Actions Needed

- **Genesee River Basin Sediment Transport Model:** See model description under *Agricultural Actions Needed*, page 18.

## Commitments

### Counties

**Livingston County**

SWCD:

- Roadbank stabilization project – ongoing, including an active hydro-seeding program

Planning:

- Conesus Lake Watershed Management Plan – completed and implementing
- Model Erosion Control Law – all towns have adopted – code enforcement officers conducting enforcement

**Ontario County**

SWCD:

- Timber Harvest Local Ordinance - standardize for municipal adoption
- Roadbank Stabilization occurring on Honeoye, Canadice, and Hemlock Lakes

**Potter County (Potter County Conservation District)**

- Working with PA Dept. of Environmental Protection to get dikes and flood issues fixed
- Roadbank stabilization, particularly ditch design review in areas w/dirt roads

**Wyoming County**

- SWCD: -2 log crib walls on Wiscoy with stream fencing and bridge
  -East Koy stream stabilization

### Agencies

**G/FLRPC**

- Flood mitigation plan for communities in the Oatka Creek Watershed: provides detail regarding drainage, including data regarding the condition of impoundments and culverts

**NYSDEC**

- Keshequa Creek erosion control
- Exploring the impacts of streambed gravel mining on downstream habitat; specifically, Cold, Angelica and Rush Creeks
- Conesus Lake level management

**RAP**

[11] US EPA. Wetlands, Oceans and Watersheds: *Nonpoint Source Pollution*. Retrieved 14 August 2004 from: http://www.epa.gov/owow/nps/MMGI/Chapter1/index.html.

- RAP 1999 Adden. Sec. 2.2: *Support a proposed study on ways to reduce erosion in the Genesee River due to the flow regime from the dam* - **Underway** (in conj. with sediment transport model)

**USACE**

- Sediment Transport Model – Navigation study
- WQMP Mt. Morris Dam Study – recreation and future management (ongoing)
- FEMA Flood Study: Oatka Creek at Warsaw

## Recommendations

- **Water Withdrawals for Agricultural/Industrial Processes:** An assessment of the implications of significant water withdrawals (for irrigation and other utilitarian functions) on local waterbody health and function should be conducted. Heavy water withdrawals that occur during dry periods create stressful conditions for a great variety of aquatic organisms. Reduced stream flow, stream size and an increase in water temperature are common impacts.

- **Water Diversions:** A greater understanding and awareness of the impacts on water quality resulting from water diversion to and from the Erie Barge Canal at the Genesee River should be sought by local officials and disseminated to the public.

- **Stage II RAP Sec. 7.17:** *Plan annual workshops for local officials to educate about the benefits of wetlands and how land use decisions affect wetlands; include a wetland tour as part of each workshop* - **Ongoing**

- **Stage II RAP Sec. 7.19:** *Implement a program to identify and rank critical habitat in and along waterways with the goal of restoring, enhancing and protecting the most significant habitats* - Recommended remedial action; no action taking place

## Failing Onsite Wastewater Treatment Systems (OWTS)

***PWL WATERBODY SEGMENTS IMPACTED BY FAILING ONSITE WASTEWATER TREATMENT SYSTEMS***

| Rivers and Streams | | Lakes, Ponds and Reservoirs | |
|---|---|---|---|
| *Impaired* | *Minor Impacts* | *Impaired* | *Minor Impacts* |
| **1** | **4** | **1** | **1** |

### *Problem Description*

Failing onsite wastewater treatment systems (septic systems) is a widespread and yet relatively unknown and often overlooked source of water quality contamination in the Genesee River Basin. Onsite systems are made up of several interrelated components that require regular maintenance and inspection by qualified personnel for them to operate properly over time. Prohibitive maintenance costs, owner negligence and a general lack of understanding of onsite treatment systems often preclude routine system maintenance. Systems can fail suddenly due to localized damage or gradually over time through the natural accumulation of biological debris within the leach field or from vegetative growth (root damage). When failures occur, they may not be readily apparent to the property owner. Furthermore, systems may be illegally or improperly installed (insufficient capacity, illicit discharges, etc.) and can be sighted in areas that lack adequate or appropriate soil cover and composition to allow sufficient time for the biological breakdown (i.e. treatment) of effluent.

The primary water quality threats associated with failing septic systems include nutrient loading (phosphorous and nitrogen), low dissolved oxygen and pathogens which may lead to eutrophication, beach closings, adverse health effects among human and animal populations and an overall decline in water quality and aesthetics.

Key Goals for Addressing Source Pollutant:

- *Designated best uses are restored for all waters where OWTS or direct discharges from homes are currently the primary source of pollutants causing PWL listing*
- *Public education and outreach efforts advocating proper system design, construction, use and maintenance for homeowners, public officials and contractors*
- *Routine inspection and maintenance of OWTS by county officials and/or certified professionals to insure proper system operation. Aerial infrared thermography and die testing should be conducted in households and businesses in areas with waterbodies that are known to be impacted by failing OWTS in order to detect illicit discharges.*
- *Administrative control measures or alternative design standards should be instituted in communities that are serviced by OWTS and are located near waterbodies known to be impacted by failing OWTS.*

## Actions Needed

- **Strict adherence to NYS Standards Addressing OWTS:** Design standards put forth by the NYS Dept. of Health (refer to NYS Public Health Law, 201(1)(1)) and the *Individual Residential Wastewater Treatment Systems Design Handbook*) will be understood and strictly adhered to by local agency officials in the Genesee River Basin.[12]

Adherence to guidelines put forth in the *On-Site Wastewater Treatment Systems Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State*, including:[13]

- **Public Education and Outreach:** Training of onsite wastewater treatment installers and maintainers, code enforcement officers, inspectors and homeowners regarding the proper installation and maintenance of onsite wastewater treatment systems and on the appropriate use and disposal of household hazardous substances.

- **Routine Inspection:** Homeowners and local officials should devise methods to insure that area systems are functioning properly. This includes the routine inspection of absorption fields and pumping of tanks on a regular schedule (based on household size). Methods such as die testing and aerial infrared thermography should be applied in areas with known water quality problems stemming from failing OWTS in order to detect possible illicit discharges.

- **Administrative Control Measures**: These may include NYS Health Department regulation addendums, septic surveys, property/home sale contingencies, subdivision rules and regulations, and site review and zoning regulations. Measures should be adopted at the most appropriate management level (county, town, homeowners association, environmental overlay district, watershed protection district, etc.). Common components of OWTS control measures include a sound, legal framework, financial guarantees or bonds, inspection, enforcement, and penalty provisions, and a public education program. Administrative control measures may be tied to state or federal legislation.

- **Conservation Measures:** Conservation measures may include enforcing the use of high efficiency plumbing devices for new systems and promoting their use as a contingency for the approval of a replacement system or upgraded system. The purpose is to reduce hydraulic loading and promote an unsaturated, aerobic condition in the leachfield.

[12] NYSDOH, Div. of Environmental Protection. *Individual Residential Wastewater Treatment Systems Design Handbook*. 1996. Available from Health Education Services, P. O. Box 7126, Albany, N Y 12224 ($12/copy)
[13] Document published in 1994 by the NYSDEC OWTS Management Subcommittee of the NYS NPS Management Practices Sub-Committee. While not available online, copies can be made available by Brian Slack, G/FLRPC.

## Commitments

### Counties

**Livingston**

- Failing OWTS in Hemlock Lake, Lime Kiln Creek and Springwater Creek cited as High Priority issues in the Water Quality Management Strategy (1992); Clean Water/Clear Air Bond Act and EPF funds for a package sewage treatment facility in the Hamlet of Springwater have been secured

**Ontario**

- County wide uniform wastewater treatment law and the development of uniform procedures for individual residential treatment systems (referenced in Ont. Water Quality Strategy)

**Wyoming**

- Village of Castile centralized wastewater treatment system

### Agencies

**NYSDEC**

- Septic issues on Wolf Creek stemming from the Village of Castile are fully funded for remediation

## Recommendations

- **Elected officials and agency heads should actively explore alternatives to failing OWTS, particularly in high-density communities that lack a centralized treatment facility.**

- **In instances where funding for construction of centralized treatment systems is unavailable, or their construction is deemed to be impractical, administrative control measures should be implemented in regions where failing OWTS are known or suspected to be a significant source of water pollution.**

- **Organizations such as the Water Education Collaborative and county agencies should be encouraged to promote education and outreach programs.** Effective programs will cover proper system design, construction, use and maintenance of OWTS for homeowners, code enforcement officers and other relevant agency officials.

## Municipal Drainage and Industrial Discharge

***PWL WATERBODY SEGMENTS IMPACTED BY MUNICIPAL DRAINAGE AND INDUSTRIAL DISCHARGE***

| Rivers and Streams | | Lakes, Ponds and Reservoirs | |
|---|---|---|---|
| *Impaired* | *Minor Impacts* | *Impaired* | *Minor Impacts* |
| **4** | **0** | **0** | **0** |

### *Problem Description*

Municipal drainage and industrial discharge consists primarily of domestic wastes from households and industrial wastewater from manufacturing and commercial activities. Both types of wastewater are generally collected in sanitary sewers and conveyed to municipal wastewater treatment plants. Wastewater entering a treatment plant may contain organic pollutants (sewage) pathogens and sediments, as well as toxic substances used in the home or in industrial processes. These may include household cleaners, motor oil, pesticides, paint or other hazardous compounds. Industrial processes generate significantly larger volumes of wastewater than do household uses, and discharges are generally more concentrated and exotic (heavy metals or synthetic organic compounds, for example). Combined sewer overflows (CSOs) and sanitary sewer overflows (SSO) should also be considered here. CSOs are discharges of a mix of raw household and industrial sewage that occur when a system is inundated with stormwater prior to reaching a treatment facility. SSOs can occur under the same conditions as CSOs or they can be the result of leaks or breaks in conveyance systems due to gradual deterioration and/or neglect of the system.[14]

All such facilities in NYS must possess a State Pollution Discharge Elimination System (SPDES) permit in order to operate. Under this permit, plants are required to file monthly discharge monitoring reports to the DEC. Large industries (Eastman Kodak, Rochester Gas and Electric) with their own private treatment plants are also regulated under the SPDES permit.

Key Goals for Addressing Source Pollutant:

- *Viability and remaining useful life of aging wastewater treatment plants is assessed; Consolidations should take place wherever and whenever feasible*
- *All CSO communities will meet State and Federal policy commitments; specifically, in accordance with NPDES regulations, the "Nine Minimum Controls" and the establishment of long term control plans for CSOs should be in place.*
- *Full compliance and improvements related to SPDES permits*

[14] EPA, Office of Water: *Wastewater Primer*. Retrieved 13 August 2004 from: http://www.epa.gov/npdes/pubs/primer.pdf.

## Actions Needed

- **State Pollution Discharge Elimination System (SPDES):** NYSDEC requires that every point source discharger obtain a SPDES permit in order to legally discharge sanitary, industrial, or commercial wastewater. The permit is a comprehensive legal document and all of its provisions and conditions are enforceable under the law. Under SPDES, NYSDEC reviews permit applications to develop the limits for types and quantities of pollutants in the effluent. The permit also includes the schedules and conditions under which discharges are allowed. Owners or operators of facilities must treat wastewater in order to meet the limits listed in their SPDES permit. In the case of municipal facilities, permits also require industries discharging into the municipal collection system to pre-treat their wastes. Compliance and self-monitoring reports are a major part of this program. Permits are reviewed and reissued every five years.

## Commitments

**RAP**

- Stage II RAP Sec. 7.13: *Provide technical assistance to small wastewater treatment plants if necessary to reduce phosphorus discharges* - **Underway**
- Stage II RAP Sec. 7.7: *Investigate the feasibility of pumping contaminated fluid at the site of the Brewer St. tunnel under the Genesee River and remediating it* – **; Monroe County Environmental Services DNAPL (Dense Non-Aqueous Phase Liquid) Project, Completed fall 2003**
- RAP 1999 Adden. Sec. 3.12: *Identify and eliminate problems caused by in-building drains and cross connections* - **Ongoing**
- Stage II RAP Sec. 9.14: *Establish volunteer environmental observers to report on unusual discharges to water* - **Ongoing**

## Recommendations

- **NYSDEC assures that all CSO communities have developed long-term CSO control plans and that SPDES permits meet the requirements of the federal Clean Water Act.** The NYSDEC is responsible for coordinating the implementation and review of long-term CSO control plans.

- **Changes in SPDES permit limits for chemicals on the list of high priority chemical pollutants should be documented to the greatest degree possible when permits for facilities in the Genesee River Basin are renewed.** (Similar to Stage II RAP Section 9.14: *Suggested Monitoring Method*)

- **Assess upstream measures to address industrial discharge.** While data regarding industrial discharges in the lower reaches of the Genesee River are generally well known, concern has been raised regarding industrial discharges from small public wastewater treatment plants in upstream/rural areas. An assessment addressing the degree to which discharge permits are being properly acquired and enforced should therefore be conducted.

## Toxic and Contaminated Sediment

***PWL WATERBODY SEGMENTS IMPACTED BY TOXIC AND CONTAMINATED SEDIMENT***

| Rivers and Streams | | Lakes, Ponds and Reservoirs | |
|---|---|---|---|
| *Impaired* | *Minor Impacts* | *Impaired* | *Minor Impacts* |
| **1** | **0** | **0** | **0** |

### *Problem Description*

While hazardous discharges into the waters of the Genesee River Basin have gradually decreased over time, the legacy of those discharges remains in the form of toxic and contaminated bottom sediments of rivers, lakes and harbors. Contaminated and toxic sediments are among the most expensive remedial measures present in the Genesee River Basin. Their mitigation poses several difficulties, primarily preventing the re-suspension of materials from occurring as well as locating appropriate disposal sites if and when remediation takes place. Regarding contaminated sediments, the US EPA states:

> …[C]ontaminated sediments have been created by decades of industrial and municipal discharges, combined sewer overflows, and urban and agricultural non-point source runoff. Buried contaminants posing serious human and ecological health concerns can be re-suspended by storms, ship propellers, and bottom-dwelling organisms. Many of these small bottom-dwellers ingest toxins as they feed in the mud. As larger animals eat these smaller animals, the toxins move up the food chain, with their concentrations getting higher, often thousands of times higher. Fish at the top of the food chain, such as lake trout and salmon, can be unsafe to eat in some areas because of the heavy concentrations of toxic substances in their tissues. Fish-eating birds, including the bald eagle, may suffer low reproductive rates or produce offspring with birth defects.[15]

Key Goals for Addressing Source Pollutant:

- *The possibility of developing an innovative mechanism for studying the extent of the problem and assessing possible cost sharing options with responsible parties and relevant agencies should be explored.*
- *In the absence of an innovative strategy to remove contaminated sediments from areas within the Basin, containment must be a top priority. Long-term agreements regarding the type of dredging activities and the extent to which they should occur should continue to be made with relevant authorities—in particular, the USACE.*

[15] US EPA, Great Lakes Monitoring Program: *Contaminated Sediments Program*. Retrieved 13 August 2004 from: http://www.epa.gov/greatlakes/sediments.html.

## Actions Needed

- **Continued regulation, monitoring, and remediation of contaminated sediments.**

## Commitments

**RAP**

- Stage II Rap Section 9.2: *USACE monitors sediments as part of its dredging activities in the Rochester harbor.*
- RAP 1999 Adden. Sec. 2.4: *Establish an [intergovernmental agreement] with the USACE to prevent future increase in the area of the Turning Point Basin that is dredged* - **Ongoing**; no long term agreements established, however the USACE holds informational meetings before dredging to establish clear expectations
- Stage II Rap Sec. 7.4: *Enact a long-term agreement with the USACE to ensure that restrictions on overflow dredging in the Rochester harbor continue despite changes in personnel and political climate* - **Ongoing**; see above statement regarding Turning Pt. Basin
- Stage II RAP Section 9.1: *Monitor levels of toxic chemicals in residential turtles* – **Analysis conducted by SUNY Brockport; findings delivered to NYSDEC**

## Recommendations

- **Stage II RAP Sec. 7.1:** *Develop a program for removal and disposal of equipment containing PCBs within industrial, commercial, municipal and residential locations* – **Underway: Monroe County Environmental Management Council, Waste Site Advisory Committee.** Contact: Louise Hartshorn, Coordinator (see Appen. D for contact information).

- **Stage II RAP Sec. 7.7:** *Educate developers about the history of contamination in the Genesee River gorge* - **Recommended; no action**

- **Stage II RAP sec. 9.2.2:** Establish chemical sediment quality goals for the Rochester harbor at the mouth of the Genesee River and sample sediments to monitor progress toward goals.

- **Stage II RAP Sec. 9.2.3:** Obtain data from the USACE on results of required sediment sampling in the Rochester harbor.

## Assessment

In accordance with the federal Clean Water Act (CWA), New York State is required to monitor and assess state water quality in an effort to ensure that water resources can viably support three essential functions: wildlife propagation, recreation and public consumption. In accordance with this mandate, the CWA specifies four primary activities that the State must carry out:

- Develop and adopt water quality standards designed to protect these functions (Sec. 303)
- Establish monitoring programs to collect and analyze data regarding water quality (Sec. 106)
- Report on the status of waters and the degree to which designated uses are supported (Sec. 305(b))
- Identify and prioritize waters that are not meeting water quality standards (Sec. 303(d))[16]

Monitoring and assessment in the Genesee River Basin was last conducted between 1999 and 2001 (with some revisions added in 2002). The next five-year Rotating Basin Studies (RIBS) monitoring cycle will take place in the basin between 2004 and 2006.

### *Actions Needed*

**NYS DEC: WI/PWL**

- The 4% of lakes, reservoirs and ponds and 12% of river and stream segments currently listed as *Needing Verification* on the Genesee River Basin WI/PWL will be assessed and verified during the 2004—06 RIBS monitoring cycle.
- The segment of the main stem of the Genesee River from Portageville to Mt. Morris which forms the border between Wyoming and Livingston County is listed solely as part of Livingston County. Given that the river is shared between the two counties, an appropriate reference to this fact should be cited in the WI/PWL so that Wyoming County is fully eligible for any and all federal and state funding resources incumbent therein.
- The NYS DEC should attempt to address the limitations that the linear stream segment monitoring approach has when conducting watershed-wide monitoring. Oftentimes segment-by-segment monitoring does not accurately reflect overall in-stream conditions; this problem is most readily evident in instances where upstream conditions are found to be worse than downstream conditions.

**Stressed Stream Analysis**

- In order to compile a more comprehensive body of information relative to stressed waterways in the Genesee River Basin, stressed stream analyses should be conducted among all major streams in high-priority watersheds (as ranked in Chapter 4 of the report).

**CSLAP**

- The Citizens Lake Assessment Program will continue on Genesee River Basin lakes, ponds and reservoirs and be expanded to those waterbodies where the integrity of local water quality may be in question

[16] NYS DEC, Div. of Water. *NYS Water Quality Monitoring Strategy*. 1

**RAP**

- Stage II RAP Sec. 7.23: *Complete basin water quality plans for the…Genesee RiverBasin; focus on plans for individual stream watersheds within the basins* - **Plans completed for North Chili trib. of Black Creek; *State of the Basin/Characterization* reports completed for Black and Oatka Creek watersheds**
- RAP 1999 Adden. Sec. 2.9: *Reevaluate the rankings of remedial measures, studies and monitoring methods every 6 years* - **High Priority**
- Stage II RAP sec. 7.9: *Continue developing and implementing intermunicipal agreements (IMAs) between Monroe County and the municipalities to protect water quality* - **Ongoing**
- Stage II RAP Sec. 4.6: *Study to learn if contaminants affect the benthic community in the lower Genesee River and, if so, which ones* - **Will be done by NYSDEC as part of Rotating Intensive Basin Studies (RIBS) and benthic delisiting criteria monitoring**

**Source Water Assessments**

- Source Water Assessment data for all public water supplies in the Basin is underway and near completion (originally scheduled for completion in 2002). Data should be obtained from the NYS Department of Health upon completion so that the potential impact related to publicly owned treatment plants can be reviewed and verified.

## Compliance

### *Actions Needed*

**NYS DEC: SPDES**

- The NYSDEC will maintain SPDES facility surveillance as resources allow and take timely action when non-compliance is identified
- SPDES facilities include both medium and large CAFOs, publicly owned WWTPs, all Phase I and Phase II Stormwater communities and construction sites, and any other public or private facilities covered under SPDES permits
- Stage II RAP Sec 9.14: *Monitor enforcement efforts for NYS DEC permits for stormwater discharges* – **Initiated; Monroe Co. SWCD and the DEC have been steadily increasing monitoring efforts.**

# Chapter 4: Watershed Prioritization

## Introduction

Chapter 4 of the GRBAS uses the watershed as the foundational component for quantifying and assessing protection and restoration efforts in the Genesee River Basin. Watersheds with the greatest need for restoration have been ranked based on their degree of degradation (see Prioritization Methodology below). When available, local water quality data supplements data provided in the WI/PWL. Commitments listed in Chapter 3 have been cross-referenced and are correlated relative to the location in which those actions are taking place.

### *The Watershed Approach*

The 1972 Clean Water Act made great progress toward eliminating point-sources of pollution. The reduction of hazardous discharges into waterways was accomplished through the National Pollution Discharge Elimination System (NPDES) and massive infrastructure improvements, which allowed for more thorough treatment of industrial and municipal wastes. Non-point sources (NPS) of pollution, however, are a ubiquitous and, consequently, more complicated challenge for agencies and municipalities to address.

NPS pollution is generated across wide areas of land, air, and water, precluding the ability of small, singular entities such as local governments to address them efficiently and effectively. The watershed approach to water quality restoration and protection addresses this problem by evaluating pollution sources and water quality across the basic component of accumulation and contribution (i.e. the "watershed," "catchment" or "sub-basin" which, when in combination with other similarly related components, comprise the drainage basin).[1]

## Prioritization Methodology

Objectively quantifying and prioritizing watersheds in need of restoration presents a number of challenges. Data sets are not necessarily universal throughout the Basin; while the New York Statewide Waters Monitoring Program attempts to look at all waterbody segments within a drainage basin, certain areas are ultimately given greater attention and scrutiny than others—particularly those near significant communities of people. Furthermore, annual and seasonal fluctuations in water quality and the data associated therein complicate the process of assigning precise rankings. The GRBAS nevertheless attempts to rank the need for remediation efforts among its comprising watersheds using a relatively simple and straightforward mechanism.

[1] The terms *watershed*, *catchment* and *sub-basin* are often used interchangeably and refer to the components that comprise a drainage basin.

High Priority Watersheds

Watersheds containing waterbody segments listed as *Precluded* or *Impaired* on the 2001 PWL are considered to be High Priority watersheds. These are waterbody segments that have been found to have significant levels of pollution that restrict one or more uses on that waterbody.[2]

Medium Priority Watersheds

Watersheds containing waterbody segments that fully support their uses but have less than ideal water quality are ranked as Medium Priority watersheds. These are waterbodies labeled as having *Minor Impacts* or as *Threatened* in the PWL; conditions in these waters are generally considered to be stable by the DEC but are nonetheless experiencing a measurable degree of environmental stress from one or more sources. It is important that these waters are monitored closely by local entities in order to ensure that conditions do not worsen.

Low Priority Watersheds

Watersheds with no definitive information indicating water quality problems have been ranked as Low Priority watersheds. It may be the case that there are water quality problems in Low Priority watersheds. The absence of reliable data, however, precludes our capacity to rank them appropriately.

## Watershed Identification

Watershed names and boundaries used in this report have been derived from the Hydrologic Unit Maps maintained by the United States Geologic Service (USGS). As explained by the USGS:

> The United States is divided and sub-divided into successively smaller hydrologic units which are classified into four levels: regions, sub-regions, accounting units, and cataloging units. The hydrologic units are arranged within each other, from the smallest (cataloging units) to the largest (regions). Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to [eleven] digits based on the…levels of classification in the hydrologic unit system.[3]

This system of watershed boundary identification yields two primary, 8-digit drainage basins in the study area: the Upper Genesee (HUC# 04130002) and the Lower Genesee (HUC# 04130003). Within these two basins there are a total of 24 11-digit sub-basins, or watersheds (referred to as "cataloging units" by the USGS above). The names and locations of these watersheds and their corresponding rank can be found below; watersheds are identified in this report using the last four digits of their 11-digit HUC.

[2] There are no waterbody segments listed as *Precluded* in the 2001 Genesee River Basin WI/PWL.
[3] USGS, Hydrologic Unit Maps: *What are hydrologic units?* Retrieved 13 August 2004 from: http://water.usgs.gov/GIS/huc.html.

## Watershed Descriptions and Rankings

In the pages that follow, watersheds have been listed with their corresponding ranking and the related waterbody segments that have documented water quality problems. Watersheds are listed in hydrologic order beginning with the headwaters of the Upper Genesee Basin and working downstream to the mouth of the Genesee River. Details regarding levels of pollution, pollution sources and associated use impairments are provided, the majority of which have been taken directly from the 2001 WI/PWL.[4] In certain instances, more detailed water quality information has been provided from local sources; these are noted where present.

Details regarding the status of programs currently in effect are provided under the *Commitments* section; *Recommendations* include those deemed to be appropriate by stakeholders, partially underway or under discussion. In an attempt to avoid repetition and redundancy, a summary of efforts or programs currently in effect throughout a watershed has been provided at the beginning of most watershed's segment listing. (i.e. a watershed management plan, the RAP, the Sediment Transport Model, etc.).

## Restoration versus Protection

The criteria used for watershed ranking focuses primarily on the need for watershed restoration. Based on this model, it can reasonably be assumed that watersheds that receive a low priority for restoration are likely to have a high level of environmental quality and stability and, therefore, should be considered high priority watersheds for *protection*. While this has not been the focus of this investigation, it is a feasible notion that deserves greater investigation and consideration among Genesee River Basin stakeholders.[5]

Finally, it is important to note that watersheds should not be chosen for project implementation based on watershed ranking alone; a willingness and ability to cooperate with implementation projects between local entities and lead agencies as well as past evidence of a desire to implement watershed restoration and protection efforts should also be taken into consideration.

[4] Readers should refer to http://www.gflrpc.org/GeneseeRiver.htm for a complete electronic version of the 2001 Genesee River Basin WI/PWL.
[5] Statements based on comments by and discussion with Tracey M. Tomajer, NYS Watershed Conservation Coordinator, NYS DEC.

## Genesee River Basin Watersheds and Associated Priority Ranking

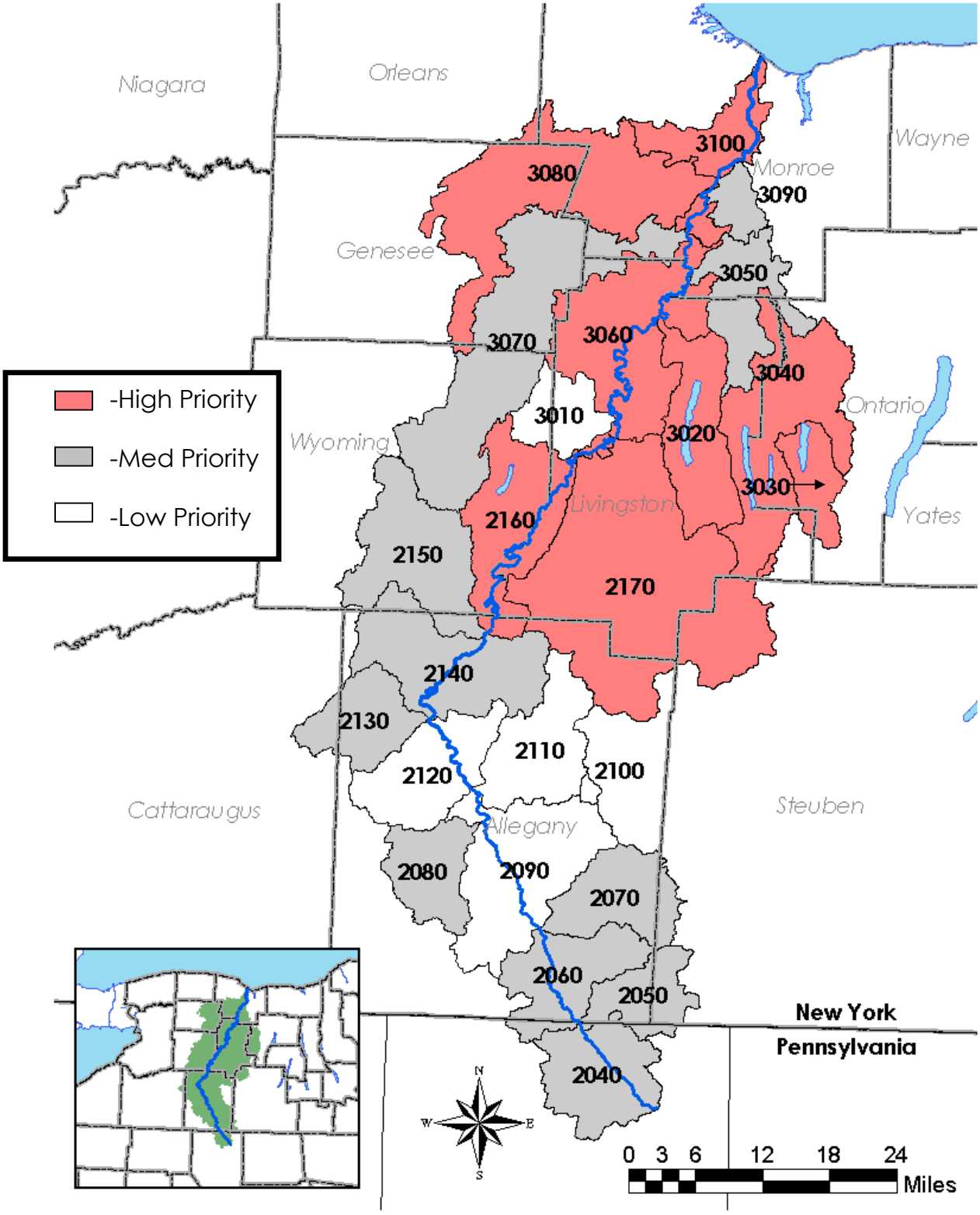
### Upper Genesee – HUC# 04130002

| Last Four HUC Digits/ Watershed Name | Rank |
|---|---|
| 2040 - Direct Pa. Drainage | Medium |
| 2050 - Cryder Creek | Medium |
| 2060 - State Line to Dyke Creek | Medium |
| 2070 - Dyke Creek | Medium |
| 2080 - VanCampen Creek | Medium |
| 2090 - Dyke Creek to Angelica Creek | Low |
| 2100 - Angelica Creek at West Almond, NY | Low |
| 2110 - Angelica Creek | Low |
| 2120 - Angelica Creek to Caneadea Creek | Low |
| 2130 - Caneadea Creek | Medium |
| 2140 - Caneadea Creek to Wiscoy Creek | Medium |
| 2150 - Wiscoy Creek | Medium |
| 2160 - Wiscoy Creek to Canaseraga Creek | High |
| 2170 - Canaseraga Creek | High |

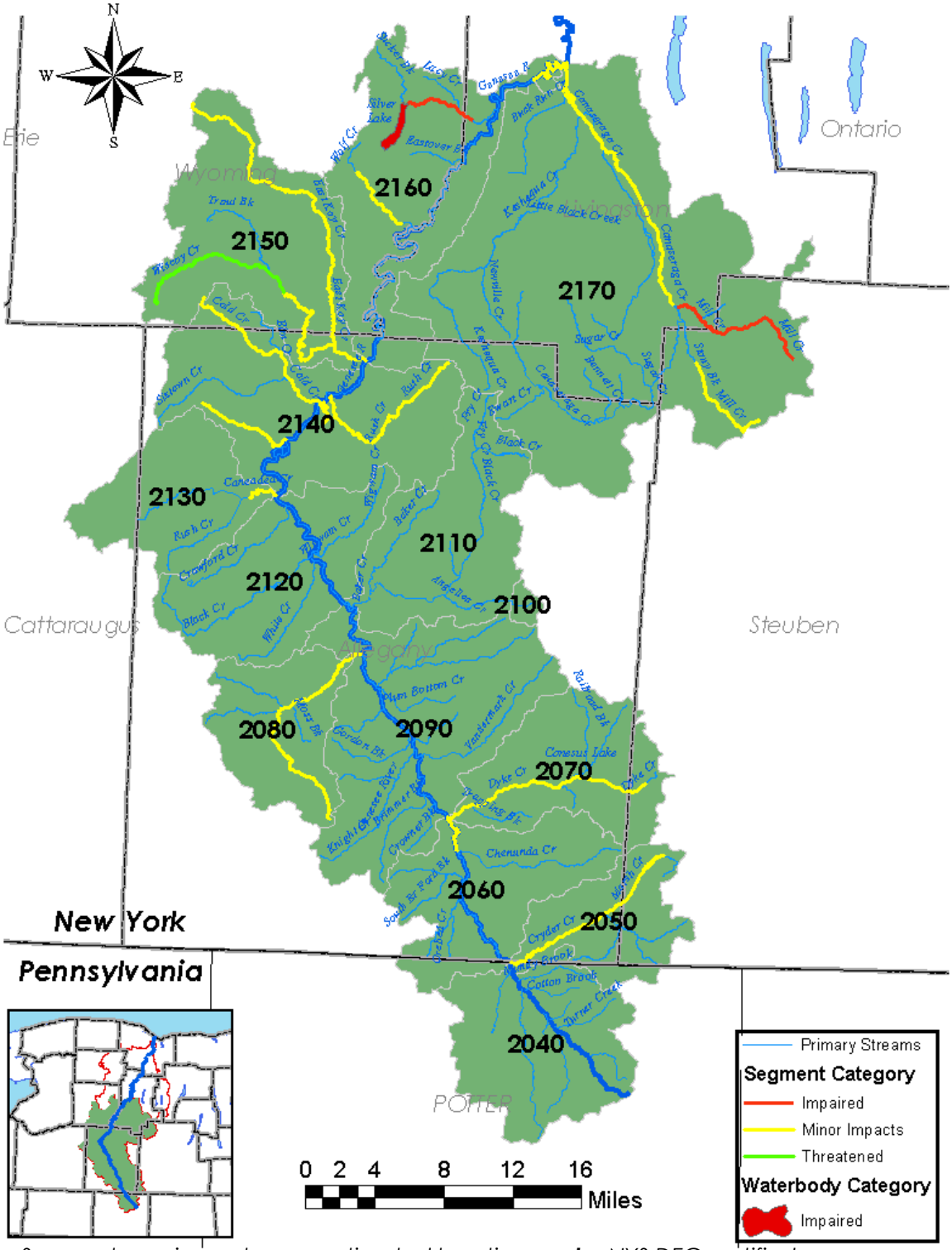
### Lower Genesee – HUC# 04130003

| Last Four HUC Digits/ Watershed Name | Rank |
|---|---|
| 3010 - Beards Creek | Low |
| 3020 - Conesus Creek | High |
| 3030 - Upper Honeoye Creek | High |
| 3040 - Middle Honeoye Creek | High |
| 3050 - Lower Honeoye Creek | Medium |
| 3060 - Canaseraga Creek to Oatka Creek | High |
| 3070 - Oatka Creek | Medium |
| 3080 - Black Creek | High |
| 3090 - Red Creek | Medium |
| 3100 - Oatka Creek to Mouth | High |

***Map 3: Genesee River Basin Priority Watersheds***



***Map 4: Upper Genesee River Basin 2001 PWL Waterbodies and River/Stream Segments***




*Note: Segments are in most cases estimated locations; **not** a NYS DEC certified map.*

## 2040 – Direct Pa. Drainage — *Medium Priority*

*Data for Pennsylvania watersheds are collected and maintained by the Pennsylvania Department of Environmental Protection (DEP) Bureau of Watershed Conservation. As with New York State, Pennsylvania is required by the federal government to conduct a Unified Watershed Assessment (UWA) in an effort to monitor water quality problems and set watershed restoration priorities.*[6] *NY and PA have assigned the adjoining Upper Genesee River Basin as a Category II watershed. Category II watersheds are those with more than 20% of the watershed assessed and less than 15% of those stream miles found to be impaired. These watersheds will need continued implementation of core clean water programs to maintain water quality and conserve natural resources.*

## Documented Water Quality Problems

**Musto Hollow** — ***Impaired***

### *Use Impairments and Associated Pollutants*

- Aquatic life has been confirmed as impaired

### *Pollutant Sources*

- Agriculture, low dissolved oxygen, organic enrichment and siltation cited as pollution sources

**Ludington Run** — ***Impaired***

### *Use Impairments and Associated Pollutants*

- Aquatic life has been confirmed as impaired

### *Pollutant Sources*

- Agriculture, low dissolved oxygen, organic enrichment and siltation cited as pollution sources

**Genesee River West Branch** — ***Impaired***

### *Use Impairments and Associated Pollutants*

- Aquatic life has been confirmed as impaired

[6] For more information on PA's UWA program, visit http://www.dep.state.pa.us/dep/deputate/watermgt/WC. Retrieved 13 August 2004.

### Pollutant Sources

- Agriculture, low dissolved oxygen, organic enrichment and siltation cited as pollution sources

**Genesee River, Main Stem** ***Impaired***

### Use Impairments and Associated Pollutants

- Aquatic life has been confirmed as impaired

### Pollutant Sources

- Agriculture, low dissolved oxygen, organic enrichment and siltation cited as pollution sources

### Commitments (for entire PA drainage)

- The Potter County Conservation District has applied for a grant to develop a restoration and protection plan for the headwaters of the Genesee River.
- Instituting agricultural BMPs on priority farms found to pose the greatest threat to water quality
- Education and outreach to farm owners and community members
- Road ditch stabilization projects throughout Potter County

### Recommendations (for entire PA drainage)

- Future efforts to maintain water quality be coordinated through the establishment of a restoration and protection plan
  - The extent of impacts stemming from failing on site septic systems, particularly concentrations in Genesee, and Hicox, PA, should be explored
- Continued in-depth sampling of primary water segments to determine the extent of impairments

## 2050 – Cryder Creek — *Medium Priority*

### Documented Water Quality Problems

**Cryder Creek and minor tributaries (0403-0027)** — ***Minor Impacts***

*This segment is approximately 50 miles long and includes the entire stream and tributaries within New York State.*

#### *Use Impairments and Associated Pollutants*

- Aquatic life is known to be stressed; recreation is suspected to be stressed
- Nutrients are suspected to be a major pollutant type; pathogens are suspected to be a major pollutant.

#### *Pollutant Sources*

- Agriculture is suspected to be a major pollutant source.

#### *Commitments*

- 2004 SPDES CAFO regulations in effect: one CAFO known to be located in the watershed

#### *Recommendations*

- Continued monitoring to ensure full compliance with CAFO regulations
- Implementation of AEM on any farms found to pose a real or potential threat to water quality

## 2060 – State Line to Dyke Creek — *Medium Priority*

Watershed-Wide Activities Addressing Water Quality Issues:

- **AEM/2004 SPDES CAFO Regulations:** *2 CAFOs known to exist within the watershed*
- **Village of Wellsville Water Department Watershed Rules and Regulations:** *Regulations established in 1994 for the protection from the contamination of the public water supply of the Village of Wellsville.*

## Documented Water Quality Problems

**Genesee River Upper, Main Stem (0403-0039)** — ***No Known Impacts***

*This portion of the Genesee River is approximately 1.5 miles long and stretches between Stannards and the Pennsylvania border.*

The PWL reports no specific impacts to this portion of the Genesee River. For reference purposes, all segments of the Genesee River will be listed regardless of status.

### *Recommendations*

- Stakeholders have noted that feeder tributaries to the Genesee River more accurately reflect the state of water quality in the main stem of the Genesee River, which, as noted above, is listed as having *no known impacts*. There are, however, notable impacts measured on feeder rivers and streams. It is suggested that water quality monitoring and sampling take place during first flush events and in conjunction with manure spreading schedules in order to more accurately reflect the cumulative impacts of NPS on the main stem of the Genesee River.

**Genesee River, Upper, Main Stem (0403-0001)** — ***Minor Impacts***

*This segment of the Genesee River is approximately 11 miles in length and stretches between Wellsville and Stannards.*

### *Use Impairments and Associated Pollutants*

- Water supply is known to be threatened; recreation and aesthetics are known to be stressed.
- Nutrients and silt/sediments are known to be major pollutant types. Pathogens are a suspected type; oil and grease and priority organics are possible pollutant types.

## Pollutant Sources

- Agriculture, landfill/land disposal (Sinclair Refinery) and streambank erosion are known to be major sources of pollution; roadbank erosion is also a known source. Resource extraction is a possible source.
- There are two CAFOs known to be in operation in the watershed

## Commitments

- 2004 SPDES CAFO regulations in effect: two CAFOs known to be located in the watershed

## Recommendations

- Continued monitoring to ensure full compliance with CAFO regulations
- Implementation of AEM on any farms found to pose a real or potential threat to water quality
- Continued monitoring of inactive hazardous waste sites

## 2070 – Dyke Creek — *Medium Priority*

Watershed-Wide Activities Addressing Water Quality Issues:

- **Village of Wellsville Water Department Watershed Rules and Regulations:** *Regulations established in 1994 for the protection from the contamination of the public water supply of the Village of Wellsville.*

## Documented Water Quality Problems

### Dyke Creek, Lower, and tributaries (0403-0004) — *Minor Impacts*

*This segment is approximately 66 miles in length and includes the stream and tributaries from the mouth to the Village of Andover.*

#### *Use Impairments and Associated Pollutants*

- Aquatic life is known to be stressed; recreation is suspected to be stressed.
- Nutrients are suspected to be a major type of pollutant; silt/sediments are also a suspected pollutant.

#### *Pollutant Sources*

- Failing on-site septic systems are suspected to be a major source of pollution (Village of Andover); agriculture and streambank erosion are also suspected sources.

### Dyke Creek, Upper, and tributaries (0403-0071) — *Minor Impacts*

*This segment is approximately 40 miles in length and includes all streams and tributaries above the Village of Andover.*

#### *Use Impairments and Associated Pollutants*

- Aquatic life is known to be stressed; recreation is suspected to be stressed.
- Nutrients are suspected to be a major type of pollutant; silt/sediments are also a suspected pollutant. Pathogens are a possible major pollutant type.

#### *Pollutant Sources*

- Agriculture is suspected to be a major source of pollution; failing on-site septic systems and streambank erosion are also suspected sources.

### Commitments (for entire Dyke Creek)

- Individual septic upgrades, coupled with stormwater ditch diversions and storm sewers have lessened the impact of failing OWTS

### Recommendations (for entire Dyke Creek)

- Testing and detection of failing OWTS
- Implementation of AEM on any farms found to pose a real or potential threat to water quality

## 2080 – Van Campen Creek *Medium Priority*

### Documented Water Quality Problems

**Van Campen Creek and minor tributaries (0403-0025)** ***Minor Impacts***

*This segment is approximately 62 miles in length and includes the entire stream and selected tributaries.*

#### *Use Impairments and Associated Pollutants*

- Aquatic life is known to be stressed.
- Nutrients are suspected to be a major type of pollutant.

#### *Pollutant Sources*

- Agriculture is suspected to be a major source of pollution.

#### *Commitments*

- WWTP constructed in the Town of Friendship has resulted in considerable improvements in water quality
- 2004 SPDES CAFO regulations in effect: one CAFO known to be located in the watershed

#### *Recommendations*

- Implementation of AEM on any other farms found to pose a real or potential threat to water quality

## 2090 – Dyke Creek to Angelica Creek *Low Priority*

Watershed-Wide Activities Addressing Water Quality Issues:

- **AEM/2004 SPDES CAFO Regulations:** *a CAFO known to exist within the watershed*
- **Village of Wellsville Water Department Watershed Rules and Regulations:** *Regulations established in 1994 for the protection from the contamination of the public water supply of the Village of Wellsville.*

## Documented Water Quality Problems

**Genesee River, Upper, Main Stem (0403-0022)** **No Known Impacts**

*This portion of the Genesee River is approximately 19 miles in length and stretches between Angelica to Wellsville.*

The PWL reports no specific impacts to this portion of the Genesee River. For reference purposes, all segments of the Genesee River will be listed regardless of status.

### *Commitments*

- 2004 SPDES CAFO regulations in effect: one CAFO located in the watershed near confluence of Genesee River and Long Gore Creek

### *Recommendations*

- It is suggested that water quality monitoring and sampling take place during first flush events and in conjunction with manure spreading schedules in order to more accurately reflect the cumulative impacts of NPS on the main stem of the Genesee River.

**Knight Creek and tributaries (0403-0035)** ***No Known Impacts***

*This segment is approximately 33 miles in length and includes the entire stream and tributaries.*

### *Pollutant Sources*

- While there are no known impacts on this segment, the PWL cites concerns regarding the impact of oil production on stream water quality. Activities date back to the early 1900s; no discernable impacts to stream quality have been noted.

### *Commitments*

- No specific commitments

## Recommendations

- Continued monitoring

**Vandermark Creek and tributaries (0403-0011)** ***Needs Verification***

*This segment is approximately 45 miles in length and includes the entire stream and tributaries.*

## Use Impairments and Associated Pollutants:

- Habitat/hydrology is possibly stressed.
- Silt/sediments are suspected to be a major type of pollutant; salts are also suspected.

## Pollutant Sources

- Streambank erosion is suspected to be a major source of pollution; deicing storage and application is a possible source.

## Commitments

- No specific commitments

## Recommendations

- Explore the degree to which exposed salt piles are interfering with water quality and propose site-specific remedial measures. See the G/FLRPC regional salt storage inventories for more information: http://www.gflrpc.org/Planning/WQ/wqdata.htm.
- Verification attained during 2004-05 RIBS cycle

## 2100 – Angelica Creek at West Almond, NY *Low Priority*

### Documented Water Quality Problems

This is a relatively small watershed where the headwaters of Angelica Creek are located. There are no major water segments or associated problems reported here.

## 2110 – Angelica Creek *Low Priority*

### Documented Water Quality Problems

**Black Creek and tributaries (0403-0067)** ***Needs Verification***

*This segment is approximately 81 miles in length and includes the entire stream and tributaries.*

#### *Use Impairments and Associated Pollutants*

- Aquatic life and recreation are possibly stressed; habitat/hydrology suspected to be stressed.
- Nutrients and pathogens are suspected to be a major pollutant types; aesthetics and depleted oxygen/oxygen demand are possible pollutant types.

#### *Pollutant Sources*

- Agriculture is known to be a major pollutant source.

#### *Commitments*

- The DEC cites one CAFO and 4 smaller agricultural operations present in the watershed

#### *Recommendations*

- AEM and agricultural BMPs instituted as necessary in order to control runoff and leachate discharge into area waters
- Verification attained during 2004-05 RIBS cycle

## 2120 – Angelica Creek to Caneadea Creek *Low Priority*

### Documented Water Quality Problems

| Genesee River, Upper, Main Stem (0403-0077) | *No Known Impacts* |
|---|---|

*This portion of the Genesee River is approximately 10 miles in length and stretches between Caneadea to Angelica.*

The PWL reports no specific impacts to this portion of the Genesee River. For reference purposes, all segments of the Genesee River will be listed regardless of status.

### *Recommendations*

- It is suggested that water quality monitoring and sampling take place during first flush events and in conjunction with manure spreading schedules in order to more accurately reflect the cumulative impacts of NPS on the main stem of the Genesee River.

## 2130 – Caneadea Creek — *Medium Priority*

Watershed-Wide Activities Addressing Water Quality Issues:

- **AEM/2004 SPDES CAFO Regulations:** *Allegany County SWCD and NYCS have used EQIP and Clean Water/Clean Air Bond Act funding to implement BMPs on 16 farms, including 5 known CAFOs*
- **Genesee River Basin Sediment Transport Model***: The Sediment Transport Model will be used to evaluate streambank erosion in upstream areas and operate as a decision support mechanism that will ideally lead to an overall decline in sediment and siltation loading in the Lower Genesee River.*

## Documented Water Quality Problems

### Caneadea Creek, Lower, and tributaries (0403-0008) — *Minor Impacts*

*This segment is approximately 7 miles in length and includes the stream and tributaries from its mouth to Rushford Lake.*

#### *Use Impairments and Associated Pollutants*

- Aquatic life is known to be stressed; recreation and habitat/hydrology are suspected to be stressed.
- Silt/sediments are suspected to be a major pollutant; thermal changes are also suspected. Nutrients and pathogens are possible pollutants.

#### *Pollutant Sources*

- Streambank erosion is known to be a major pollutant source; agriculture is suspected to be a major pollutant source. Hydromodification is a possible source.

### Caneadea Creek, Upper, and tributaries (0403-0060) — *Needs Verification*

*This segment is approximately 100 miles in length and includes the stream and tributaries above Rushford Lake.*

#### *Use Impairments and Associated Pollutants*

- Aquatic life and recreation are possible stressed; habitat/hydrology is suspected to be stressed.
- Silt/sediments and thermal changes are suspected to be major pollutants. Nutrients and pathogens are possible pollutants.

#### *Pollutant Sources*

- Habitat modification is a known pollutant source; agriculture and streambank erosion are suspected to be major pollutant sources.

### Actions (for entire Caneadea Creek)

- Allegany SWCD and NYS have used EQIP and Clean Water/Clean Air Bond Act funding to implement BMPs on 16 farm operations within the watershed, five of which were CAFOs

### Recommendations (for entire Caneadea Creek)

- Verification attained during 2004-05 RIBS cycle

**Rushford Lake (0403-0024)** ***Needs Verification***

*This waterbody has an approximate area of 570 acres.*

### Use Impairments and Associated Pollutants

- Recreation is known to be stressed. Aquatic life is suspected to be threatened. Public bathing is possibly stressed.
- Nutrients are known to be a major type of pollution. Silt/sediments are suspected types; pathogens are a possible pollutant type.

### Pollutant Sources

- Agriculture and streambank erosion are known to be major pollutant sources; failing onsite septic systems are a possible source.

### Recommendations

- Verification attained during 2004-05 RIBS cycle

## 2140 – Caneadea Creek to Wiscoy Creek *Medium Priority*

Watershed-Wide Activities Addressing Water Quality Issues:

- **AEM/2004 SPDES CAFO Regulations:** *5 CAFOs known to exist in the watershed*
- **Genesee River Basin Sediment Transport Model***: The Sediment Transport Model will be used to evaluate streambank erosion in upstream areas and operate as a decision support mechanism that will ideally lead to an overall decline in sediment and siltation loading in the Lower Genesee River.*

## Documented Water Quality Problems

**Genesee River, Upper, Main Stem (0403-0038)** ***No Known Impact***

*This segment of the Genesee River is approximately 17 miles in length and stretches between Rossburg and Caneadea.*

The PWL reports no specific impacts to this portion of the Genesee River. For reference purposes, all segments of the Genesee River will be listed regardless of status.

### *Recommendations*

- It is suggested that water quality monitoring and sampling take place during first flush events and in conjunction with manure spreading schedules in order to more accurately reflect the cumulative impacts of NPS on the main stem of the Genesee River.

**Rush Creek and tributaries (0403-0057)** ***Minor Impacts***

*This segment is approximately 80 miles in length and includes the entire stream and tributaries.*

### *Use Impairments and Associated Pollutants*

- Aquatic life and habitat/hydrology are known to be stressed.
- Water level/flow and silt/sediments are known to be major pollutants; nutrients are a suspected pollutant; thermal changes a possible pollutant.

### *Pollutant Sources*

- Habitat modification, resource extraction (gravel removal) and streambank erosion are known to be major pollutant sources; agriculture is a suspected pollutant source.

### *Commitments*

- Research as to the effects of gravel removal on in-stream conditions and on down-stream conditions being conducted by DEC (contact: Joseph Galati, Reg. 9)

### Recommendations
- Ensure full compliance with SPDES permits re: in-stream gravel removal
- Detailed streambank analysis conducted in order to drive implementation of BMPs

**Cold Creek and tributaries (0403-0058)** ***Minor Impacts***

*This segment is approximately 95 miles in length and includes the entire stream and tributaries.*

### Use Impairments and Associated Pollutants
- Habitat/hydrology is known to be stressed.
- Water level/flow and silt/sediments are known to be major pollutants; nutrients are a possible pollutant.

### Pollutant Sources
- Hydromodification and streambank erosion are known to be major pollutant sources; habitat modification is a suspected pollutant source. Agriculture is a possible source.

### Commitments
- Research as to the effects of gravel removal on in-stream conditions and on down-stream conditions being conducted by DEC (contact: Joseph Galati, Reg. 9)

### Recommendations
- Detailed streambank analysis conducted in order to drive implementation of BMPs

**Houghton Creek (0403-0059)** ***Minor Impacts***

*This segment is approximately 13 miles in length and includes the entire stream and tributaries.*

### Use Impairments and Associated Pollutants
- Habitat/hydrology is known to be stressed.
- Silt/sediments are known to be a major pollutant source; water level/flow are a suspected pollutant.

### Pollutant Sources
- Streambank erosion is known to be major pollutant sources; hydromodification is a suspected pollutant source.

### Commitments
- Syracuse University (SU) students studying stream conditions and evaluating possible solutions

## Recommendations

- In conjunction with SU, Streambank analysis conducted for entire creek; use resulting data to propose and implement BMPs

## 2150 – Wiscoy Creek *Medium Priority*

## Documented Water Quality Problems

**Wiscoy Creek, Lower, and minor tributaries (0403-0023)** ***Minor Impacts***

*This segment is approximately 47 miles in length and includes the entire stream and tributaries from its mouth to Pike Five Corners.*

### *Use Impairments and Associated Pollutants*

- Aquatic life is known to be stressed.
- Nutrients are suspected to be a major pollutant type; salts and silt/sediments are also suspected types. Water level/flow and thermal changes are possible types.

### *Pollutant Sources*

- Agriculture is known to be a major pollutant source. Streambank erosion is a suspected source; roadbank erosion is a possible source.

### *Commitments*

- No specific commitments

### *Recommendations*

- No specific recommendations

**Wiscoy Creek, Upper, and minor tributaries (0403-0019)** ***Threatened***

*This segment is approximately 63 miles in length and includes the stream and tributaries above Pike Five Corners.*

### *Use Impairments and Associated Pollutants*

- Aquatic life is known to be threatened.
- Salts are suspected to be a major pollutant type. Water level/flow, nutrients and thermal changes are possible types.

### *Pollutant Sources*

- Deicing materials (storage/application) are suspected to be a major source; agriculture is also a suspected source.

### *Commitments*

- Streambank stabilization: SWCD has installed two long crib walls with stream fencing

### Recommendations
- No specific recommendations

**East Koy Creek, Lower, and tributaries (0403-0020)** ***Minor Impacts***

*This segment is approximately 32 miles in length and includes the stream and tributaries from its mouth to Lamont.*

### Use Impairments and Associated Pollutants
- Aquatic life is known to be stressed; habitat/hydrology is suspected to be stressed.
- Nutrients and thermal changes are suspected to be major pollutant types; water level/flow is also a suspected type. Salts are a possible pollutant type.

### Pollutant Sources
- Agriculture is known to be a major pollutant source. Habitat modification is suspected to be a major pollutant source. Deicing materials (storage/application) is a possible source.

**East Koy Creek, Middle, and tributaries (0403-0045)** ***Minor Impacts***

*This segment is approximately 24 miles in length and includes the stream and tributaries from Lamont to Hermitage.*

### Use Impairments and Associated Pollutants
- Aquatic life is known to be stressed; recreation is suspected to be stressed.
- Nutrients and silt/sediments are suspected to be major pollutant types.

### Pollutant Sources
- Agriculture is suspected to be a major pollutant source; streambank erosion is a possible source.

**East Koy Creek, Upper, and tributaries (0403-0046)** ***Minor Impacts***

*This segment is approximately 39 miles in length and includes the stream and tributaries about Hermitage.*

### Use Impairments and Associated Pollutants
- Aquatic life is known to be stressed; recreation is suspected to be stressed.
- Nutrients are suspected to be a major pollutant type; silt/sediments are also suspected.

### Pollutant Sources

- Agriculture is suspected to be a major pollutant type.

### Commitments (for entire East Koy Creek)

- No specific commitments

### Recommendations (for entire East Koy Creek)

- None specific to river segment

## 2160 – Wiscoy Creek to Canaseraga Creek *High Priority*

Watershed-Wide Activities Addressing Water Quality Issues:

- **AEM/2004 SPDES CAFO Regulations:** *17 CAFOs known to exist in the watershed*

## Documented Water Quality Problems

**Genesee River, Middle, Main Stem (0403-0037)** ***Minor Impacts***

*This section of the Genesee River is approximately 2 miles in length and is located between the Village of Mt. Morris and the Mt. Morris Dam.*

### *Use Impairments and Associated Pollutants*

- Recreation is known to be stressed; aesthetics are suspected to be stressed. Water supply is suspected to be threatened.
- Water level/flow, nutrients and silt/sedimentation are known to be major pollutant types.

### *Pollutant Sources*

- Agriculture, hydromodification and streambank erosion are known to be major pollutant sources.

### *Recommendations*

- The segment of the main stem of the Genesee River from Portageville to Mt. Morris which forms the border between Wyoming and Livingston County is listed solely as part of Livingston County. Given that the river is shared between the two counties, an appropriate reference to this fact should be cited in the WI/PWL so that Wyoming County is fully eligible for any and all federal and state funding resources incumbent therein.

**Genesee River, Upper, Main Stem (0403-0006)** ***Needing Verification***

*This section of the Genesee River is approximately 18 miles in length and stretches between the Mt. Morris Dam (reservoir portion) and Rossburg.*

### *Use Impairments and Associated Pollutants*

- Aquatic life is suspected to be threatened.
- Silt/sedimentation is suspected to be a major pollutant type.

### *Pollutant Sources*

- Streambank erosion is suspected to be a major pollutant source.

## Commitments
- None specific to segment

## Recommendations
- Verification attained during 2004-05 RIBS cycle

**Silver Lake Outlet, Upper, and tributaries (0403-0034)** ***Impaired Segment***

*This segment is approximately 24 miles in length and flows from the north end of Silver Lake into Letchworth State Park.*

## Use Impairments and Associated Pollutants
- Aquatic life is suspected to be threatened.
- Silt/sedimentation is suspected to be a major pollutant type.

## Pollutant Sources
- Streambank erosion is suspected to be a major pollutant source.

## Commitments
- None specific to segment

## Recommendations
- Continued monitoring

**Silver Lake (0403-0002)** ***Impaired Segment***

*This waterbody has an approximate area of 812 acres and is located southwest of the Village of Perry in Wyoming County.*

## Use Impairments and Associated Pollutants
- Aquatic life is suspected to be threatened.
- Silt/sedimentation is suspected to be a major pollutant type.

## Pollutant Sources
- Streambank erosion is suspected to be a major pollutant source.

## Commitments
- Detailed water quality analysis conducted by SUNY Brockport to be released in draft form January 2005
- CSLAP volunteer monitoring of the lake conducted since 1986
- See the *Silver Lake Monitoring Report* for specific recommendations for implementation

## Recommendations

- Continued monitoring and implementation of *Silver Lake Monitoring Report* recommendations

**Wolf Creek, Upper, and tributaries (0403-0003)** ***Minor Impacts***

*This segment is approximately 36 miles in length and includes the stream and tributaries above Letchworth State Park.*

## Use Impairments and Associated Pollutants:

- Aquatic life is suspected to be threatened.
- Silt/sedimentation is suspected to be a major pollutant type.

## Pollutant Sources

- Streambank erosion is suspected to be a major pollutant source.

## Commitments

- Strategy to address failing onsite septic systems is in place; centralized treatment facility is scheduled to be built in 2005 and a plant operator has been hired

## Recommendations

- Continued monitoring

## 2170 – Canaseraga Creek *High Priority*

### Documented Water Quality Problems

**Canaseraga Creek, Lower, and minor tributaries (0404-0001)** ***Minor Impacts***

*This segment stretches approximately 95 miles from its mouth to the Town of Dansville and includes the entire stream and selected tributaries.*

#### *Use Impairments and Associated Pollutants:*

- Recreation and habitat/hydrology are both suspected to be stressed
- Silt/sediments are known to be a major type of pollutant; water level/flow is also a known pollutant. Thermal changes are a suspected pollutant; nutrients are a possible pollutant

#### *Pollutant Sources*

- Habitat modification and streambank erosion are known to be major sources of pollution; agriculture and hydromodification are also known sources.

**Canaseraga Creek, Upper, and tributaries (0404-0002)** ***Needing Verification***

*This segment is approximately 101 miles in length and include all tributaries above the Village of Canaseraga.*

#### *Use Impairments and Associated Pollutants:*

- Habitat/hydrology is suspected to be stressed; recreation is possibly stressed
- Water level/flow and silt/sediments are known pollutants; pathogens are suspected to be a major pollutant.

#### *Pollutant Sources*

- Streambank erosion is a known source of pollution; failing on-site septic systems in the Village of Canaseraga are suspected to be a major source. Agriculture is also a suspected source .

#### *Commitments (for entire Canaseraga Creek)*

- WWTP being considered for the Village of Canaseraga: A $2,224,674 interest-free short-term loan through the Clean Water State Revolving Fund was awarded 6/04 for the construction of collector sewers and a wastewater treatment plant

#### *Recommendations (for entire Canaseraga Creek)*

- While cited as a suspected source, agriculture has been reported to be a major problem on this water segment; testing should therefore coincide more closely with first flush events and

manure spreading schedules in order to more accurately reflect water quality problems. There are 7 CAFOs known to be in operation in the watershed.
- Verification attained during 2004-05 RIBS cycle

**Tuscarora, Buck Run Creeks (0404-0014)** ***Needs Verification***

*This segment is approximately 44 miles in length including the entire stream and tributaries and is located south of the Village of Mt. Morris.*

## Use Impairments and Associated Pollutants:

- Aquatic life and recreation and considered to be possibly stressed.
- An unknown pollutant is cited as a possible major type of pollutant; silt/sediments are also a possible type.

## Pollutant Sources

- An unknown source is cited as a possible major source. Agriculture is also cited as a possible source.

## Commitments

- No specific commitments

## Recommendations

- Verification attained during 2004-05 RIBS cycle
- Unknown sources identified

**Keshequa Creek, Lower, and tributaries (0404-0010)** ***Needs Verification***

*This segment is approximately 21 miles in length and includes the stream and tributaries from its mouth to Tuscarora.*

## Use Impairments and Associated Pollutants:

- Aquatic life and recreation are possibly stressed.
- Nutrients are suspected to be a major type of pollutant; pathogens are a possible type.

## Pollutant Sources

- Private/Commercial/Institutional (Groveland Correctional Facility) is suspected to be a major source of pollution.

## Commitments

- No specific commitments

## Recommendations

- Verification attained during 2004-05 RIBS cycle

**Mill Creek and minor tributaries (0404-0011)** ***Impaired Segment***

*This segment is approximately 54 miles in length including the entire stream and tributaries beginning in Steuben County, merging with the Canaseraga Creek in the Village of Dansville.*

## Use Impairments and Associated Pollutants:

- Aquatic life is known to be a major impairment; recreation is suspected to be stressed.
- Silt/sediments is a suspected pollutant type.

## Pollutant Sources

- Streambank erosion is suspected to be a major source; agriculture is a possible source.

## Commitments

- No specific commitments

## Recommendations

- Sediment Transport Model/streambank analysis
- Improved monitoring: while this segment is listed as impaired, it has been noted by local stakeholders that it is indeed one of the most productive trout streams in the region.

**Stony Brook, Upper, and tributaries (0404-0029)** ***Minor Impacts***

*This segment is approximately 33 miles in length and includes the stream section and tributaries above Stony Brook State Park.*

## Use Impairments and Associated Pollutants:

- Recreation is known to be stressed.
- Pathogens are known to be a major pollutant type

## Pollutant Sources

- An unknown source is considered to be a possible major contributor; failing on-site septics are also a possible source.

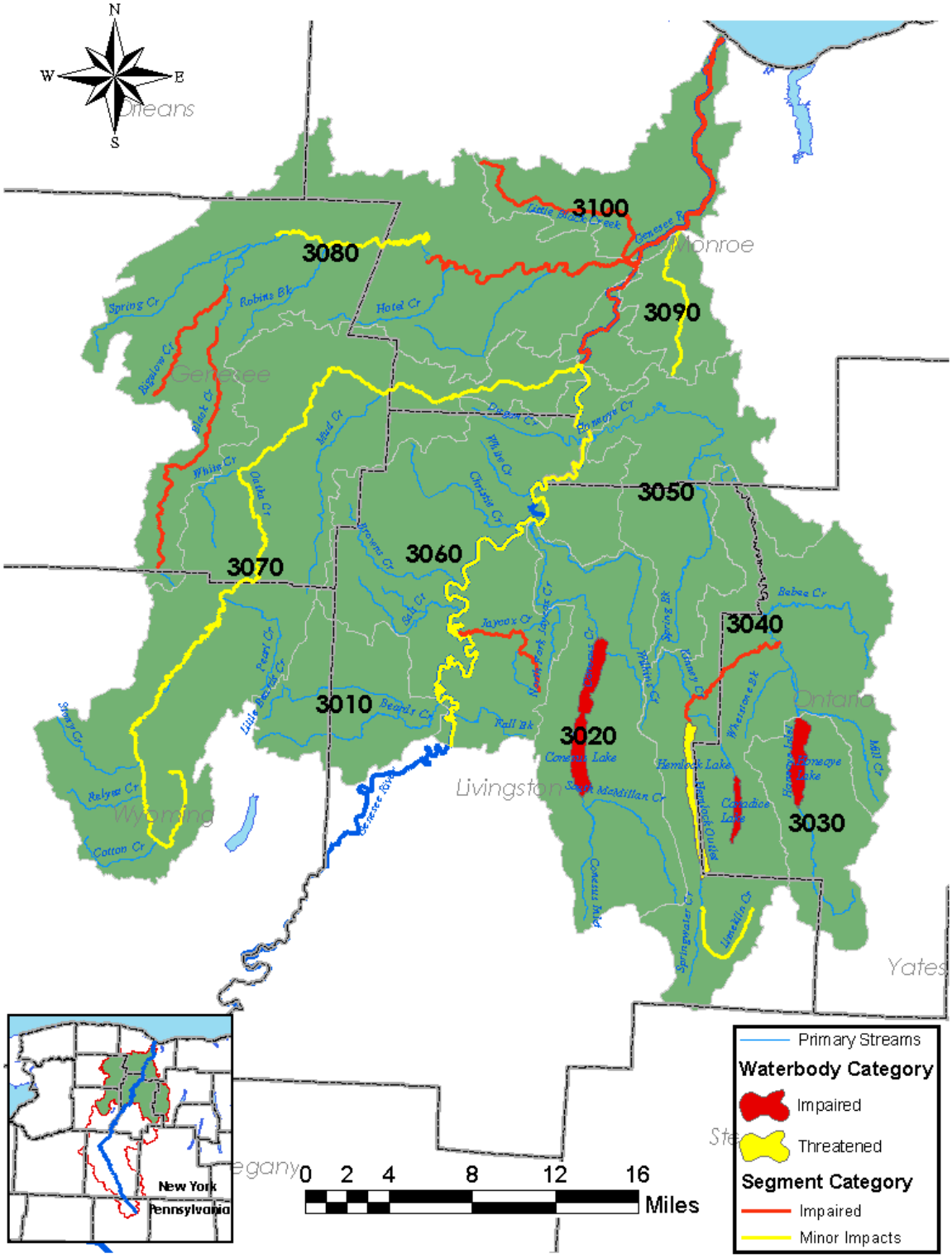
## Commitments

- WWTP being considered for the Village of Canaseraga (Allegany County WQCC, April 2001)

## Recommendations

- Flood mitigation plans conducted for the area; local municipalities are seeking solutions to flooding of homes
- Administrative control measures or alternative design standards should be instituted if failing OWTS prove to be a significant source of pollutants in the area

***Map 5: Lower Genesee River Basin 2001 PWL Waterbodies and River/Stream Segments***




*Note: Segments are in most cases estimated locations; **not** a NYS DEC certified map.*

## 3010 – Beards Creek — *Low Priority*

## Documented Water Quality Problems

**Beards/Bairds Creek and tributaries (0402-0037)** — **Needs Verification**

*This segment is approximately 50 miles in length including the entire stream and tributaries located near the Village of Leicester, Livingston County.*

### *Use Impairments and Associated Pollutants:*

- Aquatic life and recreation are possibly stressed
- Salts are a known pollutant type. Nutrients are a suspected major type; pesticides and pathogens are possible pollutant types

### *Pollutant Sources*

- Agriculture is suspected to be a major pollutant source. Deicing materials (storage/application) and resource extraction (old Akzo salt mine) are possible sources

### *Commitments*

- AEM and other agricultural BMPs being administered

### *Recommendations*

- Continued implementation of agricultural BMPs
- Verification attained during 2004-05 RIBS cycle

**Little Beards Creek and tributaries (0402-0014)** — ***Needs Verification***

*This segment is approximately 53 miles in length including the stream and tributaries located near the Village of Leicester, Livingston County, north of Beards/Bairds Creek.*

### *Use Impairments and Associated Pollutants:*

- Aquatic life and recreation are possibly stressed
- Nutrients and silt/sediments are suspected to be major pollution types; pathogens are also suspected.

### *Pollutant Sources*

- Agriculture and streambank erosion are suspected to be major sources of pollution; failing onsite septic systems are also a suspected source

### *Commitments*

- AEM and other agricultural BMPs being administered

## Recommendations

- Streambank inventory and assessment in conjunction with the Sediment Transport Model
- Continued implementation of agricultural BMPs
- See OWTS recommendations listed in Chapter 3
- Verification attained during 2004-05 RIBS cycle

**Lake LaGrange (0402-0008) Minor Impacts**

*This waterbody has an approximate area of 51 acres and can be found south of the hamlet of LaGrange.*

## Use Impairments and Associated Pollutants:

- Aesthetics are known to be stressed
- Algal/weed growth and nutrients are both known to be major types of pollutants; Pesticides are also known. Silt/sediments are a suspected type; pathogens are a possible pollutant type.

## Pollutant Sources

- Agriculture is known to be a major pollutant source. Streambank erosion is a suspected source; roadbank erosion is a possible source

## Commitments

- AEM and other agricultural BMPs being administered

## Recommendations

- Streambank inventory and assessment in conjunction with the Sediment Transport Model
- Continued implementation of agricultural BMPs

## 3020 – Conesus Creek — *High Priority*

Watershed-Wide Activities Addressing Water Quality Issues:

- **Conesus Lake Management Plan and Related Activities:** *The Livingston County Planning Department, in conjunction with various local, state, county and regional organizations, has been heavily involved in characterizing environmental conditions in the Conesus watershed and seeking viable improvements. Visit* **http://co.livingston.state.ny.us/conesus.htm** *for a complete summary of actions and reports relative to the watershed.*
- **Genesee River Basin Sediment Transport Model***: As explained in Chapter 3, the Sediment Transport Model will be used to evaluate streambank erosion in upstream areas and operate as a decision support mechanism that will ideally lead to an overall decline in sediment and siltation loading in the Lower Genesee River.*
- **Stormwater Phase II Regulations:** *The NYS DEC, in partnership with local communities and county and regional agencies (i.e. SWCDs, G/FLRPC, etc.) will work to institute the "Six Minimum Measures" to significantly reduce pollutants in urban stormwater among all regulated entities.*
- **2004 SPDES CAFO Regulations:** *The NYS DEC, in partnership with local SWCDs, will ensure full compliance among all CAFOs in a consistent and timely manner.*
- **Education and Outreach:** *The Water Education Collaborative (http://thewec.org/) will expand its role as a water education partner and resource/clearinghouse for water education programs beyond Monroe County and into upstream areas of the Genesee River Basin.*

## Documented Water Quality Problems

**Conesus Creek and minor tributaries (0402-0038)** — **Needing Verification**

*This segment is approximately 22 miles in length including tributaries and enters the Genesee River at the Village of Avon.*

### *Use Impairments and Associated Pollutants:*

- Aquatic life is considered to be possibly stressed

### *Pollutant Sources*

- Silt/sediment is suspected to be a major pollutant type; nutrients are a possible pollutant. Agriculture and streambank erosion are possible sources; an unknown source contributes a significant amount of pollution in the segment.

### *Commitments*

- Water quality is considered to be slightly impacted, however monitoring efforts have failed in 1999 and 2000

### *Recommendations*

- Continued monitoring of sites in order to determine potential sources and degree of pollution

- Verification attained during 2004-05 RIBS cycle

**Conesus Lake (0402-0004)** **Impaired Segment**

*This waterbody has an approximate area of 3180 acres and is located in Livingston County, east of Geneseo.*

## Use Impairments and Associated Pollutants:

- Recreation is known to be a major impairment; public bathing is known to be stressed. Water supply is suspected to be threatened; aesthetics are suspected to be stressed.
- Algal/weed growth, depleted oxygen/oxygen demand, nutrients (phosphorous) and problem species (Eurasian milfoil) are all known to be major pollution types.
- Chlorine (disinfection by-product) and silt/sediments are a suspected pollutant type; priority organics (PCBs), other pollutants (THM precursors), pesticides, pathogens and salts are possible types

## Pollutant Sources

- Agriculture and nutrient recycling are suspected to be major sources of pollution. Failing on-site septic systems and streambank erosion are also suspected sources.

## Commitments

- *State of Conesus Lake Watershed Characterization Report* extensively details water quality issues
- *Conesus Lake Watershed Management Plan* outlines recommendations for addressing the pollutants and sources that pose the greatest threat to the lake's use as a public water supply and recreational asset
- Model erosion control law adopted by nearly all municipalities bordering the lake
- Watershed manager/inspection program in place
- USDA conducting major study: *Experimental Manipulation of Entire Watersheds through Best Management Practices (BMPs): Nutrient Fluxes, Fate, Transport and Biotic Responses.* Project description online at http://www.envsci.brockport.edu/Conesus_Project/.
- Wastewater discharges to be addressed through Clean Water/Air Bond Act and EPF grants

## Recommendations

- Continued monitoring and incremental implementation of *Watershed Management Plan* recommendations

## 3030 – Upper Honeoye Creek *High Priority*

### Documented Water Quality Problems

**Honeoye Lake (0402-0032)** **Impaired Segment**

*This waterbody has an approximate area of 1734 acres and is located in Ontario County, west of the Village of Livonia.*

#### *Use Impairments and Associated Pollutants:*

- Recreation is known to be a major impairment; public bathing is known to be stressed. Water supply is suspected to be threatened; aesthetics are suspected to be stressed.
- Algal/weed growth, nutrients (phosphorous), and problems species (Eurasin milfoil) are known to be major pollutant types. Depleted oxygen/oxygen demand is a suspected type; Pathogens and silt/sediments are possible types

#### *Pollutant Sources*

- Agriculture and failing on site septic systems are suspected to be major sources; streambank erosion is also suspected to be a source. Urban runoff is also a possible source.

#### *Commitments*

- Honeoye Valley Association (HVA) is currently drafting a watershed management plan
- CSLAP and NYSCED Finger Lakes Water Quality Study continue to monitoring water quality, as does Finger Lakes Community College
- Extensive natural resource monitoring and restoration taking place
- Ontario County conducting roadbank stabilization
- Agricultural BMPs in place

#### *Recommendations*

- Remaining homes not connected to main sewer line should do so; explore the feasibility of cost sharing as an option for funding line extension
- Continued development and implementation of AEM among all farms found to pollute or have the potential to pollute in area tributaries
- Education and outreach regarding identification of invasive species (Eurasian Milfoil)

## 3040 – Middle Honeoye Creek *High Priority*

## Documented Water Quality Problems

**Honeoye Creek, Middle, and minor tributaries (0402-0066)** ***No Known Impacts***

*This segment stretches approximately 3 miles from Spring Brook to the Village of Honeoye Falls, including minor tributaries.*

The PWL reports no specific impacts or impairments to water uses of this portion of Honeoye Creek. Agriculture is cited as a potential source of pathogens and nutrient loading, although there is no indication that levels are abnormally high in this portion of the creek. Silt and sediment loads are also high, although soils are noted to be naturally susceptible to erosion.

*See Commitments and Recommendations for Lower Honeoye Creek above.*

**Honeoye Creek, Upper, and minor tributaries (0402-0061)** ***No Known Impacts***

*This segment stretches approximately 125 miles from the Village of Honeoye Falls to Honeoye Lake and includes minor tributaries.*

The PWL reports no specific impacts or impairments to water uses of this portion of Honeoye Creek. Agriculture is cited as a potential source of pathogens and nutrient loading, although there is no indication that levels are abnormally high in this portion of the creek. Silt and sediment loads are also high, although soils are noted to be naturally susceptible to erosion.

*See Commitments and Recommendations for Lower Honeoye Creek above.*

**Hemlock Lake Outlet and minor tributaries (0402-0013)** ***Impaired Segment***

*The segment stretches approximately 30 miles below Hemlock Lake to the convergence with Honeoye Creek, including minor tributaries.*

### *Use Impairments and Associated Pollutants:*

- Aquatic life and recreation are suspected to be major impairments. Habitat and hydrology are known to be stressed.
- Water level/flow is known to be a major pollutant type. Nutrients and pathogens are suspected to be major pollutant types; silt/sediments are also suspected pollutant types. Pesticides are a possible pollutant

### *Pollutant Sources*

- Hydromodification, failing onsite septic systems are known to be major pollutant sources.

- Agriculture and streambank erosion are suspected to be sources; roadbank erosion is a possible source.

## Commitments

- No specific riparian commitments; see Hemlock Lake for more information.

## Recommendations

- Failing onsite septic systems cited thought to be predominantly from the Hamlet of Hemlock; see Chap. 3 OWTS recommendations
- Conduct streambank inventory and assessment to determine the extent of streambank erosion in the area. If problems are found to be significant, the Sediment Transport Model may be used to conduct a more in-depth analysis in the area

**Hemlock Lake (0402-0011)** ***Threatened***

*This waterbody is approximately 2067 acres in area and is located in Livingston/Ontario County line.*

## Use Impairments and Associated Pollutants:

- Water supply is known to be threatened.
- Water level/flow is a known type of pollutant. Nutrients and silt/sedimentation are suspected to be major types of pollution.

## Pollutant Source

- Failing on-site septic systems (Springwater) are known to be a major source pollutant; hydromodification is also a known source. Agriculture is a suspected source

## Commitments

- Clean Water/Clean Air Bond Act and EPF funds will be used to allow the Town of Springwater to construct a sanitary sewer collection system; this will effectively eliminate direct discharge/inadequately treated effluent into Hemlock Lake, Springwater Creek and Lime Kiln Creek
- Lake supplies water to the City of Rochester; new filtration system has decreased risks.
- Livingston Co. SWCD addressing the need for roadbank stabilization
- Strict watershed rules in effect preventing swimming and other recreational activities that can cause water quality problems

## Recommendations

- Further study regarding stabilization to steep slopes may be necessary in order to mitigate sedimentation during storm events
- Continued monitoring and remediation where necessary

**Canadice Lake (0402-0002)** ***Impaired Segment***

*This waterbody is approximately 672 acres in size and is located in Ontario County just east of Hemlock Lake.*

## Use Impairments and Associated Pollutants:

- Fish consumption is known to be a major impairment.
- Priority organics (PCBs) are known to be a major type of pollutant. Silt/sediments are a possible pollutant type

## Pollutant Sources

- Landfill/land disposal is known to be a major source of pollution. Construction, streambank erosion and silviculture are possible pollutant sources.

## Commitments

- Water quality sampling has been occurring as part of the ongoing Water Quality Study of the Finger Lakes (DEC)
- The most probable source of PCB contamination was reported to be remediated through the NYS Superfund program in 1985; monitoring of fish shows a continued downward trend of PCB levels
- Sediment loadings from construction can be addressed through Phase II Stormwater regulations
- Ontario County SWCD addressing the need for roadbank stabilization

## Recommendations

- Continued monitoring and remediation where necessary

**Limekiln Creek and tributaries (0402-0007)** ***Minor Impacts***

*This segment is approximately 23 miles in length, including tributaries, and is located south of Hemlock Lake.*

## Use Impairments and Associated Pollutants:

- Aquatic life is known to be stressed; recreation is suspected to be stressed.
- Depleted oxygen/oxygen demand and nutrients are known to be major pollutant types; water level/flow is also a known pollutant type. Pathogens are a suspected to be a major pollutant.

## Pollutant Sources

- Failing on-site septic systems (Springwater) are known to be a major source pollutant; hydro- and habitat modification are also suspected sources.

## Commitments

- Clean Water/Clean Air Bond Act and EPF funds will be used to allow the Town of Springwater to construct a sanitary sewer collection system; this will effectively eliminate direct discharge/inadequately treated effluent into Hemlock Lake, Springwater Creek and Lime Kiln Creek

## Recommendations

- Channelization of the stream through the Hamlet of Springwater may impact fish propagation. Research possible remedial actions and funding sources.

## 3050 - Lower Honeoye Creek *Medium Priority*

### Documented Water Quality Problems[7]

**Honeoye Creek, Lower, and minor tributaries (0402-0019)*** ***No Known Impacts***

*Lower Honeoye Creek stretches approximately125 miles, including tributaries, from Spring Brook to the mouth of the Genesee River.*

#### *Use Impairments and Associated Pollutants:*

- Public bathing is suspected to be impaired. Aquatic life and aesthetics are suspected to be stressed.
- Siltation/sediments are a known pollutant. Nutrients, metals, and pathogens are suspected pollutants.

#### *Pollutant Sources*

- Private/Commercial/Institutional is a suspected point source. Agriculture, urban runoff, failing on-site septics, streambank erosion, and landfills/land disposal are suspected non-point sources.

#### *Commitments (for entire Honeoye Creek)*

- There are 17 current SPDES permits issued in the Monroe County portion of the creek.
- Nutrient/soils data is collected at the monitoring station in Honeoye Falls in conjunction with the USGS.
- Rochester area high school students in conjunction with Delta Laboratories has conducted water quality monitoring in 2001 and have found no apparent impacts present

#### *Recommendations (for entire Honeoye Creek)*

- Strict monitoring of SPDES permits to ensure full compliance among permitees.
- Education and outreach to area homeowners regarding the use of lawn pesticides and fertilizers and their impact on water resources; visit http://www.thewec.org for examples of possible programs for implementation.
- Encourage concerned citizens to organize and volunteer time and add segment to the Community Water Watch list (contact: Todd Stevenson, Monroe County DOH)
- Conduct streambank inventory and assessment to determine the extent of streambank erosion in the area. If problems are found to be significant, the Sediment Transport Model may be used to conduct a more in-depth analysis in the area

[7] For Monroe County waterbodies, the Monroe County Dept. of Health has provided PWL worksheet data for special use in this report. This data is in some cases more comprehensive than data included in the 2001 PWL; an asterisk '*' next to the segment name indicates DOH data supplements PWL. For all other counties, data is taken directly from the 2001 PWL.

## 3060 – Canaseraga Creek to Oatka Creek *High Priority*

Watershed-Wide Activities Addressing Water Quality Issues:

- **Rochester Embayment Remedial Action Plan**: *The RAP recognizes that downstream water quality problems cannot be adequately addressed in the absence of remedial action in upstream areas (identified as "rural areas" in the RAP). Many of those remedial measures mentioned are either proposed or documented to be taking place in the GRBAS.*
- **Genesee River Basin Sediment Transport Model**: *see page 76*
- **Stormwater Phase II Regulations:** *see page 76*
- **2004 SPDES CAFO Regulations:** *see page 76*
- **Education and Outreach:** *see page 76*

## Documented Water Quality Problems

**Genesee River, Middle, Main Stem (0402-0009)*** ***Minor Impacts***

*This portion of the Genesee River stretches approximately 41 miles from Mt. Morris north to Scottsville.*

### *Use Impairments and Associated Pollutants:*

- Recreation is known to be stressed; aesthetics are suspected to be stressed.
- Water level/flow and silt/sedimentation are known to be major pollutant types; nutrients are also a known pollutant. Pathogens are a suspected pollutant.

### *Pollutant Sources*

- Agriculture, hydromodification and streambank erosion are known to be major pollution sources; failing on-site septic systems have also been cited as a known pollution source.
- Urban runoff is a suspected source; landfill/land disposal (Rush Landfill) is a possible source.

### *Commitments:*

- Livingston County agricultural BMPs active, including vegetative buffer strips, AEM, and EQIP
- Town of York began developing a sewage treatment system in June of 2001

### *Recommendations:*

- Continued implementation of agricultural BMPs
- While high sediment loads are generally considered to be natural, a streambank inventory in conjunction with the Sediment Transport Model is warranted
- Continued monitoring and remediation

**Jaycox Creek and tributaries (0402-0064)** ***Impaired Segment***

*This segment is approximately 34 miles in length, including tributaries, and is located north of the City of Geneseo.*

## *Use Impairments and Associated Pollutants:*

- Aquatic life is known to be a major impairment. Recreation and aesthetics are known to be stressed.
- Nutirents and silt/sedimentation are known to by major types of pollutants. Pathogens are a suspected pollutant type.

## *Pollutant Sources*

- Agriculture is known to be a major pollution source. Streambank erosion is identified as a suspected source of pollution.

## *Commitments:*

- Canaseraga has been exploring the possibility of constructing a WWTP
- SPDES CAFO regulations

## *Recommendations:*

- AEM in the watershed is targeting CAFOs and other farms in the Basin
- Implementation of other agricultural BMPs such as vegetative buffer strips and livestock fencing in areas that are adversely affected by agricultural runoff
- Streambank inventory and stabilization can be conducted in conjunction with the Sediment Transport Model

## 3070 – Oatka Creek — *Medium Priority*

Watershed-Wide Activities Addressing Water Quality Issues:

- **Genesee/Wyoming Joint Flood Mitigation Plan:** *G/FLRPC, working with the Joint Flood Mitigation Planning Committee, developed a Flood Mitigation Plan for each municipality along the Creek in Genesee and Wyoming Counties. More information online at http://www.gflrpc.org/JointFlood/Index.htm.*
- **G/FLRPC Erosion and Sediment Control Project:** *G/FLRPC will be conducting the project Controlling Erosion and Sediment Control in the Black and Oatka Creek Watersheds through 2005.* Visit http://www.gflrpc.org/Planning/WQ/greatlakescom.htm *for a complete project description.*
- **RAP Rural Remedial Measures:** *A Rural Ranking Task Group was formed during the RAP process in order to review remedial measures and propose revisions or add new measures so that the chapter would reflect a rural perspective. This group was composed of representatives from Allegany, Genesee, Livingston, Ontario and Wyoming Counties..*
- **Genesee River Basin Sediment Transport Model***: see page 76*
- **Stormwater Phase II Regulations:** *see page 76*
- **2004 SPDES CAFO Regulations:** *see page 76*
- **Education and Outreach:** *see page 76*

## Documented Water Quality Problems

### Oatka Creek, Lower, and minor tributaries — *Minor Impacts*

** Note: To avoid repetition, commitments and recommendations for the entire waterbody segment have been condensed and summarized below.*

*This segment is approximately 38 miles in length, including tributaries, and stretches from the mouth east of Scottsville to Mud Creek.*

### *Use Impairments and Associated Pollutants:*

- Public bathing is suspected of being threatened. Recreation and aesthetics are suspected of being stressed
- Algal/weed growth, nutrients and silt/sediments are all known to be major types of pollution present
- Salts are a suspected pollution type; pathogens are a possible pollution type

### *Pollutant Sources*

- Agriculture and streambank erosion are known to be major sources of pollution. De-icing (stor./appl.), failing onsite septic systems and urban runoff are suspected sources; construction runoff is a possible pollutant source.

**Oatka Creek, Middle, and minor tributaries (0402-0031)** ***Minor Impacts***

*This segment is approximately 111 miles in length, including tributaries, and stretches from Mud Creek in Genesee County to Pearl Creek in Wyoming County.*

## Use Impairments and Associated Pollutants:

- Recreation and aesthetics are both suspected of being stressed.
- Algal/weed growth, nutrients and silt/sediments are all known to be major pollution types. Salts are a suspected type of pollutant; pathogens are a possible type.

## Pollutant Sources

- Agriculture, failing onsite septic systems and streambank erosion are each known to be major sources of pollution. Deicing (stor./appl.), and urban runoff are suspected sources of pollution; construction runoff is a possible source of pollution.

**Oatka Creek, Middle, and minor tributaries (0402-0041)** ***Minor Impacts***

*This segment is approximately 117 miles in length, including tributaries, and stretches from the Pearl Creek to the Village of Warsaw.*

## Use Impairments and Associated Pollutants:

- Recreation and aesthetics are both suspected of being stressed.
- Algal/weed growth, nutrients and silt/sediments are all known to be major pollution types. Salts are a suspected type of pollutant; pathogens are a possible type.

## Pollutant Sources

- Agriculture and streambank erosion are both known to be major sources of pollution. Deicing (stor./appl.), failing onsite septic systems and urban runoff are suspected sources of pollution.

**Oatka Creek, Upper, and minor tributaries (0402-0029)** ***Minor Impacts***

*This segment is approximately 56 miles in length and includes all tributaries above Warsaw.*

## Use Impairments and Associated Pollutants:

- Recreation and aesthetics are both suspected of being stressed.
- Algal/weed growth, nutrients and silt/sediments are all known to be major pollution types. Salts are a suspected type of pollutant; pathogens are a possible type.

## Pollutant Sources

- Agriculture and streambank erosion are both known to be major sources of pollution. Deicing (stor./appl.), failing onsite septic systems and urban runoff are suspected sources of pollution.

## Commitments (for entire Oatka Creek):

- SUNY Brockport report, *Segment Analysis of Oatka Creek, The Location of Sources of Pollution, Wyoming and Genesee Counties*: draft completed August 2004
- Oatka Creek Watershed Committee formed in 1998 and is active in the watershed; State of the Basin report completed in 2002
- G/FLRPC Erosion and Sediment Control study
- SPDES Phase II Construction regulations
- AEM/CAFO regulations
- Joint nutrient and sediment monitoring between Monroe County and USGS
- Previous water quality issues associated with the Warsaw WWTP have been addressed[8]
- All other watershed-wide commitments listed above

## Recommendations (for entire Oatka Creek):

- Explore the degree to which exposed salt piles are interfering with water quality and propose site-specific remedial measures. See the G/FLRPC regional salt storage inventories for more information: http://www.gflrpc.org/Planning/WQ/wqdata.htm.
- In areas found to be heavily impacted by failing onsite wastewater treatment systems, initiate action items outlined in Chapter 3, page 31

**LeRoy Reservoir (0402-0003)** ***Minor Impacts***

*This waterbody is approximately 51 acres in area and is located in Genesee County south of the Village of LeRoy.*

## Use Impairments and Associated Pollutants:

- Aesthetics are known to be stressed; water supply is considered to be stressed as well, however, the Reservoir is only used as a water supply in cases of emergency, which are rare.
- Algal/weed growth and nutrients are known to be major pollution types; pesticides are also a known pollution type. Silt/sediments are a suspected pollution type; pathogens are a possible type.

[8] Note: At the time of publishing, the draft stream segment analysis for the Oatka Creek (SUNY Brockport) indicated elevated levels of phosphorous downstream from the Warsaw WWTP. Further review of this report and analysis of the data is strongly suggested among all interested and relevant parties.

## Pollutant Sources

- Agriculture is known to be a major pollution source. Streambank erosion is a suspected source; roadbank erosion is a possible source.

## Commitments:

- AEM/CAFO regulations and other programs noted above and in Chapter 3; BMPs have been implemented and have since resulted in positive impacts on water quality

## Recommendations:

- Continued water quality monitoring

## 3080 – Black Creek *High Priority*

Watershed-Wide Activities Addressing Water Quality Issues:

- **Black Creek Watershed Coalition:** *Formed in April of 2002; conducts planning and outreach activities, information online at http://blackcreekwatershed.org/.*
- **G/FLRPC Erosion and Sediment Control Project:** *see page 86.*
- **RAP Rural Remedial Measures:** *see page 86*
- **Genesee River Basin Sediment Transport Model***: see page 76*
- **Stormwater Phase II Regulations:** *see page 76*
- **2004 SPDES CAFO Regulations:** *see page 76*
- **Education and Outreach:** *see page 76*

## Documented Water Quality Problems

**Black Creek, Lower, and minor tributaries (0402-0033)*** ***Impaired Segment***

*This segment is a meandering stream and includes several tributaries that together account for approximately 138 miles from the mouth to the Village of Churchville.*

### *Use Impairments and Associated Pollutants:*

- Aquatic life is known to be severely impaired. Recreation and aesthetics are suspected to be stressed.
- Nutrients are known to be a major pollutant; aesthetics (woody debris) and silt/sediment are also known pollutants. An unknown toxicity is also cited as a suspected pollutant.

### *Pollutant Sources*

- Agriculture and municipal sources (Churchville WWTP) are known to be major pollution sources; streambank erosion is also known to be a significant source.
- Industrial sources are suspects; urban runoff is a possible source.

### *Commitments:*

- The Churchville WWTP is scheduled to be brought off-line during the fall of 2004; this will likely alleviate municipal sources significantly
- The Black Creek State of the Basin report has been completed
- Intergovernmental agreement between Monroe County and the Town of Chili to address drainage issues is in place
- Intergovernmental agreement between Monroe, Genesee and Orleans Counties regarding watershed stewardship and cooperation is in place
- Great Lakes Commission (GLC) grant—re: erosion and sediment control—being implemented by G/FLRPC through 2005
- AEM/agriculture BMPs in place

## Recommendations:

- USACE Sediment Transport Model
- Continued development and implementation of AEM among all farms found to pollute or have the potential to pollute in area tributaries

**Black Creek, Middle, and minor tributaries (0402-0028)*** ***Minor Impacts***

*This segment is a meandering stream and includes several tributaries that together account for approximately 104 miles from the Village of Churchville to Byron.*

## Use Impairments and Associated Pollutants:

- Public bathing is known to be impaired. Aquatic life, recreation and aesthetics are known to be stressed.
- Algal/weed growth and nutrients are known to be major pollutants; silt/sediments and depleted oxygen/oxygen demand are known to be a significant pollutant types. Metals, salts and pesticides are possible pollutant types.

## Pollutant Sources

- Known point sources include industrial and municipal WWTP and possibly storm sewer discharges.
- Known NPS sources include agriculture, urban runoff, failing on-site septic systems, construction activities, hydrologic modification, streambank erosion, de-icing storage and application and possibly landfills/land disposal

## Commitments:

- AEM in the watershed is targeting CAFOs and other farms in the Basin
- Phase II Stormwater Regulations are beginning to be implemented throughout the watershed
- See G/FLRPC GLC grant above addressing sediment and erosion control

## Recommendations

- Phase II Stormwater Regulations need to be strictly enforced in rural areas; focus has been on MS4s. Greater training, education and resources to local SWCD offices, DEC may be necessary
- Monitoring municipal and industrial discharges to ensure full compliance with DEC SPDES permits
- Determine what impact the Mill Seat Landfill in Riga, NY has on the watershed, if any.
- See Ch. 3 recommendations regarding failing OWTS
- Continued development and implementation of AEM among all farms found to pollute or have the potential to pollute in area tributaries

**Black Creek, Upper, and minor tributaries (0402-0048)** ***Impaired Segment***

*This segment includes the approximately 56 miles of stream and tributaries from the Town of Byron upstream to near the Genesee/Wyoming County line.*

## Use Impairments and Associated Pollutants:

- Aquatic life is known to be significantly impaired. Recreation is known to be stressed.
- Nutrients are known to be a major pollutants; silt/sediments are also a known pollutant. Pathogens are considered to be a possible pollutant type.

## Pollutant Sources

- Agriculture and municipal sources (South Byron WWTP) are known to be major sources of pollution; streambank erosion is also a known source. Urban runoff is considered to be a possible source.

## Commitments:

- AEM in the watershed is targeting CAFOs
- See G/FLRPC GLC grant above addressing sediment and erosion

## Recommendations

- Monitoring municipal and industrial discharges to ensure full compliance with DEC SPDES permits at South Byron plant

**Mill Creek/Blue Pond Outlet and tributaries (0402-0049)** ***Needing Verification***

*This segment is approximately 30 miles in length and flows through the towns of Riga, Wheatland and Chili before entering the Black Creek.*

## Use Impairments and Associated Pollutants:

- Aquatic life and recreation are possibly stressed.
- Nutrients are suspected to be a major type of pollutant; water level/flow (woody debris), silt/sediment, pesticides and salts are also suspected pollutants.

## Pollutant Sources

- Agriculture is suspected to be a major pollutant source; hydromodification is also a suspected source.

## Commitments:

- AEM in the watershed is targeting CAFOs
- Intermunicipal agreement between Monroe County and the Town of Chili is in place to address water quality and drainage issues

- See G/FLRPC GLC grant above addressing sediment and erosion

## Recommendations

- Explore the possibility of establishing agreements with the NYS Thruways regarding salt usage near Interstate 90 overpass
- Phase II Construction Regulations should be strictly enforced on new developments
- Verification attained during 2004-05 RIBS cycle

**Blue Pond (0402-0079)*** ***Needing Verification***

*This waterbody has a surface area of 12.8 acres and is fed in part by Mill Creek; located in the Town of Wheatland.*

## Use Impairments and Associated Pollutants:

- Public bathing is suspected to be impaired. Aquatic life, natural resources habitat/hydrology and recreation are possibly threatened.
- Nutrients are a known chemical cause; salts, pesticides and oil and grease are considered possible chemical pollutants.
- Siltation is a known physical pollutant; depleted oxygen/oxygen demand and restricted passage (flow) are possible physical pollutants.

## Pollutant Sources

- Agriculture and failing on-site septics are suspected to be major sources of pollution.
- Construction activities, habitat modification, de-icing materials (stor./appl) petrol leaks/spills and resource extraction (gravel mining) are all possible sources of pollution.
- Industrial activity has been a suspected point source of pollution.

## Commitments

- See watershed-wide commitments above (agriculture, sediments, etc.)

## Recommendations

- See Ch. 3 recommendations regarding failing OWTS
- The restriction of flow (beaver activity cited) should not be allowed to intensify if nutrient loading/eutrophication is to be abated.
- Other tributaries to the pond (Cedar Spring fish hatchery upstream) should be reviewed for possible BMP development
- Verification attained during 2004-05 RIBS cycle

**Bigelow Creek and tributaries (0402-0016)** ***Impaired Segment***

*This includes the entire segment of Bigelow Creek which extends approximately 12 miles to the Black Creek, beginning near the Stafford/Batavia Town line. Horseshoe Lake and Godfrey Pond are two waterbodies located on this segment.*

## Use Impairments and Associated Pollutants:

- Aquatic life is known to be a major impairment; recreation is known to be stressed
- Nutrients are known to be a major type of pollutant present; pathogens, silt/sediments and an unknown toxicity are suspected types of pollution.

## Pollutant Sources

- Agriculture is known to be a major source of pollution; streambank erosion is a suspected pollution source.

## Commitments:

- AEM and SPDES CAFO regulations are being implemented
- See also watershed-wide commitments listed above (sediment transport model, etc.)

## Recommendations

- None specific other than those mentioned above

## 3090 – Red Creek *Medium Priority*

Watershed-Wide Activities Addressing Water Quality Issues:

- **Rochester Embayment Remedial Action Plan:** *see page 76*
- **Genesee River Basin Sediment Transport Model:** *see page 76*
- **Stormwater Phase II Regulations:** *see page 76*
- **Education and Outreach:** *see page 76*

## Documented Water Quality Problems

**Red Creek and tributaries (0402-0024)** ***Impaired Segment***

*This includes the entire stretch of the Red Creek—approx. 46 miles—beginning near the Rush/Henrietta Town Line and flowing north to the Erie Canal/Genesee River junction. The Town of Henrietta is a source contact*

### *Use Impairments and Associated Pollutants:*

- Bathing, recreation and habitat/hydrology are all known to be stressed; aquatic life may possibly be stressed
- Water level/flow and silt/sediment are known to be major pollutants. Nutrients and priority organics are suspected; metals and salts are possible pollutants.

### *Pollutant Sources*

- Hydromodification, streambank erosion and urban runoff are all known to be major sources of pollution. Landfill/land disposal and private/commercial/industrial sources are known sources as well.
- Agriculture is a suspected source; construction activities may be a possible source of pollution.

### *Commitments:*

- As cited in the PWL, a streambank erosion project is being conducted by the Monroe County SWCD.
- NYS DEC initiated remediation of Stuart-Oliver-Holtz inactive hazardous waste site in 1997; remedial design began in 1999.

### *Recommendations:*

- USACE Sediment Transport Model and continued monitoring of streambank stabilization efforts; conduct a detailed streambank inventory if problems persist

- Continued monitoring and remediation of inactive hazardous waste sites in the area, specifically the Roehlen Engraving and the Stuart-Oliver-Holtz sites.
- The flow of the Red Creek has been modified to empty into the Erie Canal just east of the Genesee River junction. When this is the case, the creek becomes part of the Oswego drainage basin. During cold season months, however, the creek's flow enters the Genesee River. Clarification by the NYS DEC and NYS Dept. of Transportation regarding flow schedules and source destinations may be helpful.

## 3100 – Oatka Creek to Mouth *High Priority*

Watershed-Wide Activities Addressing Water Quality Issues:

- **Rochester Embayment Remedial Action Plan**: *The lowest and final watershed in the Genesee River Basin has received intense scrutiny and support since the RAP process began in 1992. Use impairments identified in the RAP will continue to be assessed and 'de-listed' as conditions improve. Remedial measures that fall short of addressing use impairments will be evaluated and altered as necessary.*
- **Genesee River Basin Sediment Transport Model**: *see page 76*
- **Stormwater Phase II Regulations:** *see page 76*
- **2004 SPDES CAFO Regulations:** *see page 76*
- **Education and Outreach:** *see page 76*

## Documented Water Quality Problems

**Genesee River, Lower, Main Stem (0401-0001)*** ***Impaired Segment***

*This river segment is located in the City of Rochester and stretches approx. 6 miles in length from Lower Falls to Lake Ontario. It is listed as an Impaired Segment on the 2001 PWL.*

### *Use Impairments and Associated Pollutants:*

- Public bathing, fish consumption, aquatic life, natural resources habitat/hydrology, and aesthetics are all known to be impaired uses.
- Types of known chemical pollutants include nutrients, metals, pesticides and priority organics; suspected chemical pollutants include salts, grease and oil, and non-priority organics.
- Pathogens are known to be a present biological pollutant; certain species are suspected to suffer from physical alterations.
- Known physical pollutants include heavy siltation and sediments, fluctuating water levels and flow, and general aesthetic issues.

### *Pollutant Sources:*

- Known point sources include: industrial, municipal, combined sewer overflows (CSOs), storm sewer discharges, and private/commercial/industrial sources.
- Known NPS include: agriculture, urban runoff, hydromodification, streambank erosion, contaminated/toxic sediments, petrol leaks/spills, and landfills/land disposal. Use and storage of de-icing materials are a suspected source.

### *Commitments:*

- Refer to the *Stage II Rochester Embayment Remedial Action Plan (RAP*) and the *2002 Addendum* for specific commitments that are either ongoing or completed.

### Recommendations:

- None specific beyond RAP commitments and recommendations
- USACE Sediment Transport Model

**New York State Barge Canal (0401-0012)*** ***Need Verification***

*The Erie Canal flows west-to-east and joins the Genesee River at Genesee Valley Park near the Greater Rochester International Airport. The majority of its waters flow into the main channel of the Genesee and onward to Lake Ontario; much of the flow in the Canal east of the junction consists primarily of water from the Genesee River.*

### Use Impairments and Associated Pollutants:

- Natural resource/hydrology and aesthetics are known impairments; aquatic life is a suspected impairment.
- Water level/flow is the primary known pollutant due to major alterations in flow regime and seasonal fluctuations.
- Nutrients and salts are suspected chemical pollutants; boat traffic and siltation are suspected physical pollutants.

### Pollutant Sources:

- Hydromodification is a known source; canal flow regime is altered every spring and fall.
- Urban runoff, salts, industrial sources and other (unknown) sources are all suspected.

### Commitments:

- Refer to the *Stage II Rochester Embayment Remedial Action Plan (RAP*) and the *2002 Addendum* for specific commitments that are either ongoing or completed.

### Recommendations:

- Cooperation with the NYS Thruway Authority (operator of Erie Canal) regarding continued monitoring of flow regimes and scheduled releases; monitoring should occur during "first flush."
- Verification attained during 2004-05 RIBS cycle

**Little Black Creek, Lower, and tributaries (0402-0047)** ***Impaired Segment***

*This segment stretches approximately 34 miles west to Coldwater from its mouth on the Genesee River near the Greater Rochester International Airport.*

### Use Impairments and Associated Pollutants:

- Aquatic life is known to be impaired. Habitat is known to be stressed; recreation is suspected to be stressed.
- Water level/flow is a known pollutant. An unknown toxicity is a suspected pollutant; nutrients are a possible pollutant.

### Pollutant Sources:

- Urban runoff is suspected to be a major source of pollution; agriculture is also suspected.
- Storm sewers are a possible source of pollution

### Commitments:

- The Town of Ogden has obtained a permit to remove vegetation in order to improve flow.
- SPDES permits for stormwater discharge and non-contact cooling water discharge have been obtained by area industries.

### Recommendations:

- Institute BMPs that can lessen the impacts of urban runoff, stormwater and other discharges to the creek and tributaries.
- In collaboration with the Monroe County Dept. of Health (DOH) and the WEC, encourage concerned citizens to organize and volunteer time and add segment to the Community Water Watch list (contact: Todd Stevenson, Monroe County DOH)

**Genesee River, Middle, Main Stem (0401-0003)*** ***Impaired Segment***

*This river segment stretches from the Erie Barge Canal to Scottsville and is approximately 10.5 miles in length.*

### Use Impairments and Associated Pollutants:

- Aquatic life is known to be impaired. The area nearby the Rush Landfill (near Rt. 251 bridge) has known recreational impairments attributed to iron oxide leachate and associated discoloration; elsewhere recreation is suspected to be stressed, as are natural resources habitat/hydrology and aesthetics.
- Types of known chemical pollutants include nutrients and pesticides.
- Known physical pollutants include siltation/sediment and thermal changes. Fluctuations in water level/flow are a suspected physical cause.

### Pollutant Sources:

- Known NPS include agriculture, hydromodification and streambank erosion.
- The Rush Landfill is suspected to be a source downstream near the State Industrial School.

## Commitments:

- Refer to the *Stage II Rochester Embayment Remedial Action Plan (RAP*) and the *2002 Addendum* for specific commitments that are either ongoing or completed
- USACE Sediment Transport Model

## Recommendations:

- None specific beyond RAP commitments and recommendations

# Chapter 5: Natural Resource and Heritage Data

## Introduction

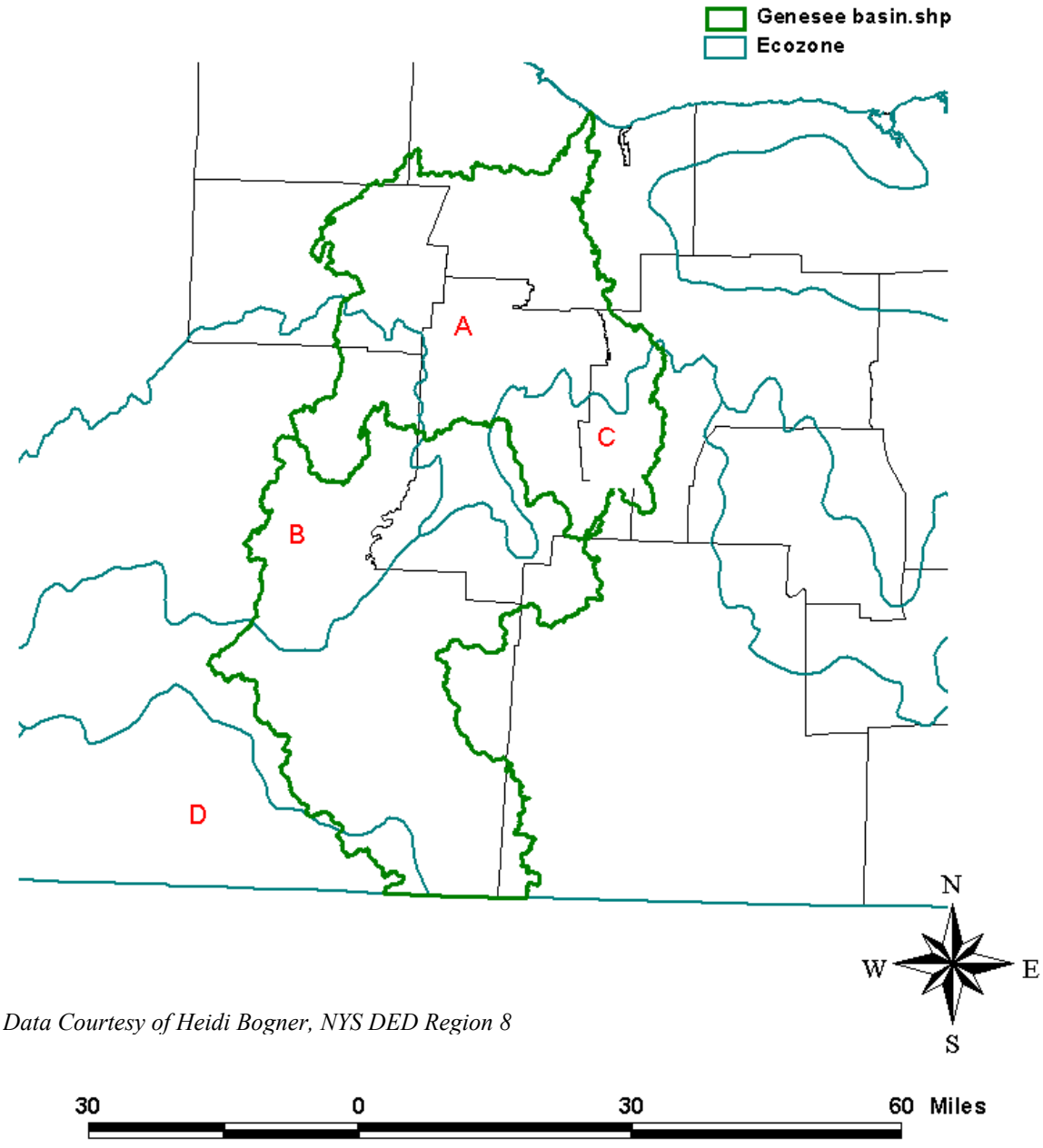
A great deal of natural resource and heritage data exists for all of New York State. Data pertaining to the Genesee River Basin has been provided for this report by several departments within the NYS DEC, as well as the Audubon Society of New York. This data, in conjunction with data contained in the previous chapters of the GRBAS, is an invaluable resource that can be used to create more comprehensive restoration and protection plans for Basin watersheds.

Stakeholders are strongly encouraged to review the following data sets. Where and when necessary, G/FLRPC and the cited contributors are prepared to offer more in-depth data for specific restorative and protective measures and/or planning endeavors.

*The following data sets have been included in Chapter 5 of the GRBAS:*

- **Basin Ecozones**
- **Important Bird Areas**
- **Furbearer Management Considerations**
- **River Otter and Mink Data**
- **NYS DEC Herpetofauna ("Herp") Database**
- **NYS Natural Heritage Program**
- **Fish Stocking Data**

***Map 6: Genesee River Basin Ecozones***




*Data Courtesy of Heidi Bogner, NYS DED Region 8*

## Ecozones in the Genesee Basin

**A** - Major - Zone B -Great Lakes Plain
- Minor - B01 - Erie-Ontario Plain

**B** - Major - Zone A - Appalachian Plateau
- Minor - A01 - Cattaraugus Highlands

**C** - Major - Zone A - Appalachian Platueau
- Minor - A03 - Central Appalachians

**D** - Major - Zone A - Appalachian Plateau
- Minor - A02 - Allegheny Hills

## Important Bird Areas of the Genesee River Basin[1]

### *Bergen Swamp*

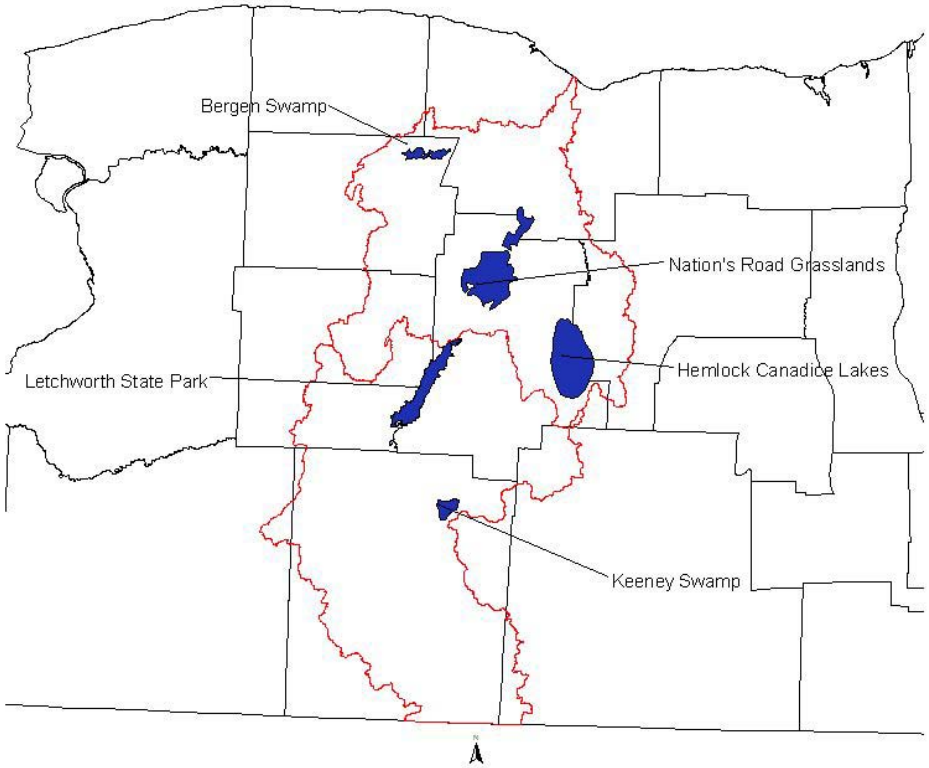
(scheduled to be announced publicly at the end of summer 2004)

#### General Description

Bergen Swamp is of historic interest as one of the oldest nature preserves to be privately protected by a land trust. The New York Board of Regents first chartered it in 1936. One of the first presidents was Richard Goodwin who went on to become a founder of The Nature Conservancy.

Bergen swamp lies on soft shale between the Niagara and Onondaga limestone escarpments to the north and south. The shale also contains gypsum and halite. The swamp is a remnant of the ancient glacial Lake Tonawanda. The swamp consists of northern white cedar forest, open marl, pine-hemlock forest, and beech-maple deciduous forest. The site supports a high diversity of plants with a total of 2392 species and is especially known for its orchids. The swamp has been

Important Bird Areas (IBAs) in the Genesee River Drainage Basin




Map created by J.Liner Audubon New York June 2004

[1] This section of the report, including illustrations, has been contributed by Jillian Liner of Audubon New York. Created June, 2004.

recognized by the US Department of the Interior as a National Natural Landmark. The habitat is perhaps unique in New York State and rare nationally. It is rich in breeding birds and has an assemblage of species that do not breed elsewhere in the Lake Ontario Plain. They include "boreal" species such as Winter Wren, Hermit Thrush, Canada, Nashville, Black-and-white, and Blackburnian Warbler, Blue-headed Vireo, Yellow-bellied Sapsucker, Purple Finch, and Alder Flycatcher. On the other hand, it also has Acadian Flycatcher, which is considered to be a southern species. Five species of breeding owls are present: Great Horned, Screech, Barred, Saw-whet, and Long-eared.

### Conservation Issues

Bergen Swamp is a fairly famous place and has potential as an ecotourism spot. However, the Bergen Swamp Preservation Society (BSPS) is rightly wary about overuse. A permit is required for visits by groups of six people or more. BSPS allows research to be done at the swamp but does require a permit. The trails are generally in poor condition. At least one boardwalk is in hazardous condition and badly needs replacement. The BSPS allows deer hunting in an attempt to control deer overpopulation. The effectiveness of these measures is not known.

## *Nation's Roads Grasslands*

### General Description

This site is an exceptional grassland and oak-savanna habitat with a diverse community of breeding and wintering birds. The site lies in the Genesee River Valley among old fields, oak-scattered savanna and true riparian habitat. Along the western edge of the site there is some active agricultural land. The site is home to the second oldest fox hunt in the U.S.

### Conservation Issues

The primary threat to the area is the loss of habitat through the sale and development of the land for housing. As the towns of Avon and Geneseo continue to grow the land increases in value, making it increasingly tempting to the owners to subdivide and sell. The Genesee Valley Conservancy maintains portions of the land. An in-depth inventory for the State Species Watchlist is needed for the site along with a program to educate landowners and the public about the importance of the area to grassland species and State Watchlist species.

## *Hemlock and Canadice Lakes*

### General Description

Part of the glacially created Finger Lakes, Hemlock and Candice are long, thin lakes that run north south. Both have steep western shores. Hemlock is nearly twice the length of Candice. Both are ringed with forested buffers beyond which lie open/cleared lands. These lakes provide 80% of the drinking water for the City of Rochester.

### Conservation Issues

Currently the area is well protected as a watershed for the City of Rochester water supply. Access for recreational use is under free permit only, with restrictions to type of use, both on land and water. A potential concern is that with the recent addition of a filtration plant, the need for these restrictions will be perceived as lessened and the area could be opened to heavier recreational use or sold off for development. The primary threat outside of the city-owned shoreline portions is the potential for increased residential development. The population of the nearby town of Canadice increased from 300-1800 between 1950-1990. Trend of land holding time is that most people own a parcel for less than five years and this does not allow for the formulation and implementation of long-range plans. The Western Lakes Chapter of the Finger Lakes Land Trust has a joint program with The Nature Conservancy toward a model cooperative regional-level conservation effort in the area. This includes an active education program with a series of public speakers and field trips related to all aspects of the history and natural history of the area. The program also has sponsored an initiative to acquire land or conservation easements within the area and the site is included as a priority site in the New York State Open Space Plan. The New York State Department of Environmental Conservation has long carried out a cooperative program with the City of Rochester for monitoring the last "wild" Bald Eagle nest in the state. Over part of this time, young were imported to enhance the nest`s production when the old pair was having problems hatching a full component of its own. Continued inventory and monitoring of State Watchlist species is needed.

## *Letchworth State Park*

### General Description

Called the "Grand Canyon of the East", the area is bisected by the Genesee River, which cuts three dramatic gorges within the park, revealing the geologic history of the underlying rock. The park itself is approximately 15 miles long and 2 miles wide with three waterfalls of 70-100 feet each, a 550-foot deep gorge, and a 6-mile long canyon. Mixed forest tops the gorge walls for the length of the park. One-fifth of the land is used for the Mt. Morris Flood Control Dam System.

### Conservation Issues

Most of area is managed in ways that are beneficial to birds. There is potential for negative impacts to bird populations through development or changes in the Mt. Morris Federal Flood Control Dam. Non-point source agricultural runoff causes pollution of aquatic systems and should be monitored. Succession of grasslands to shrublands could be managed to maintain habitat for Grasshopper Sparrows, Henslow`s Sparrows, and other grassland species. Because the park is a popular recreation site (1 million annual visitors) there is the potential for negative impacts to bird populations from recreation development and overuse and this should be monitored. Inventory and monitoring of breeding birds should continue.

### *Keeney Swamp*

General Description

A state forestland with many varied habitats, featuring extensive wetland, and two territorial zonal divisions: Alleganian (above 1,800') and Sub-Canadian (w/native stands of Balsam Fir). A major strength of this site is its diversity of birds and other wildlife.

Conservation Issues

A primary threat to the area has been the drainage of wetlands by removal of beaver dams. Large bodies of water now go semi-dry in summer and late spring, affecting waterfowl and shorebirds, and encouraging succession in what has been wetlands for many years. Better monitoring of both wetland and forest species is needed. Management plans for the state forest should explicitly consider the needs of the wetland and forest bird species that rely on the site.

## Genesee River Basin Furbearer Management Considerations[2]

### *Beaver*

Beaver are common to abundant in all parts of the watershed, with densities higher at the upper (southern) part of the Genesee River system than the lower (northern) part. This is reflected in data on harvested beaver by township. (Harvest is strongly correlated to population density). Beaver are managed by the NYS DEC using wildlife management units (WMUs) as the management entity. Population objectives are established by DEC regional offices, taking into account: land-use, potential habitat, complaints of flooding or other beaver damage, and trapping trends. Management is implemented via fall and winter trapping seasons. Trappers are required to report harvested beaver and those data are used in DEC's beaver population models. As recent as the 1940s, beaver were rare in the Genesee River Valley. Now, they are managed in an effort to balance the benefits of having beaver on the landscape (e.g., improved wetland habitats) with the economic and social hardships associated with beaver damage. A robust market for beaver pelts is an integral part of achieving that balance, as is access to beaver habitat by trappers.

### *North American River Otter*

Between 1995 and 2000, nearly 300 river otter were released into suitable habitats in central and western New York. This included 62 released on the Genesee River (Monroe, Wyoming, and Allegany counties). There are good indications that these otter are reproducing and will form the

[2] The following text, including illustrations, has been contributed by Tracey Tomajer, NYSDEC Watershed Conservation Coordinator, Landscape Conservation Section, Div. of Fish, Wildlife and Marine Resources.

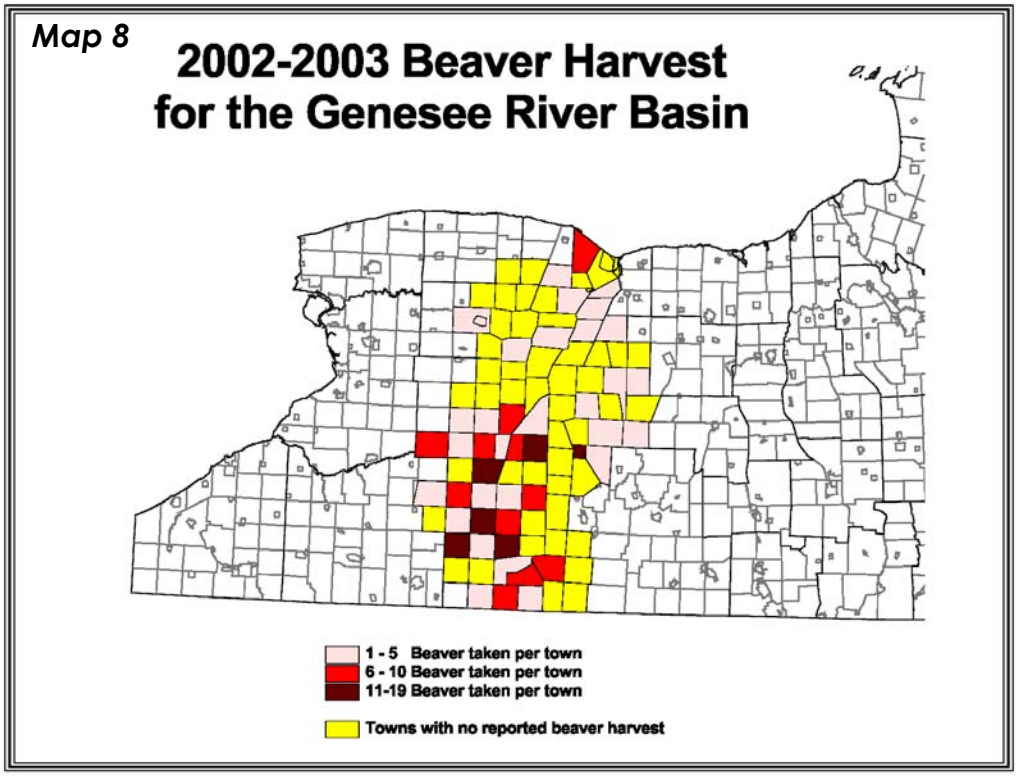
base for a newly established river otter population. For obvious reasons, the river otter trapping season is closed in all areas of central and western New York, and the DEC is carefully monitoring their populations. River otter live in similar habitats as beaver, and otter may be caught in certain types of beaver traps. DEC has proposed a new regulation to modify these traps to be more selective, excluding most river otter but still catching beaver. Watershed planning and the success of river otter in the Genesee River Valley are integral, because otter require clean, uncontaminated water, and a diverse and abundant prey base (primarily fish, amphibians, and aquatic invertebrates). In fact, the reason the otter project has been successful to date is a direct result of the improved water and habitat quality in watersheds like the Genesee.

## Coyote

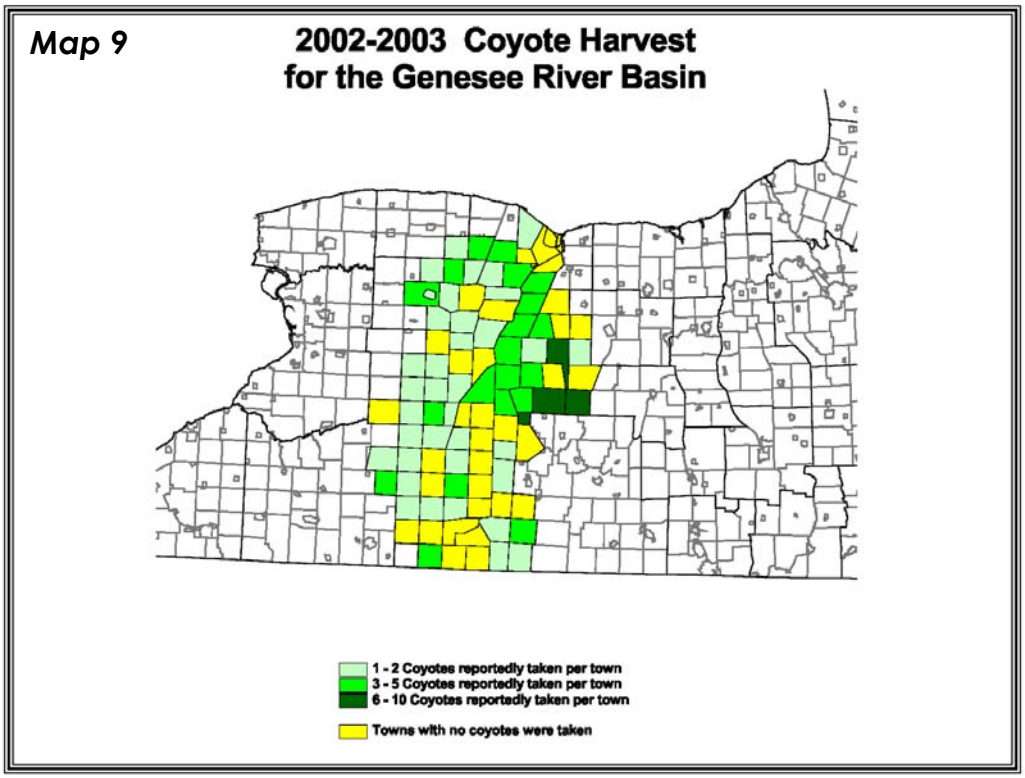
As shown in the map of coyote harvest distribution, the coyote is well established in all areas of the Genesee River Basin. Unlike river otter, coyotes expanded into central and western New York on their own. This is a fairly recent phenomenon, occurring within the last 20 years. Their expansion is due to improved habitat conditions for coyotes (e.g., conversion of agriculture to shrubby and then woody habitat). While coyotes are hunted and trapped during a regulated season, harvest is not thought to be a limiting factor. Consequently, coyote numbers are quite high in some areas, including areas near and around urban and suburban centers (e.g., near Rochester and the developed areas along the Route 20 corridor). The most significant management concern pertains to risks to human health and safety. In areas where coyotes are not hunted or trapped, they become very tolerant of people and occupy habitats near residences and farms. They are known to be a threat to people and pets, and have attacked or killed both. (The former has been documented in New York for both people and pets. The latter has occurred with pets in New York but not with people. Coyotes have killed people in California.) For watershed planning, it is important to recognize that regulated harvest (by licensed hunters and trappers) is an important component of land use, in relation to reducing potential problems associated with coyotes.

***Furbearer Data for the Genesee River Basin, 2002-2003***

*Map 8*




*Map 9*



## NYS Otter and Mink Data

***Map 10:***
Otter sightings 1982 to 2003

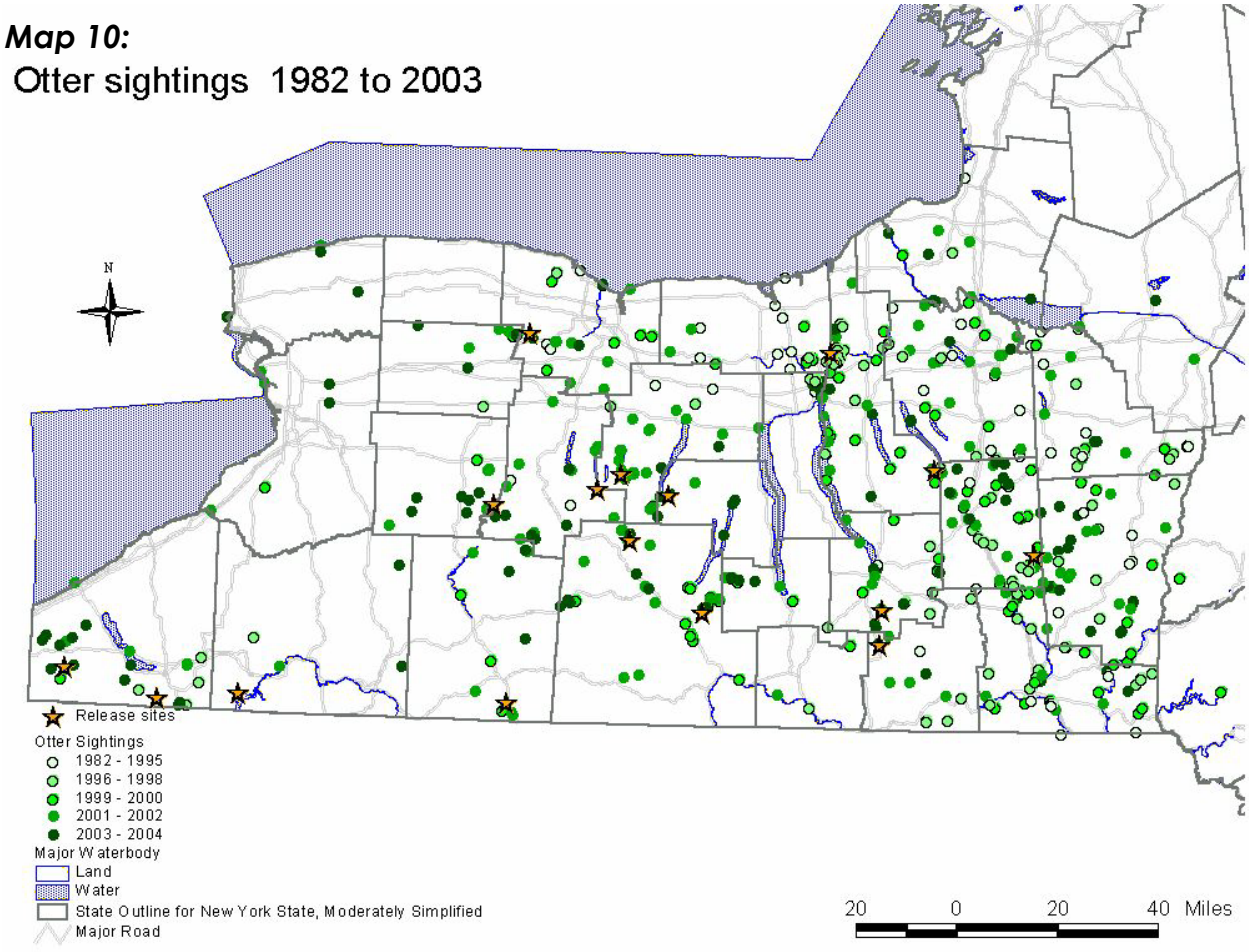


***Figure 5-1:*** *2004 LATE WINTER OTTER/MINK SURVEY SUMMARY, NYSDEC REGION 8*[3]

The 2004 Late Winter Otter Survey has been completed in Region 8. The following table shows the results of the survey. Due to varying weather conditions, some of the routes were completed with less than a 48 hour period of stable conditions, as recommended in the protocol.

| DRAINAGE | SURVEY POINTS | OTTER SIGN | MINK SIGN |
|---|---|---|---|
| Cohocton | 24 | 0 | 18 |
| Canisteo | 15 | 0 | 9 |
| Lower Genesee | 22 | 0 | 2 |
| Upper Genesee | 8 | 2 | 2 |
| West Lake Ontario | 16* | 0 | 5 |
| Mid Lake Ontario | 12 | 0 | 2 |
| Finger Lakes North | 15 | 0 | 1 |
| Finger Lakes SE | 15 | 2 | 5 |
| Finger Lakes SW | 15 | 3 | 8 |
| **TOTAL SURVEYED** | **141** | **7** | **52** |
| | | **5.0%** | **36.9 %** |

*** One crossing not done due to construction at site. Not counted in "Total Surveyed"**

[3] Data provided by Heidi Bogner, NYSDEC, Region 8.

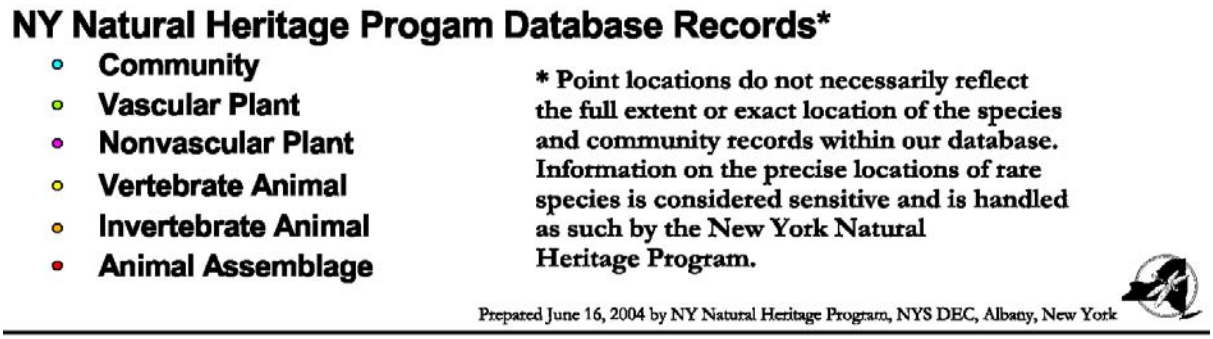
## Natural Heritage Program Database Records

*The New York Natural Heritage Program enables and enhances conservation of New York's rare animals, rare plants, and significant ecosystems. [The program combines] thorough field inventories, scientific analyses, expert interpretation, and the most comprehensive database on New York's distinctive biodiversity to deliver the highest quality information for natural resources planning, protection, and management.*

*NY Natural Heritage maintains New York's most comprehensive database on the status and location of rare species and natural communities. [The program] presently monitors 166 natural community types, 736 rare plant species, and 440 rare animal species across New York, keeping track of more than 10,000 locations where these species and communities are found. The database also includes detailed information on the relative rareness of each species and community, the quality of their occurrences, and descriptions of sites. The information is used by public agencies, the environmental conservation community, developers, and others to aid in land-use decisions. [These data sets] are essential for prioritizing those species and communities in need of protection and for guiding land-use and land-management decisions where these species and communities exist.*[4]

The Natural Heritage Program information for the Genesee River Basin on the following pages identifies only the 11-digit HUCs where a rare species or significant natural community occurs. These data sets are correlated to tables detailing species-specific information for the entire Basin.[5] Maps 11 and 12 depict the *overall* locations of rare species and significant natural communities in the Upper and Lower Genesee River Basins; they do **not** provide specific locations for those species/communities for security reasons. The Program Management Bureau in the Division of Environmental Permits at NYSDEC maintains the database for critical environmental areas and specific species data.

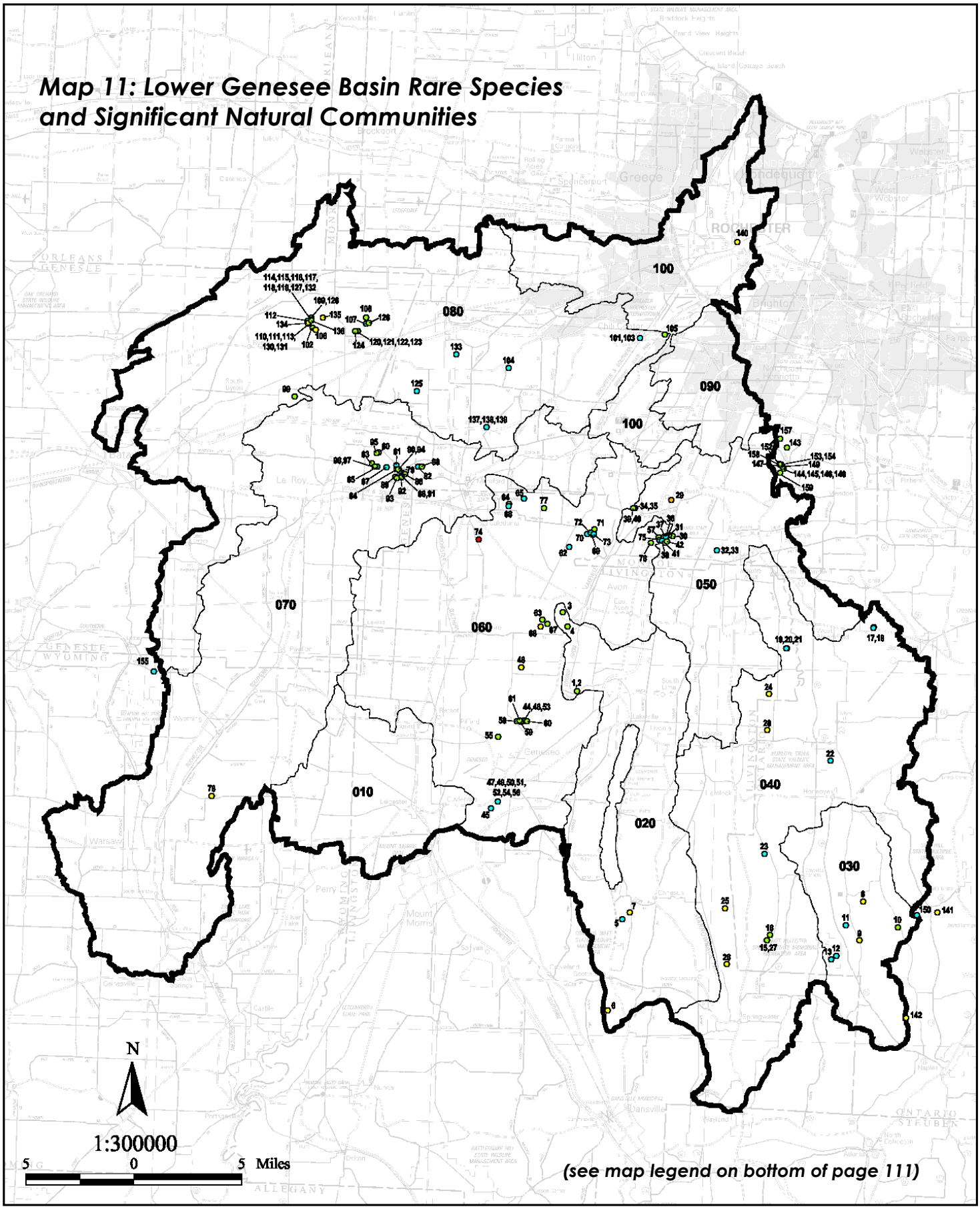
*Legend for maps on the following pages:*



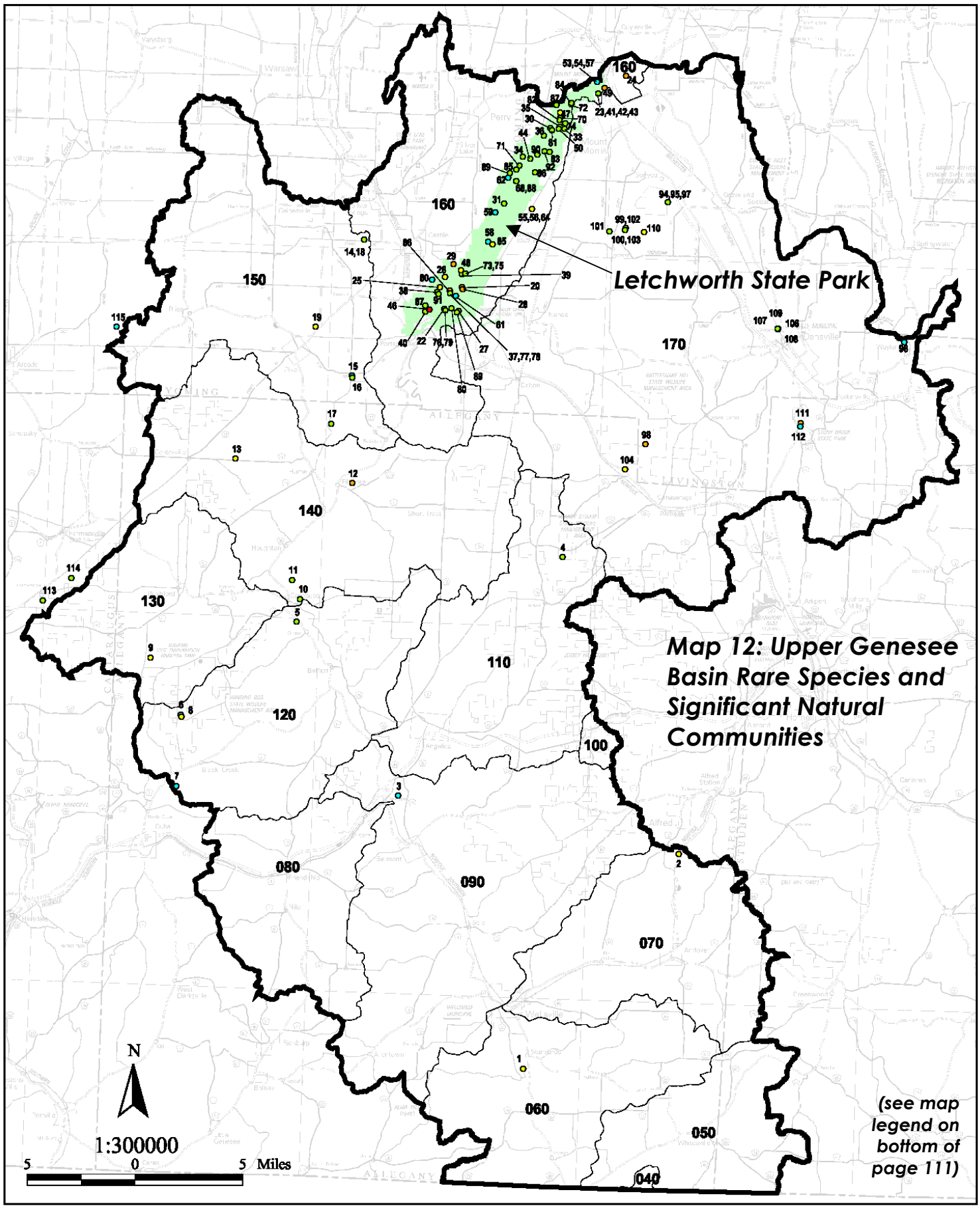

[4] NYSDEC, NY Natural Heritage Program, General Information. Retrieved 13 August 2004 from: http://www.dec.state.ny.us/website/dfwmr/heritage/#mission.

[5] Due to its sensitive nature, this data is not released to the general public. Parties interested in obtaining NYS Natural Heritage data for specific preservation and restoration projects should contact The New York Natural Heritage Program c/o Information Services • 625 Broadway, 5th Floor • Albany, NY 12233-4757.

## *Map 11: Lower Genesee Basin Rare Species and Significant Natural Communities*




*(see map legend on bottom of page 111)*




***Map 12: Upper Genesee Basin Rare Species and Significant Natural Communities***

*(see map legend on bottom of page 111)*

## NYS DEC Herpetofauna ("Herp") Database

*The word "herp" is short for herpetofauna, which is the general term for amphibians and reptiles as a group. Frogs, toads and salamanders are amphibians, while turtles, snakes and lizards are reptiles. The Amphibian & Reptile Atlas Project (Herp Atlas) was a ten year survey that was designed to document the geographic distribution of New York State's herpetofauna. The survey began in 1990 and continued through the end of 1999. During this ten year period [the NYS DEC has] compiled data that will result in documenting the current distribution of New York's herpetofauna. Records prior to 1989 are also being compiled and will comprise an historic database. The unit of measurement for collecting atlas data is the USGS 7.5 minute topographic quadrangle. [DEC's] goal was to record at least 20 species in each of these quads. Some quads, such as those in the lower Hudson Valley, have many more, while others, such as those in the Adirondacks [or] where there are high human populations, have fewer.*

***What was the Purpose?*** *In order to monitor changes in populations and to make sound management decisions, [communities and agencies] must have a reliable information base from which to work. The information [gathered] today on the current status of our populations will help us tomorrow to document what changes may be taking place. In the past decade or two there has been much discussion concerning the status of populations of amphibians. While there seems to be a general decline in this group of animals, long term monitoring projects are the only way to address this problem with scientific accuracy.*[6]

**The following maps illustrate the herpetofauna data available for the Genesee River Basin. Numbers illustrated in each quadrant correspond to the charts found on pages 117-122.**

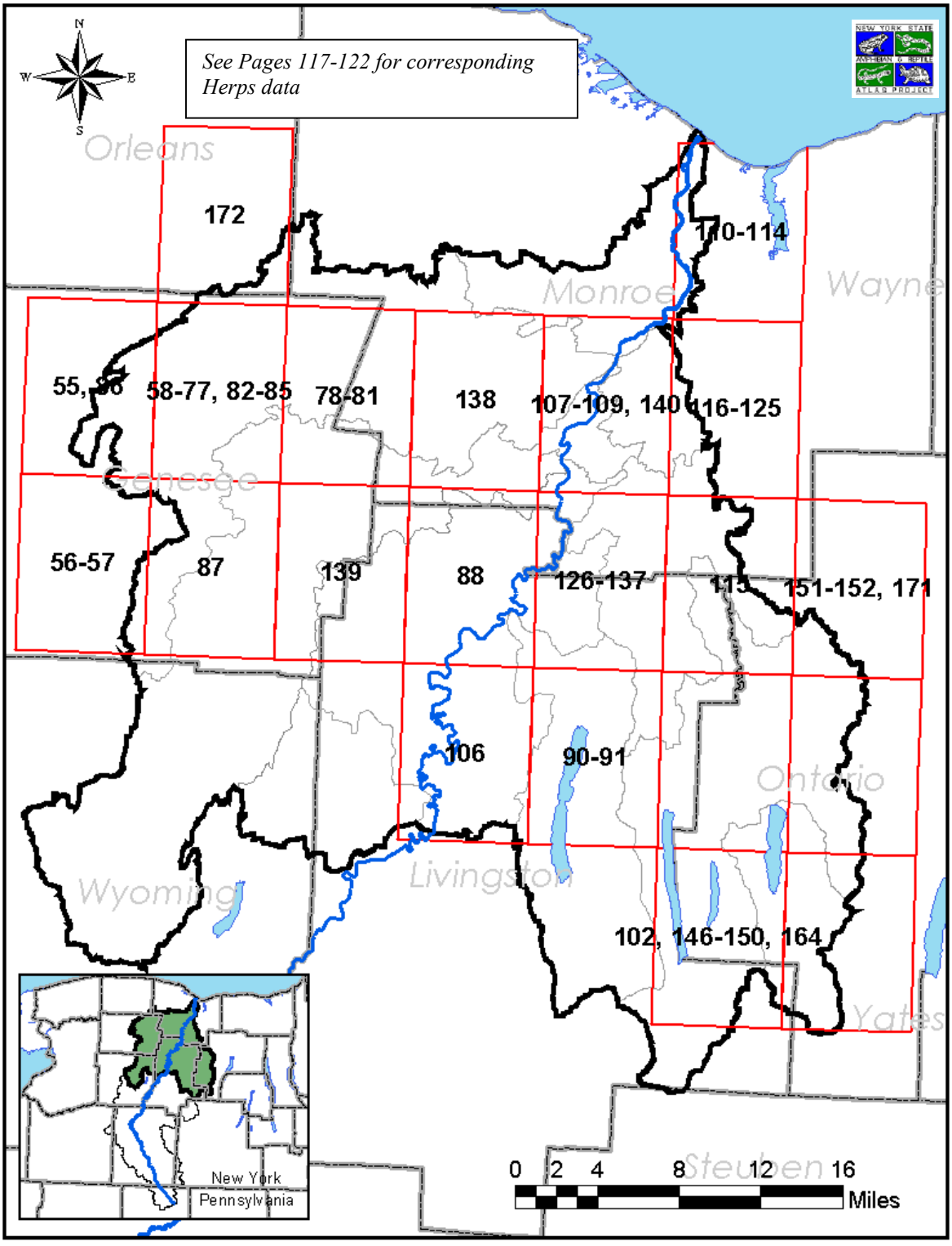
## For more information on the NYS Herp Atlas, contact:

**NYS Herp Atlas Project**
**NYSDEC**
**625 Broadway**
**Albany, NY 12233-4754**

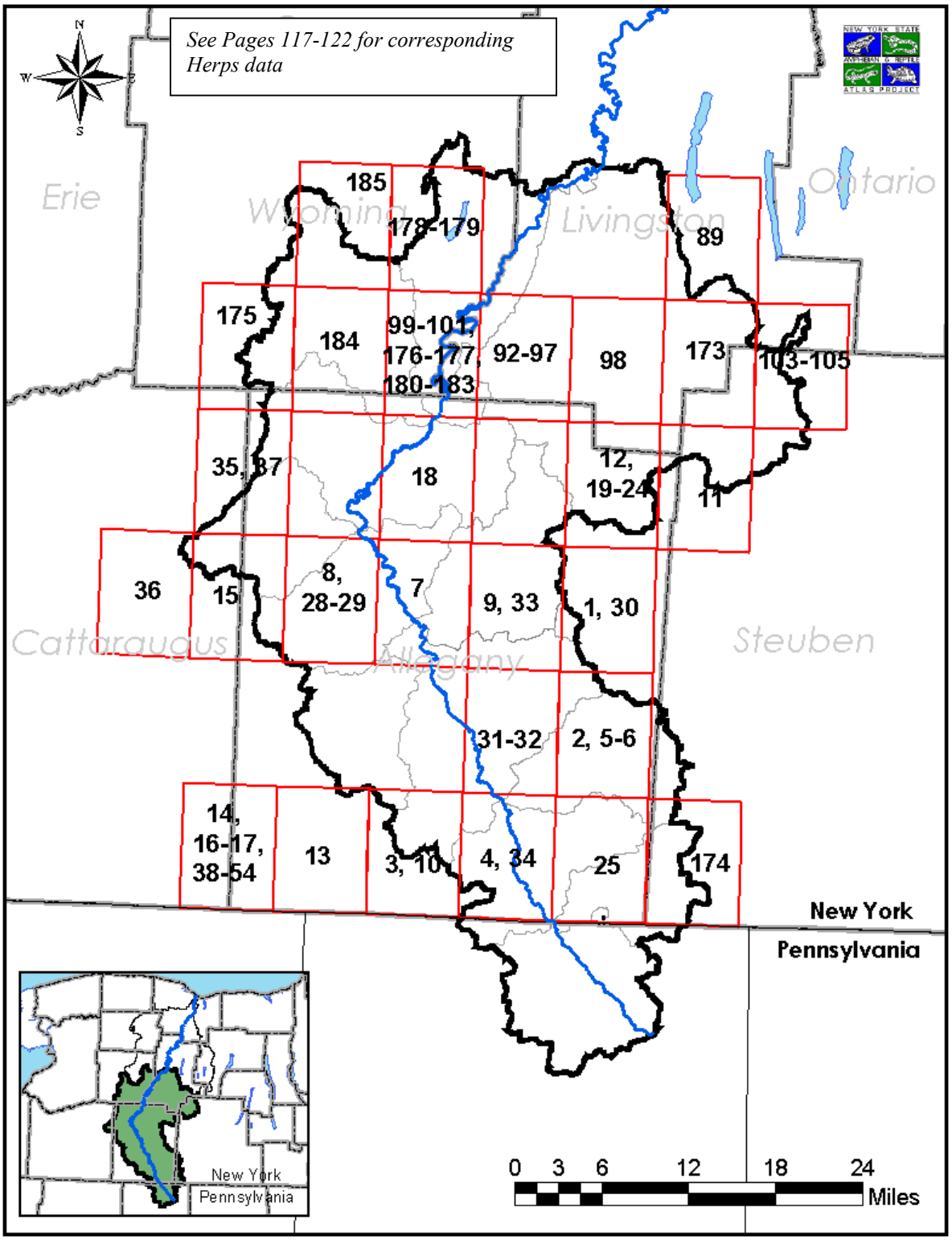
In addition to the species listed on the following maps, detailed species dossiers for 16 species may be found at the following web address: http://gflrpc.org/GeneseeRiver.htm. Dossiers include species range, status, distribution, population trends, breeding patterns, possible threats, as well as other relevant species information.

[6] Text adapted from NYSDEC *NYS Amphibian and Reptile Atlas Project*, last viewed online 9/30/04 at http://www.dec.state.ny.us/website/dfwmr/wildlife/herp/atproj.html#herpdef.

***Map 13: Listed Herps of the Lower Genesee River Basin Based on Atlas Project 1990-1999 (NYS DEC)***



***Map 14: Listed Herps of the Upper Genesee River Basin Based on Atlas Project 1990-1999 (NYS DEC)***



## *Figure 5-2: Listed Herps of the Genesee River Drainage Basin Based on Atlas Project 1990-1999 (NYS DEC)*

**E** = **Endangered Species**: any native species in imminent danger of extirpation or extinction in New York.
**T** = **Threatened Species**: any native species likely to become an endangered species within the foreseeable future in New York.
**SC** = **Special Concern Species**: any native species for which a welfare concern or risk of endangerment has been documented.
**DEC** = Species of greatest conservation need in New York.
**SPEC** = Species of Northeast Concern (13-state list)
**Intr** = Introduced species that has become established.

| Map ID #'s | County | Town | Scientific Name | Common Name | Status |
|---|---|---|---|---|---|
| **1** | ALLEGANY | ALFRED | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **2** | ALLEGANY | ALFRED | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **3** | ALLEGANY | ALMA | *Necturus maculosus* | Common Mudpuppy | DEC |
| **4** | ALLEGANY | ALMA | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **5** | ALLEGANY | ANDOVER | *Clemmys insculpta* | Wood Turtle | SC |
| **6** | ALLEGANY | ANDOVER | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **7** | ALLEGANY | BELFAST | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **8** | ALLEGANY | BELFAST | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **9** | ALLEGANY | BIRDSALL | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **10** | ALLEGANY | BOLIVAR | *Ambystoma jeffersonianum* | Jefferson Salamander | SC |
| **11** | ALLEGANY | BURNS | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **12** | ALLEGANY | BURNS | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **13** | ALLEGANY | CLARKSVILLE | *Thamnophis brachystoma* | Shorthead Garter Snake | DEC |
| **14** | ALLEGANY | CLARKSVILLE | *Clemmys insculpta* | Wood Turtle | SC |
| **15** | ALLEGANY | CUBA | *Bufo fowleri* | Fowler's Toad | DEC |
| **16** | ALLEGANY | GENESEE | *Pseudotriton r. ruber* | Northern Red Salamander | DEC |
| **17** | ALLEGANY | GENESEE | *Cryptobranchus a. alleganiensis* | Eastern Hellbender | SC |
| **18** | ALLEGANY | GRANGER | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **19** | ALLEGANY | GROVE | *Crotalus horridus* | Timber Rattlesnake | T |
| **20** | ALLEGANY | GROVE | *Crotalus horridus* | Timber Rattlesnake | T |
| **21** | ALLEGANY | GROVE | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **22** | ALLEGANY | GROVE | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **23** | ALLEGANY | GROVE | *Crotalus horridus* | Timber Rattlesnake | T |
| **24** | ALLEGANY | GROVE | *Crotalus horridus* | Timber Rattlesnake | T |
| **25** | ALLEGANY | INDEPENDENCE | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **26** | ALLEGANY | NEW HUDSON | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **27** | ALLEGANY | RUSHFORD | *Ambystoma jeffersonianum* | Jefferson Salamander | SC |
| **28** | ALLEGANY | RUSHFORD | *Ambystoma jeffersonianum* | Jefferson Salamander | SC |
| **29** | ALLEGANY | RUSHFORD | *Ambystoma jeffersonianum* | Jefferson Salamander | SC |
| **30** | ALLEGANY | WARD | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **31** | ALLEGANY | WARD | *Pseudotriton r. ruber* | Northern Red Salamander | DEC |
| **32** | ALLEGANY | WARD | *Clemmys insculpta* | Wood Turtle | SC |
| **33** | ALLEGANY | WEST ALMOND | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **34** | ALLEGANY | WILLING | *Liochlorophis vernalis* | Smooth Green Snake | DEC |

| Map ID #'s | County | Town | Scientific Name | Common Name | Status |
|---|---|---|---|---|---|
| **35** | CATT. | FARMERSVILLE | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **36** | CATT. | FRANKLINVILLE | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **37** | CATT. | FREEDOM | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **38** | CATT. | PORTVILLE | *Cryptobranchus a. alleganiensis* | Eastern Hellbender | SC |
| **39** | CATT. | PORTVILLE | *Cryptobranchus a. alleganiensis* | Eastern Hellbender | SC |
| **40** | CATT. | PORTVILLE | *Cryptobranchus a. alleganiensis* | Eastern Hellbender | SC |
| **41** | CATT. | PORTVILLE | *Cryptobranchus a. alleganiensis* | Eastern Hellbender | SC |
| **42** | CATT. | PORTVILLE | *Necturus maculosus* | Common Mudpuppy | DEC |
| **43** | CATT. | PORTVILLE | *Cryptobranchus a. alleganiensis* | Eastern Hellbender | SC |
| **44** | CATT. | PORTVILLE | *Cryptobranchus a. alleganiensis* | Eastern Hellbender | SC |
| **45** | CATT. | PORTVILLE | *Eurycea l. longicauda* | Longtail Salamander | SC |
| **46** | CATT. | PORTVILLE | *Cryptobranchus a. alleganiensis* | Eastern Hellbender | SC |
| **47** | CATT. | PORTVILLE | *Cryptobranchus a. alleganiensis* | Eastern Hellbender | SC |
| **48** | CATT. | PORTVILLE | *Necturus maculosus* | Common Mudpuppy | DEC |
| **49** | CATT. | PORTVILLE | *Cryptobranchus a. alleganiensis* | Eastern Hellbender | SC |
| **50** | CATT. | PORTVILLE | *Necturus maculosus* | Common Mudpuppy | DEC |
| **51** | CATT. | PORTVILLE | *Cryptobranchus a. alleganiensis* | Eastern Hellbender | SC |
| **52** | CATT. | PORTVILLE | *Cryptobranchus a. alleganiensis* | Eastern Hellbender | SC |
| **53** | CATT. | PORTVILLE | *Cryptobranchus a. alleganiensis* | Eastern Hellbender | SC |
| **54** | CATT. | PORTVILLE | *Necturus maculosus* | Common Mudpuppy | DEC |
| **55** | GENESEE | BATAVIA | *Ambystoma jeffersonianum* | Jefferson Salamander | SC |
| **56** | GENESEE | BATAVIA | *Clemmys insculpta* | Wood Turtle | SC |
| **57** | GENESEE | BATAVIA | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **58** | GENESEE | BERGEN | *Elaphe o. obsoleta* | Black Rat Snake | DEC |
| **59** | GENESEE | BERGEN | *Sistrurus c. catenatus* | Eastern Massasauga | E |
| **60** | GENESEE | BERGEN | *Clemmys guttata* | Spotted Turtle | SC |
| **61** | GENESEE | BERGEN | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **62** | GENESEE | BERGEN | *Sistrurus c. catenatus* | Eastern Massasauga | E |
| **63** | GENESEE | BERGEN | *Regina septemvittata* | Queen Snake | E |
| **64** | GENESEE | BERGEN | *Eumeces a. anthracinus* | Northern Coal Skink | SPEC |
| **65** | GENESEE | BERGEN | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **66** | GENESEE | BERGEN | *Sistrurus c. catenatus* | Eastern Massasauga | E |
| **67** | GENESEE | BERGEN | *Eumeces a. anthracinus* | Northern Coal Skink | SPEC |
| **68** | GENESEE | BERGEN | *Liochlorophis vernalis* | Smooth Green Snake | DEC |

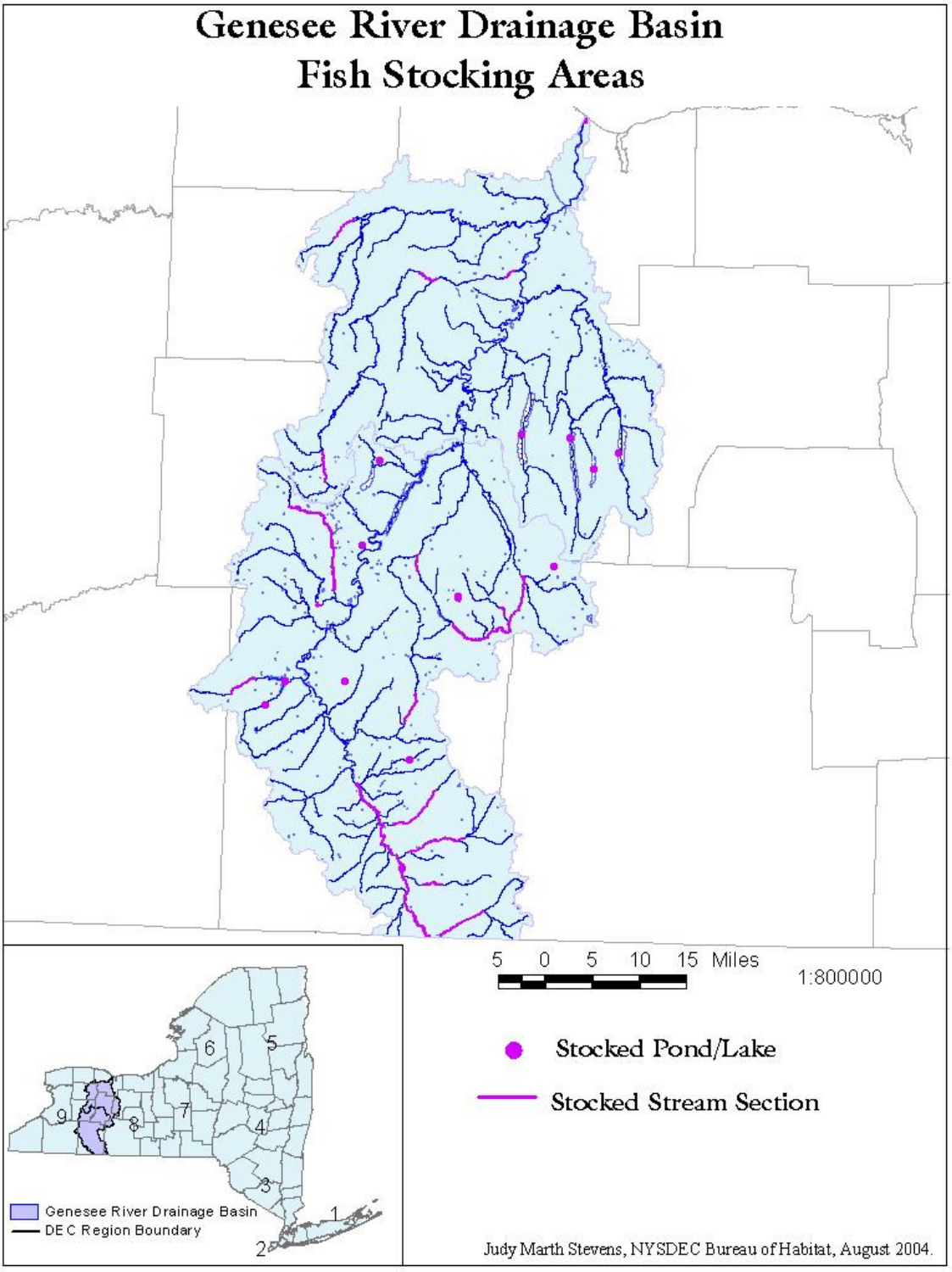
| Map ID #'s | County | Town | Scientific Name | Common Name | Status |
|---|---|---|---|---|---|
| **69** | GENESEE | BERGEN | *Sistrurus c. catenatus* | Eastern Massasauga | E |
| **70** | GENESEE | BERGEN | *Eumeces a. anthracinus* | Northern Coal Skink | SPEC |
| **71** | GENESEE | BERGEN | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **72** | GENESEE | BERGEN | *Sistrurus c. catenatus* | Eastern Massasauga | E |
| **73** | GENESEE | BERGEN | *Sistrurus c. catenatus* | Eastern Massasauga | E |
| **74** | GENESEE | BERGEN | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **75** | GENESEE | BERGEN | *Eumeces a. anthracinus* | Northern Coal Skink | SPEC |
| **76** | GENESEE | BERGEN | *Sistrurus c. catenatus* | Eastern Massasauga | E |
| **77** | GENESEE | BERGEN | *Eumeces a. anthracinus* | Northern Coal Skink | SPEC |
| **78** | GENESEE | BERGEN | *Eumeces a. anthracinus* | Northern Coal Skink | SPEC |
| **79** | GENESEE | BERGEN | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **80** | GENESEE | BERGEN | *Sistrurus c. catenatus* | Eastern Massasauga | E |
| **81** | GENESEE | BERGEN | *Clemmys guttata* | Spotted Turtle | SC |
| **82** | GENESEE | BYRON | *Eumeces a. anthracinus* | Northern Coal Skink | SPEC |
| **83** | GENESEE | BYRON | *Eumeces a. anthracinus* | Northern Coal Skink | SPEC |
| **84** | GENESEE | BYRON | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **85** | GENESEE | BYRON | *Regina septemvittata* | Queen Snake | E |
| **86** | GENESEE | OAKFIELD | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **87** | GENESEE | STAFFORD | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **88** | LIVIN'TON | CALEDONIA | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **89** | LIVIN'TON | CONESUS | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **90** | LIVIN'TON | GENESEO | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **91** | LIVIN'TON | GENESEO | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **92** | LIVIN'TON | NUNDA | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **93** | LIVIN'TON | NUNDA | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **94** | LIVIN'TON | NUNDA | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **95** | LIVIN'TON | NUNDA | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **96** | LIVIN'TON | NUNDA | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **97** | LIVIN'TON | NUNDA | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **98** | LIVIN'TON | OSSIAN | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **99** | LIVIN'TON | PORTAGE | *Elaphe o. obsoleta* | Black Rat Snake | DEC |
| **100** | LIVIN'TON | PORTAGE | *Elaphe o. obsoleta* | Black Rat Snake | DEC |
| **101** | LIVIN'TON | PORTAGE | *Elaphe o. obsoleta* | Black Rat Snake | DEC |
| **102** | LIVIN'TON | SPRINGWATER | *Ambystoma jeffersonianum* | Jefferson Salamander | SC |
| **103** | LIVIN'TON | SPRINGWATER | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **104** | LIVIN'TON | SPRINGWATER | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **105** | LIVIN'TON | SPRINGWATER | *Ambystoma jeffersonianum* | Jefferson Salamander | SC |
| **106** | LIVIN'TON | YORK | *Ambystoma jeffersonianum x* | Jefferson Salamander | SC |

| Map ID #'s | County | Town | Scientific Name | Common Name | Status |
|---|---|---|---|---|---|
| | | | *laterale* | Complex | |
| **107** | MONROE | BRIGHTON | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **108** | MONROE | BRIGHTON | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **109** | MONROE | CHILI | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **110** | MONROE | IRONDEQUOIT | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **111** | MONROE | IRONDEQUOIT | *Apalone s. spinifera* | Eastern Spiny Softshell | SC |
| **112** | MONROE | IRONDEQUOIT | *Apalone s. spinifera* | Eastern Spiny Softshell | SC |
| **113** | MONROE | IRONDEQUOIT | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **114** | MONROE | IRONDEQUOIT | *Graptemys geographica* | Common Map Turtle | DEC |
| **115** | MONROE | MENDON | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **116** | MONROE | MENDON | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **117** | MONROE | MENDON | *Hemidactylium scutatum* | Four-toed Salamander | DEC |
| **118** | MONROE | MENDON | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **119** | MONROE | MENDON | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **120** | MONROE | MENDON | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **121** | MONROE | MENDON | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **122** | MONROE | MENDON | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **123** | MONROE | MENDON | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **124** | MONROE | MENDON | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **125** | MONROE | MENDON | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **126** | MONROE | RUSH | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **127** | MONROE | RUSH | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **128** | MONROE | RUSH | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **129** | MONROE | RUSH | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **130** | MONROE | RUSH | *Clemmys guttata* | Spotted Turtle | SC |
| **131** | MONROE | RUSH | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **132** | MONROE | RUSH | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **133** | MONROE | RUSH | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **134** | MONROE | RUSH | *Ambystoma laterale* | Blue-spotted | SC |

| Map ID #'s | County | Town | Scientific Name | Common Name | Status |
|---|---|---|---|---|---|
| | | | | Salamander | |
| **135** | MONROE | RUSH | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **136** | MONROE | RUSH | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **137** | MONROE | RUSH | *Hemidactylium scutatum* | Four-toed Salamander | DEC |
| **138** | MONROE | WHEATLAND | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **139** | MONROE | WHEATLAND | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **140** | MONROE | WHEATLAND | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **141** | ONTARIO | BRISTOL | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **142** | ONTARIO | BRISTOL | *Eumeces a. anthracinus* | Northern Coal Skink | SPEC |
| **143** | ONTARIO | BRISTOL | *Eumeces a. anthracinus* | Northern Coal Skink | SPEC |
| **144** | ONTARIO | CANADICE | *Ambystoma jeffersonianum* | Jefferson Salamander | SC |
| **145** | ONTARIO | CANADICE | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **146** | ONTARIO | CANADICE | *Eumeces a. anthracinus* | Northern Coal Skink | SPEC |
| **147** | ONTARIO | CANADICE | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **148** | ONTARIO | CANADICE | *Apalone s. spinifera* | Eastern Spiny Softshell | SC |
| **149** | ONTARIO | CANADICE | *Apalone s. spinifera* | Eastern Spiny Softshell | SC |
| **150** | ONTARIO | CANADICE | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **151** | ONTARIO | EAST BLOOMFIELD | *Ambystoma jeffersonianum* | Jefferson Salamander | SC |
| **152** | ONTARIO | EAST BLOOMFIELD | *Eumeces a. anthracinus* | Northern Coal Skink | SPEC |
| **153** | ONTARIO | NAPLES | *Ambystoma jeffersonianum* | Jefferson Salamander | SC |
| **154** | ONTARIO | NAPLES | *Ambystoma jeffersonianum* | Jefferson Salamander | SC |
| **155** | ONTARIO | NAPLES | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **156** | ONTARIO | RICHMOND | *Eumeces a. anthracinus* | Northern Coal Skink | SPEC |
| **157** | ONTARIO | RICHMOND | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **158** | ONTARIO | RICHMOND | *Coluber c. constrictor* | Northern Black Racer | DEC |
| **159** | ONTARIO | RICHMOND | *Crotalus horridus* | Timber Rattlesnake | T |
| **160** | ONTARIO | RICHMOND | *Elaphe o. obsoleta* | Black Rat Snake | DEC |
| **161** | ONTARIO | RICHMOND | *Eumeces a. anthracinus* | Northern Coal Skink | SPEC |
| **162** | ONTARIO | RICHMOND | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **163** | ONTARIO | RICHMOND | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **164** | ONTARIO | RICHMOND | *Apalone s. spinifera* | Eastern Spiny Softshell | SC |
| **165** | ONTARIO | SOUTH BRISTOL | *Ambystoma jeffersonianum* | Jefferson Salamander | SC |
| **166** | ONTARIO | SOUTH BRISTOL | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **167** | ONTARIO | SOUTH BRISTOL | *Eumeces a. anthracinus* | Northern Coal Skink | SPEC |
| **168** | ONTARIO | SOUTH BRISTOL | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **169** | ONTARIO | SOUTH BRISTOL | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **170** | ONTARIO | SOUTH | *Liochlorophis vernalis* | Smooth Green Snake | DEC |

| Map ID #'s | County | Town | Scientific Name | Common Name | Status |
|---|---|---|---|---|---|
| | | BRISTOL | | | |
| **171** | ONTARIO | VICTOR | *Clemmys guttata* | Spotted Turtle | SC |
| **172** | ORLEANS | CLARENDON | *Ambystoma laterale* | Blue-spotted Salamander | SC |
| **173** | STEUBEN | DANSVILLE | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **174** | STEUBEN | WEST UNION | *Liochlorophis vernalis* | Smooth Green Snake | DEC |
| **175** | WYOMING | ARCADE | *Ambystoma jeffersonianum* | Jefferson Salamander | SC |
| **176** | WYOMING | CASTILE | *Crotalus horridus* | Timber Rattlesnake | T |
| **177** | WYOMING | CASTILE | *Hemidactylium scutatum* | Four-toed Salamander | DEC |
| **178** | WYOMING | GAINESVILLE | *Clemmys insculpta* | Wood Turtle | SC |
| **179** | WYOMING | GAINESVILLE | *Ambystoma jeffersonianum* | Jefferson Salamander | SC |
| **180** | WYOMING | GENESEE FALLS | *Elaphe o. obsoleta* | Black Rat Snake | DEC |
| **181** | WYOMING | GENESEE FALLS | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **182** | WYOMING | GENESEE FALLS | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **183** | WYOMING | GENESEE FALLS | *Ambystoma jeffersonianum x laterale* | Jefferson Salamander Complex | SC |
| **184** | WYOMING | PIKE | *Clemmys insculpta* | Wood Turtle | SC |
| **185** | WYOMING | WARSAW | *Ambystoma jeffersonianum* | Jefferson Salamander | SC |

## Genesee River Basin Fish Stocking Data[7]




[7] Maps and fish stocking data courtesy of Judy Marth Stevens, Senior Cartographer, NYSDEC Div. of Fish, Wildlife and Marine Resources, Bureau of Habitat.

# 2004 STOCKING SUMMARY - GENESEE RIVER DRAINAG

**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION**
**BUREAU OF FISHERIES**

***Anticipated distribution of fish for 2004.***
***Actual numbers and stocking times may vary depending on fish availability and weather conditions.***
***Contact Regional Fisheries Office for additional information.***

| WATER | TOWN | NUMBER | DATE | SPECIES | SIZE |
|---|---|---|---|---|---|
| **REGION 8** | | | | | |
| | ***Genesee County*** | | | | |
| Oatka Creek | Le Roy | 700 | March - April | Brown Trout | 12 - 15 inches |
| Oatka Creek | Le Roy | 2,640 | March - April | Brown Trout | 8 - 9 inches |
| Oatka Creek | Le Roy | 700 | April - May | Brown Trout | 12 - 15 inches |
| Oatka Creek | Le Roy | 1,360 | April - May | Brown Trout | 8 - 9 inches |
| Oatka Creek | Le Roy | 2,320 | May - June | Brown Trout | 8 - 9 inches |
| Spring Brook | Byron | 150 | March - April | Brown Trout | 12 - 15 inches |
| Spring Brook | Byron | 240 | April | Brown Trout | 8 - 9 inches |
| | ***Livingston County*** | | | | |
| Conesus Lake | Livonia, Geneseo, Groveland, Conesus | 9,500 | Fall | Tiger Muskellunge | 5 - 6 inches |
| Conesus Lake | Livonia, Geneseo, Groveland, Conesus | 65,000 | Fall | Walleye | 5 - 6 inches |
| Hemlock Lake | Livonia | 2,000 | May | Rainbow Trout | 8 - 9 inches |
| Hemlock Lake | Livonia | 4,000 | June | Brown Trout | 8 - 9 inches |
| Hemlock Lake | Livonia | 4,100 | Spring | Landlocked Salmon | 8 - 9 inches |
| Hemlock Lake | Livonia | 3,200 | Spring | Lake Trout | 8 - 9 inches |
| Hemlock Lake | Livonia | 6,600 | Fall | Lake Trout | 5 - 6 inches |
| Little Dansville Creek | Nunda | 400 | April | Brown Trout | 8 - 9 inches |
| Rattlesnake Pond 1 | Ossian | 200 | Fall | Brook Trout | 5 - 6 inches |
| Rattlesnake Pond 2 | Ossian | 200 | Fall | Brook Trout | 5 - 6 inches |
| Springwater Creek | Springwater | 2,000 | May | Rainbow Trout | 8 - 9 inches |
| Sugar Creek | Ossian | 700 | Fall | Brown Trout | 5 - 6 inches |
| | ***Monroe County*** | | | | |
| Genesee River | Rochester | 12,100 | April | Steelhead | 8 - 9 inches |
| Genesee River | Rochester | 170,500 | Spring | Chinook | 2 - 2.5 inches |
| Genesee River | Rochester | 10,000 | Spring | Steelhead | 8 - 9 inches |
| Genesee River | Rochester | 22,000 | Fall | Coho | 5 - 6 inches |
| Oatka Creek | Wheatland | 1,360 | March - April | Brown Trout | 8 - 9 inches |
| Oatka Creek | Wheatland | 350 | March - April | Brown Trout | 12 - 15 inches |
| Oatka Creek | Wheatland | 350 | April - May | Brown Trout | 12 - 15 inches |
| Oatka Creek | Wheatland | 720 | April - May | Brown Trout | 8 - 9 inches |
| Oatka Creek | Wheatland | 1,200 | May - June | Brown Trout | 8 - 9 inches |
| | ***Ontario County*** | | | | |
| Canadice Lake | Canadice | 2,400 | June | Rainbow Trout | 8 - 9 inches |
| Canadice Lake | Canadice | 2,000 | June | Brown Trout | 8 - 9 inches |

| WATER | TOWN | NUMBER | DATE | SPECIES | SIZE |
|---|---|---|---|---|---|
| | ***Ontario County*** | | | | |
| Canadice Lake | Canadice | 2,100 | Spring | Lake Trout | 8 - 9 inches |
| Honeoye Lake | Canadice | 8,670,000 | Spring | Walleye | Sac Fry |
| | ***Steuben County*** | | | | |
| Canaseraga Creek | Dansville | 500 | March - April | Brown Trout | 12 -15 inches |
| Canaseraga Creek | Dansville | 2,800 | March - April | Brown Trout | 8 - 9 inches |
| Canaseraga Creek | Dansville | 320 | April - May | Brown Trout | 8 - 9 inches |
| Dansville Rs | Wayland | 580 | Spring | Rainbow Trout | 8 - 9 inches |
| **REGION 9** | | | | | |
| | ***Allegany County*** | | | | |
| Allen Lake | Allen | 363 | March | Brown Trout | 12 -15 inches |
| Allen Lake | Allen | 2,690 | Spring | Rainbow Trout | 8 - 9 inches |
| Allen Lake | Allen | 2,540 | Spring | Brook Trout | 8 - 9 inches |
| Belmont Rod and Gun Club Pond | West Almond | 90 | Spring | Brook Trout | 8 - 9 inches |
| Black Creek | West Almond | 1,120 | March - April | Brown Trout | 8 - 9 inches |
| Canaseraga Creek | Burns | 200 | March | Brown Trout | 12 -15 inches |
| Canaseraga Creek | Burns | 2,000 | March - April | Brown Trout | 8 - 9 inches |
| Caneadea Creek | Rushford | 1,250 | April | Rainbow Trout | 8 - 9 inches |
| Chenunda Creek | Willing | 400 | April | Brown Trout | 8 - 9 inches |
| Cryder Creek | Independence | 200 | April | Brown Trout | 12 -15 inches |
| Cryder Creek | Independence | 1,680 | April | Brown Trout | 8 - 9 inches |
| Cryder Creek | Independence | 880 | May | Brown Trout | 8 - 9 inches |
| Dyke Creek | Andover | 1,360 | April | Brown Trout | 8 - 9 inches |
| Dyke Creek | Andover | 200 | April | Brown Trout | 12 -15 inches |
| Dyke Creek | Andover | 720 | May | Brown Trout | 8 - 9 inches |
| Genesee River | Amity | 6,880 | March | Brown Trout | 8 - 9 inches |
| Genesee River | Amity | 750 | March | Brown Trout | 12 -15 inches |
| Genesee River | Amity | 350 | April | Brown Trout | 12 -15 inches |
| Genesee River | Amity | 3,760 | April | Brown Trout | 8 - 9 inches |
| Genesee River | Wellsville | 750 | March | Brown Trout | 12 -15 inches |
| Genesee River | Wellsville | 1,520 | March | Brown Trout | 8 - 9 inches |
| Genesee River | Wellsville | 3,940 | March | Rainbow Trout | 8 - 9 inches |
| Genesee River | Wellsville | 450 | April | Brown Trout | 12 -15 inches |
| Genesee River | Wellsville | 800 | April | Brown Trout | 8 - 9 inches |
| Genesee River | Wellsville | 2,020 | April | Rainbow Trout | 8 - 9 inches |
| Genesee River | Wellsville | 4,160 | May | Brown Trout | 8 - 9 inches |
| Genesee River | Wellsville | 1,200 | Spring | Brown Trout | 8 - 9 inches |
| Rushford Camp Pond | New Hudson | 180 | June | Brook Trout | 8 - 9 inches |
| Rushford Lake | Caneadea | 1,440 | Various | Brown Trout | 8 - 9 inches |
| Rushford Lake | Caneadea | 3,440 | Various | Brook Trout | 8 - 9 inches |
| Vandermark Creek | Scio, Ward | 960 | April | Brown Trout | 8 - 9 inches |
| Wellsville Club Pond | Wellsville | 90 | Spring | Brook Trout | 8 - 9 inches |
| ~~* Wiscoy Creek~~ | ~~Hume~~ | ~~360~~ | ~~April~~ | ~~Brown Trout~~ | ~~8 - 9 inches~~ |

| WATER | TOWN | NUMBER | DATE | SPECIES | SIZE |
|---|---|---|---|---|---|
| | ***Allegany*** | ***County*** | | | |
| * Wiscoy Creek | Hume | 240 | May | Brown Trout | 8 - 9 inches |
| | ***Wyoming*** | ***County*** | | | |
| East Koy Creek | Gainesville | 650 | March | Brown Trout | 12 -15 inches |
| East Koy Creek | Gainesville | 4,240 | March | Brown Trout | 8 - 9 inches |
| East Koy Creek | Gainesville | 550 | April | Brown Trout | 12 -15 inches |
| East Koy Creek | Gainesville | 1,520 | April | Brown Trout | 8 - 9 inches |
| East Koy Creek | Gainesville | 6,240 | May | Brown Trout | 8 - 9 inches |
| Letchworth Park Pond | Genesee Falls | 270 | March | Brook Trout | 8 - 9 inches |
| Letchworth Park Pond | Genesee Falls | 270 | May | Brook Trout | 8 - 9 inches |
| Oatka Creek | Warsaw | 960 | April | Brown Trout | 8 - 9 inches |
| Oatka Creek | Warsaw | 520 | May - June | Brown Trout | 8 - 9 inches |
| Perry Park Pond | Perry | 90 | May | Brook Trout | 8 - 9 inches |

***Note: Stocking has been discontinued on the Wiscoy Creek due to an abundance of wild trout within that segment.**

# Appendices

# Appendix A: Implementation Schedule and Budget

## Site Identification for Implementation

Given the significant fluctuations in watershed size, the degree of impairment(s) and ongoing and/or past restoration efforts, it is difficult to present customized schedules and budgets for future restoration and protection projects throughout the Genesee River Basin. For most areas, more information is needed to identify the specific site(s) where a restoration project needs to be implemented. In other areas, data must be verified regarding pollutant source identification or which specific sites have the greatest impact on uses. Furthermore, watersheds should not be chosen for project implementation based on watershed ranking alone; a willingness and ability to cooperate with implementation projects between local entities and lead agencies as well as past evidence of a desire to implement watershed restoration and protection efforts should also be taken into consideration.

## Proposed Projects for Implementation

## Agriculture

**Continued Evaluation and Implementation of Agricultural Best Management Practices**

- No specific cost estimates or implementation schedule

While programs such as AEM, EQIP and CREP have been successfully implemented throughout the Genesee River Basin, no definitive mechanism is in place to evaluate the success and degree of implementation of agricultural BMPs across a wide variety of farms. 2004 CAFO regulations, for example, have begun to effectively address NPS pollution among large- and medium-scale livestock operations. They do not, however, address NPS pollution emanating from smaller livestock operations or other large- or medium-scale crop producers such as orchards or vegetable farms.

A mechanism for ascertaining the degree to which model farm practices are or should be occurring should be implemented in the Genesee River Basin. Procedures and practices such as Integrated Pest Management and Comprehensive Nutrient Management Planning should be inventoried (according to the degree to which they are taking place) and calibrated to individual watersheds in order to objectively measure the positive impacts that agricultural BMPs and incentive-based programs are having on local and regional water quality. The Sediment Transport Model (specifically, the Soil and Water Assessment Tool (SWAT)) can be used to help meet these goals.

Examples of Programs to be Evaluated:

- *Agriculture Environmental Management (AEM)*
- *SPDES CAFO Regulations*

- *Federally Funded Farm Bill Projects*
- *Environmental Quality Incentives Program (EQIP)*
- *Conservation Reserve Enhancement Program (CREP)*
- *Forestry Incentive Program*
- *Wetland Reserve Program*
- *Wildlife Habitat Incentives Program*

## Streambank Erosion

**Assessment and Revision of Local Laws for Stormwater Phase II Compliance Among Communities that Fall Below the MS4 Threshold**

- $10,000/municipality over three years

In large part, MS4 communities have been complying with the mandates imposed upon them under Phase II regulations. Monroe County, for example, has been successfully implementing portions of the "Six Minimum Measures" through a very active Monroe County Stormwater Coalition. Evidence of the Coalition's success is illustrated as Monroe County MS4 communities actively implement BMPs for stormwater control and adopt new local laws that institute such measures. Municipalities that fall outside of the MS4 threshold (i.e. communities with systems that sever under 50,000 people), however, are an obvious concern. Rather than wait for inevitable new mandates that will ultimately include those smaller communities that have, as of yet, fallen short of the MS4 threshold, such communities should begin the process of implementing model practices for stormwater control sooner rather than later.

In conjunction with the NYSDEC and municipalities that fall short of MS4 requirements, develop methods of integrating SPDES Phase II permit requirements into local law and work with such municipalities to integrate and adopt these laws/ordinances in advance of new mandates.

**Perform Streambank Inventories for Major Tributaries of the Entire Genesee River Basin**

- $10,000/watershed over the course of two years/watershed
- Conducted using the Sediment Transport Model as an integrated support mechanism

Conducting a streambank inventory is generally the initial step in mitigating streambank erosion and sediment loading in a watershed. The process includes a detailed visual survey at multiple sites along the primary rivers, streams and tributaries within a watershed. The goal is to obtain information needed to rank the erosion potential of each subwatershed and direct drainage. Once information is gathered, it can be entered into a stream factor equation in order to obtain a relative stream factor number. The higher the stream factor number, the greater the potential for erosion. The streams with the highest stream factors can then be prioritized for erosion and sediment control implementation.

**Riparian Corridor and Shoreline Restoration**

- $250,000/watershed over a course of two years (following the development of a Streambank Inventory)
- Conducted using the Sediment Transport Model as an integrated support mechanism

After streambank inventories are conducted, data gained from the inventory can be used to guide a more detailed riparian corridor analysis in an effort to produce implementation-ready recommendations. Recommendations would include specifications and approximate costs associated with implementing structural controls; riparian controls, practices, and bioengineering; regulatory controls; and funding integration (local, state and federal funding sources such as transportation funding). Implementation of restoration would take place among high priority areas, to be determined through streambank inventories.

**All programs listed above would be developed in conjunction with an active education and outreach component. This long-term effort would include actions such as information and training workshops, literature distribution, and web development.**

## Stormwater Runoff and Other Nonpoint Sources

*The source 'Stormwater Runoff" is in large part addressed through measures mandated through SPDES Phase II and those proposed under 'Streambank Erosion and Municipal Drainage/Industrial Discharge'.*

**Development of a Basinwide Inventory of Inactive Waste Sites Not Listed on State or Federal Registries**

- $150,000 over two years

Historic co-disposal municipal and private waste disposal sites can become sources of local concern and uncertainty. Such facilities are often overlooked and forgotten about over time and often become the subjects of local speculation and folklore as to their contents and degree of contamination and containment. An inventory of historic sites, their contents—both known and speculated—and their degree of containment and likelihood of septage should be conducted for the entire Genesee River Basin. Sites should include but not be limited to: closed or destroyed industrial facilities (warehouses, tanneries, foundries, chemical production facilities, agricultural storage and dump sites, etc) and municipal waste sites, particularly co-disposal waste sites (i.e. those that mix or could have mixed municipal solid waste with industrial hazardous waste). Sources may include local historians, previous employees and/or relatives, historic maps, municipal records, health records and any other pertinent or reliable data sources. The NYS DEC listing of inactive hazardous waste sites can be used as a useful starting point.

## Hydromodification and Habitat Modification

*The vast majority of problems related to hydromodification and habitat modification as they pertain to water quality overlap with and may be included under 'Stormwater and Other NPS' and 'Streambank Erosion' (excluding natural resource concerns).*

## Failing Onsite Wastewater Treatment Systems (OWTS)

**Control and Management of Onsite Wastewater Treatment Facilities in the Genesee River Basin**

- $100,000 for development of a model ordinance, education, outreach and implementation over the course of 2 years

As detailed in Chapter 3, failing OWTS are an often overlooked and relatively unknown threat to water quality in the Genesee River Basin (GRB). Model administrative control measures that can be applied throughout GRB communities should be developed and implemented, particularly among communities with a high proportion of homes services by OWTS. Examples of such measures can be found in Chapter 3 (pages 30-32) of this report. Furthermore, two examples listed below offer feasible models for implementation:

- **Cayuga Lake Watershed**: Uniform sanitary law throughout the Cayuga Lake watershed based on the Cayuga County model (Sanitary Code of the Cayuga County Health District) or the model Local Law for On-Site Individual Wastewater Treatment.[1]

- **Ontario County Uniform Septic System Law:** See http://www.co.ontario.ny.us/planning/acrobat/water/modelsepticlaw.pdf. for a complete text version of the law and how it has been applied.[2]

## Municipal Drainage and Industrial Discharge

*Given the heavy government regulation surrounding publicly owned sewage treatment facilities and privately owned industrial treatment facilities through mechanisms such as the SPDES and the NPDES, there are no proposed recommendations for implementation other than those mentioned in Chapter 3 (continued monitoring).*

[1] *Cayuga Lake Watershed Management Plan*, "Onsite Wastewater Systems Recommendations". 38. Retrieved 13 August 2004 at: http://www.gflrpc.org/Cayuga%20Lake/RPP/caycayugasepticinspection.htm.
[2] Ontario County Planning Department, *Proposed Model Local Law for Individual Onsite Wastewater Treatment Law*. Retrieved 13 August 2004 from: http://www.co.ontario.ny.us/planning/acrobat/water/modelsepticlaw.pdf

## Toxic and Contaminated Sediment

*The subject of toxic and contaminated sediments has been covered at length in the Rochester Embayment RAP. Below are two proposed monitoring strategies proposed in the September 1997 Stage II RAP.*

**Stage II RAP sec. 9.2.2:** *Establish chemical sediment quality goals for the Rochester harbor at the mouth of the Genesee River and sample sediments to monitor progress toward goals.*

- One-year monitoring costs: $50,000-$60,000

Costs would depend on the number of sampling sites, the number of samples per site and the parameters chosen for analysis. Monitoring similar to that performed for the Genesee River Sediment Toxic Survey would cost $50,000-60,000 for two sampling periods (total of four sites for both periods). This cost would include planning, sampling, analysis, data evaluation and report writing.[3]

**Stage II RAP Sec. 9.2.3:** *Obtain data from the USACE on results of required sediment sampling in the Rochester harbor*.

- Five-year monitoring costs: $200

Costs would be minimal – a few fours every few years to review data, note trends, and summarize results for the Monroe County Water Quality Coordinating Committee.[4]

## Miscellaneous Education and Outreach

**Education and Outreach Activities Should be Implemented or Continue to be Implemented**

- Continuous; dollar amounts will vary according to program

Education and outreach activities in a number of subject areas are an important component of watershed protection and restoration. Oftentimes even subtle changes in behavior across a significant group of people can have profound cumulative impacts (either positive or negative) on the local environment. A small reduction in household water use across a wide group of residents in a community, for example, can result in a significant annual reduction in the costs associated with drinking water and wastewater treatment processes.

Listed below are several subject areas that should be addressed through education and outreach activities, as well as several models that have been successful in improving watershed conditions and changing individual behavior with regard to watershed protection for the better:

[3] See pages 9-12 and 9-13 of the Stage II RAP for a full description of project taks.
[4] As noted by RAP committee members, reviewing data is, in actuality, a rather time-consuming endeavor, given the detail and quantity of the data sources.

Successful Models:

- **Community Water Watch Voluntary Stream Monitoring Program** Information online at: http://www.monroecounty.gov/org602.asp?orgID=602&storytypeid=&storyID=&.
- **International Costal Cleanup** Annual coastal stewardship program. Information online at: http://www.coastalcleanup.org/index.cfm.
- **Great Lawns, Great Lakes** Program addresses backyard overuse of fertilizers and hazardous chemicals. Information online at http://thewec.org.

Areas in need of Education and Outreach Activities:

- Impacts of NPS Pollution
- Maintenance of OWTS
- Detecting and Reporting Illicit Discharges
- Importance of Agricultural BMPs

## Long Term Projects

**Genesee River Basin Watershed Management Plan**

- $400,000 over the course of four years (2005 – 2010)

Many components of a Basin-wide management plan have been initiated at this point in time. Scoping, data collection, assessment and targeting, strategy development, implementation, and evaluation of water quality and land use problems has been occurring throughout the Basin to varied degrees. A Basin-wide management plan would begin to integrate these crystallized and otherwise detached watershed restoration undertakings into one cohesive plan for implementation, focusing on intergovernmental agreement and cooperation.

# Appendix B: The Sediment Transport Model

*Note: The following information was derived from: US Army Corps of Engineers, Anthony Friona, Scoping Report for the Genesee River 516(e) Sediment Transport/Delivery Model, 2003.*

**Land Surface Erosion Component: Soil and Water Assessment Tool (SWAT)**

The Soil and Water Assessment Tool (SWAT) is a physically based, continuous simulation erosion model designed to simulate water and sediment yield from watersheds. It was developed by the USDA-ARS to provide a tool for predicting the impact of land management practices on water, sediment, and agricultural chemical yields in large complex watersheds with varying soils, land use and management conditions over long periods of time. The model contains components of both the Universal Soil Loss Equation (USLE) and the Modified Universal Soil Loss Equation (MUSLE).

The model can be applied to large watersheds and complex landscapes. It uses a grid-cell characterization of the landscape to represent the spatial variability across watersheds or regions. Input information is grouped into categories consisting of weather or climate, land cover, soil, and land management. It has the capability of analyzing the above categories for sub-watersheds, ponds/reservoirs, groundwater, channels, or reaches. The model can be extended to include nutrients and pesticide loadings. SWAT has been integrated into Better Assessment Science Integrating Point and Non-point Sources (BASINS) suite of models developed by the United States Environmental Protection Agency (USEPA).

**Sediment Transport Component: Conservational Channel Evolution and Pollutant Transport System (CONCEPTS)**

The Conservational Channel Evolution and Pollutant Transport System (CONCEPTS) is a computer model that simulates open-channel hydraulics, sediment transport, and channel morphology. The CONCEPTS model was developed by the USDA-ARS, and is currently released as version 1.0. This model is available as a watershed-scale stream network or reach-scale stream corridor version.

The CONCEPTS model simulates unsteady, one-dimensional flow, graded-sediment transport, and bank-erosion processes in stream corridors. It can predict the dynamic response of flow and sediment transport to in-stream hydraulic structures. It computes channel evolution by tracking bed changes and channel widening. Bank erosion accounts for basal scour and mass wasting of unstable cohesive banks. The model simulates transport of cohesive and cohesionless sediments, both in suspension and on the bed, and selectively by size classes. The model includes channel-boundary roughness varying along a cross section, for example due to varying vegetation patterns. CONCEPTS can be used to evaluate the efficiency of in-stream grade-control structures to reduce sediment yield and to stabilize streams. It can also evaluate location and

sizing alternatives of grade control structures, and evaluate the design of specific stream corridor rehabilitation measures used for stream stability and habitat improvement.

CONCEPTS version 2.0, under development, will incorporate the simulation of riparian buffers, vegetated stream-banks, and the onset of channel meandering due to the deposition of alternate bars. There is no GIS interface for the current version of CONCEPTS.

**Models Selection Rationale**

It is recognized that no single model is able to definitely provide the solutions to all the concerns of the stakeholders. To economically address these concerns, sediment contribution prioritizations were made based on stakeholder input and available data. The following models were selected to address the stakeholders priority concerns within the constraints of available data.

SWAT, which is integrated with the EPA's BASINS suite of software will be used for the development of a watershed sediment erosion/yield model. SWAT-BASINS was selected because a large portion of the available GIS data is derived from the BASINS distribution. This implies familiarity with the data and would ease technology transfer. Using SWAT-BASINS for the development of the watershed erosion model will used to address stakeholders concerning agricultural erosion.

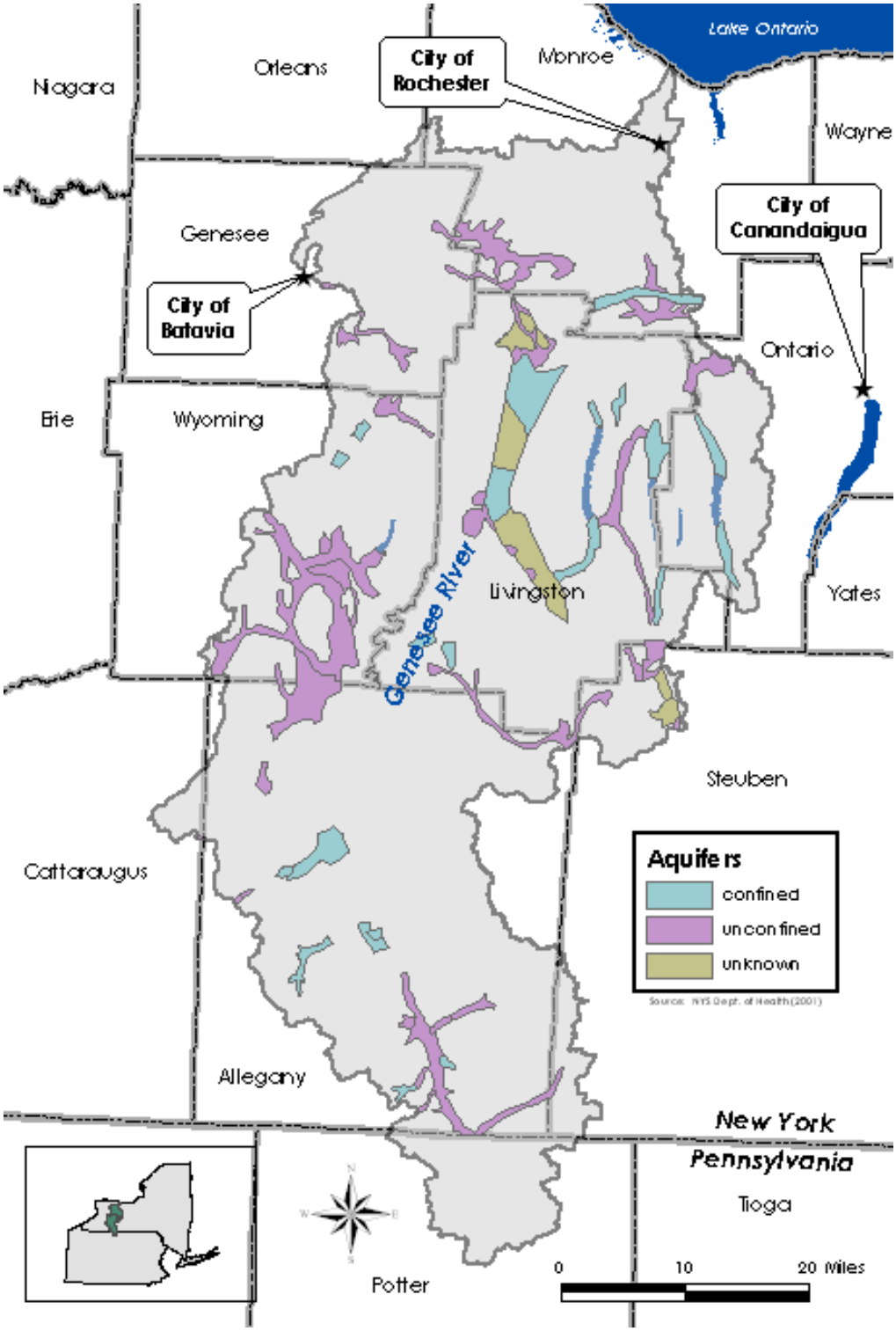
CONCEPTS will be used to develop a steam-bank stability model. The CONCEPTS model will be used because of its forecasting capabilities regarding the stakeholders concerns about the Genesee Rivers serious problems of rapid river channel migration (Livingston County in particular) and stream-bank stability.

# Appendix C: Supplemental Maps

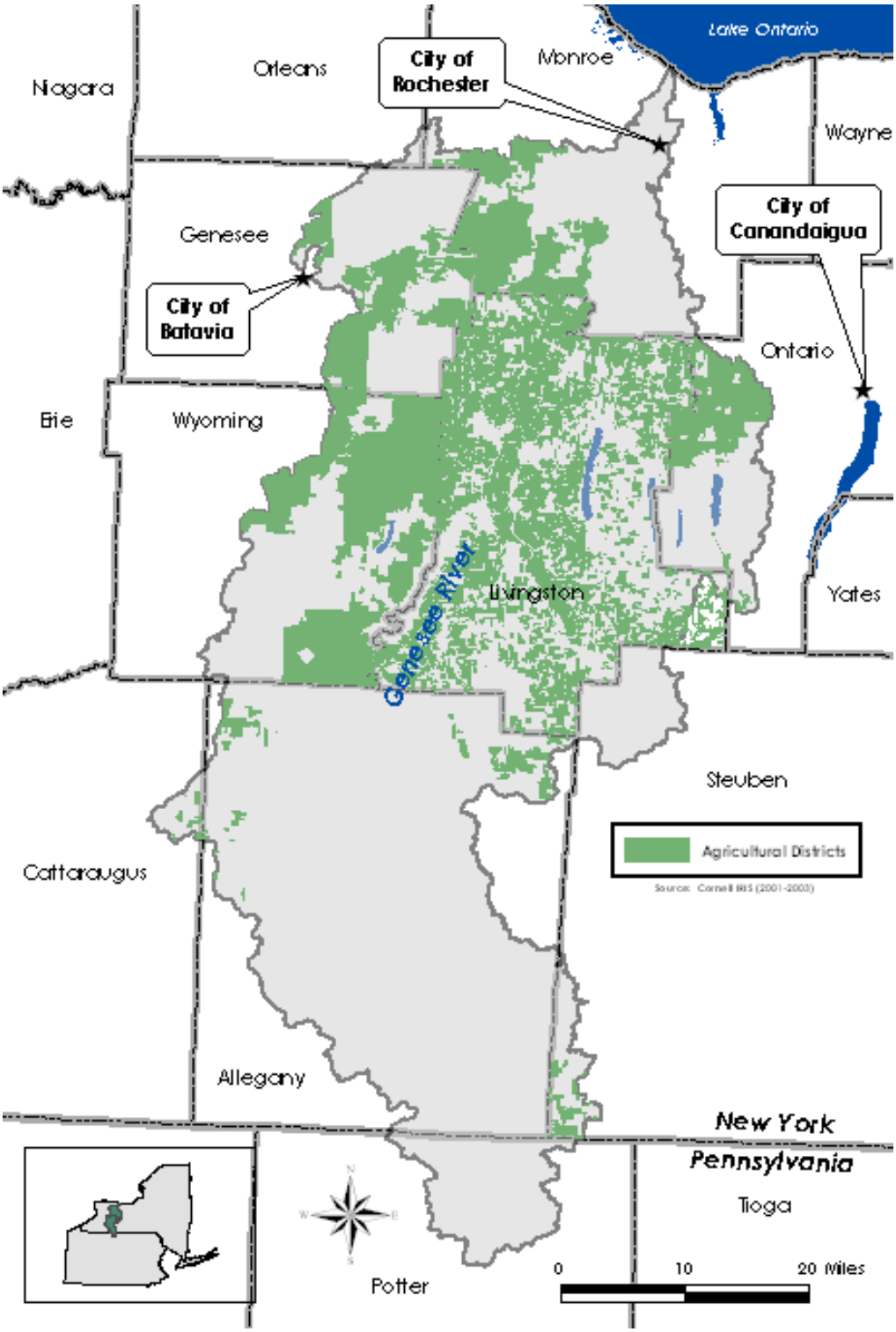
## Informational Note:

The following thirteen maps have been prepared using the latest geographic information system (GIS) datasets available to the public, as well as from data sets that were assembled by the staff of G/FLRPC or by other state and federal agencies. While the maps are intended to illustrate useful information to water quality professionals and citizens alike, the scale of some maps may prohibit users from obtaining the preferred degree of accuracy for specific locations. **In such instances, individuals are strongly urged to contact G/FLRPC; accurate, site-specific maps can be produced upon request.** Information from any of the following maps may be combined and illustrated in conjunction with other data layers, as the user prefers. Furthermore, "metadata"—technical information about a data set, such as its source, its coordinate system, its spatial extent, and descriptions of its attributes—can be provided as well.

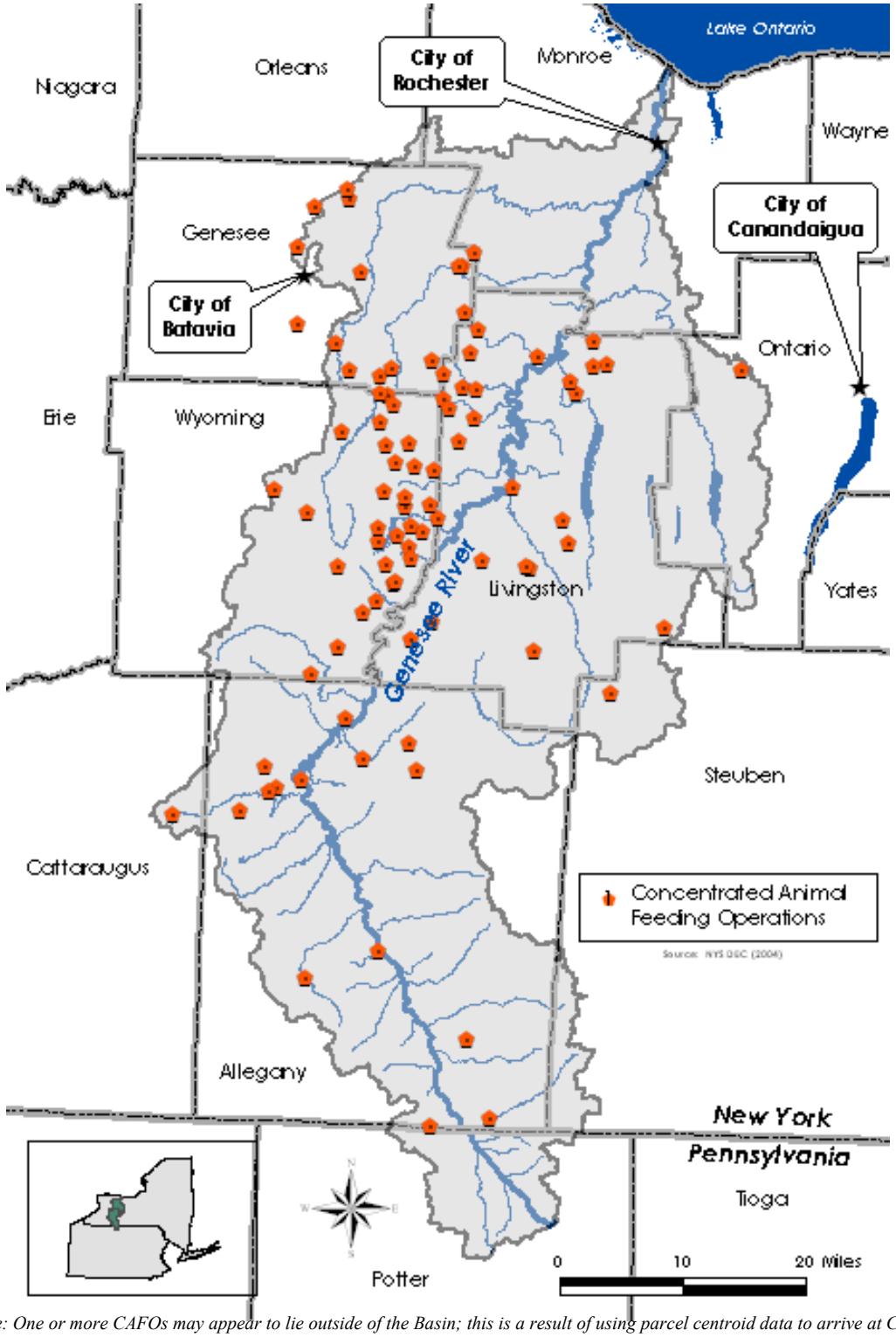
## Map C-1: Genesee River Basin Aquifers



## Map C-2: Genesee River Basin Agricultural Districts

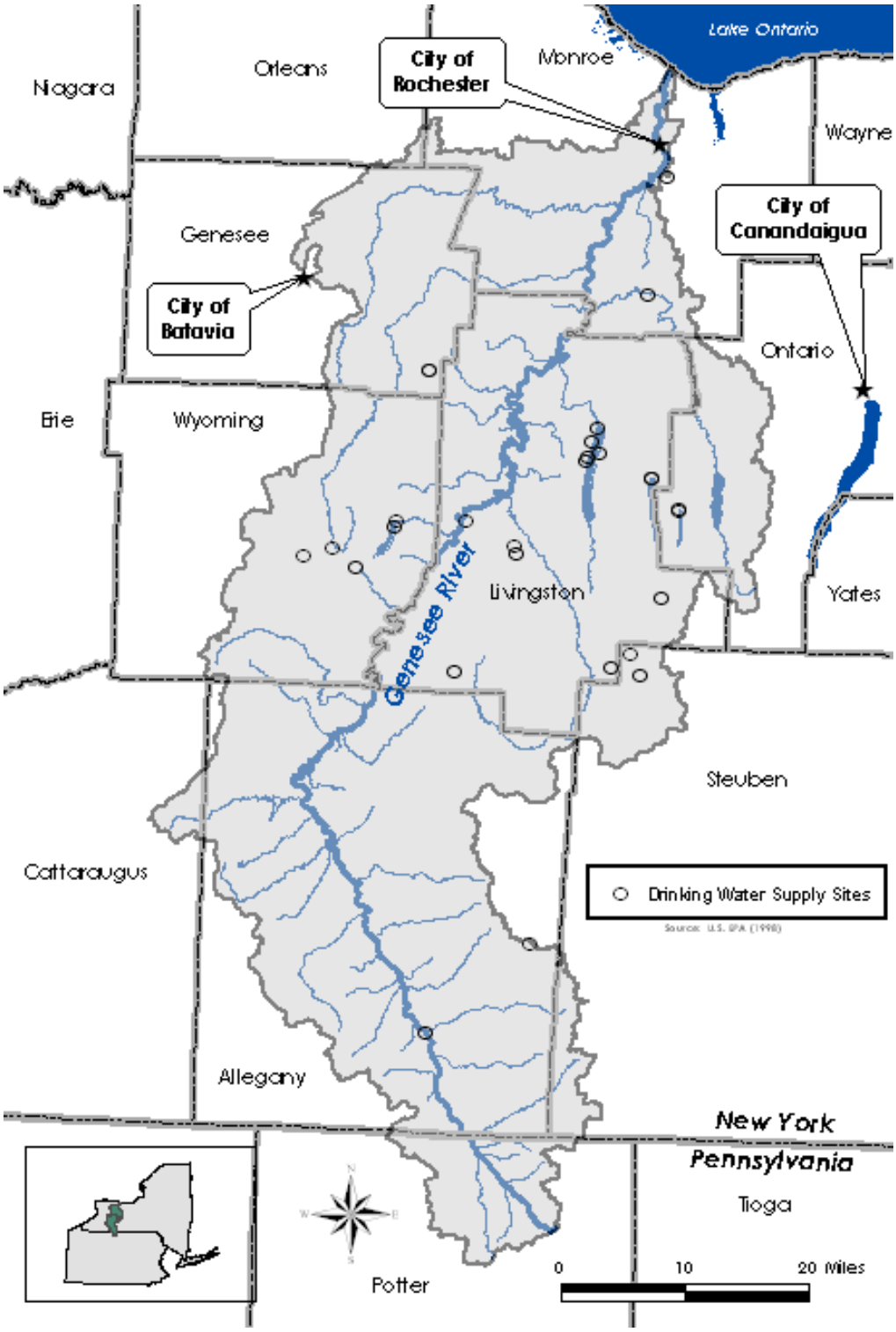


## Map C-3: Genesee River Basin Concentrated Animal Feeding Operations

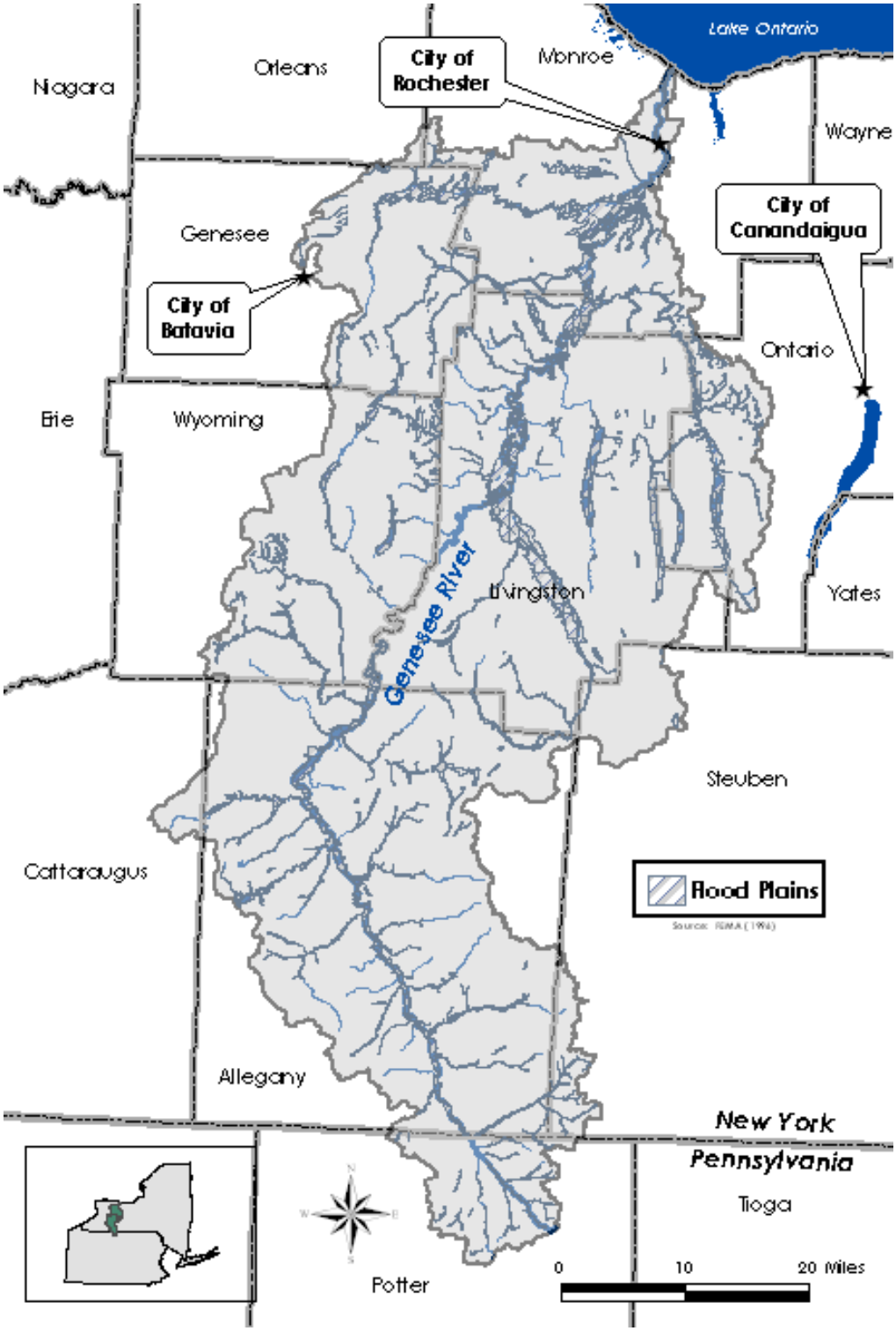



*Note: One or more CAFOs may appear to lie outside of the Basin; this is a result of using parcel centroid data to arrive at CAFO locations. Each CAFO shown above has at least a minimal area located inside the drainage basin.*

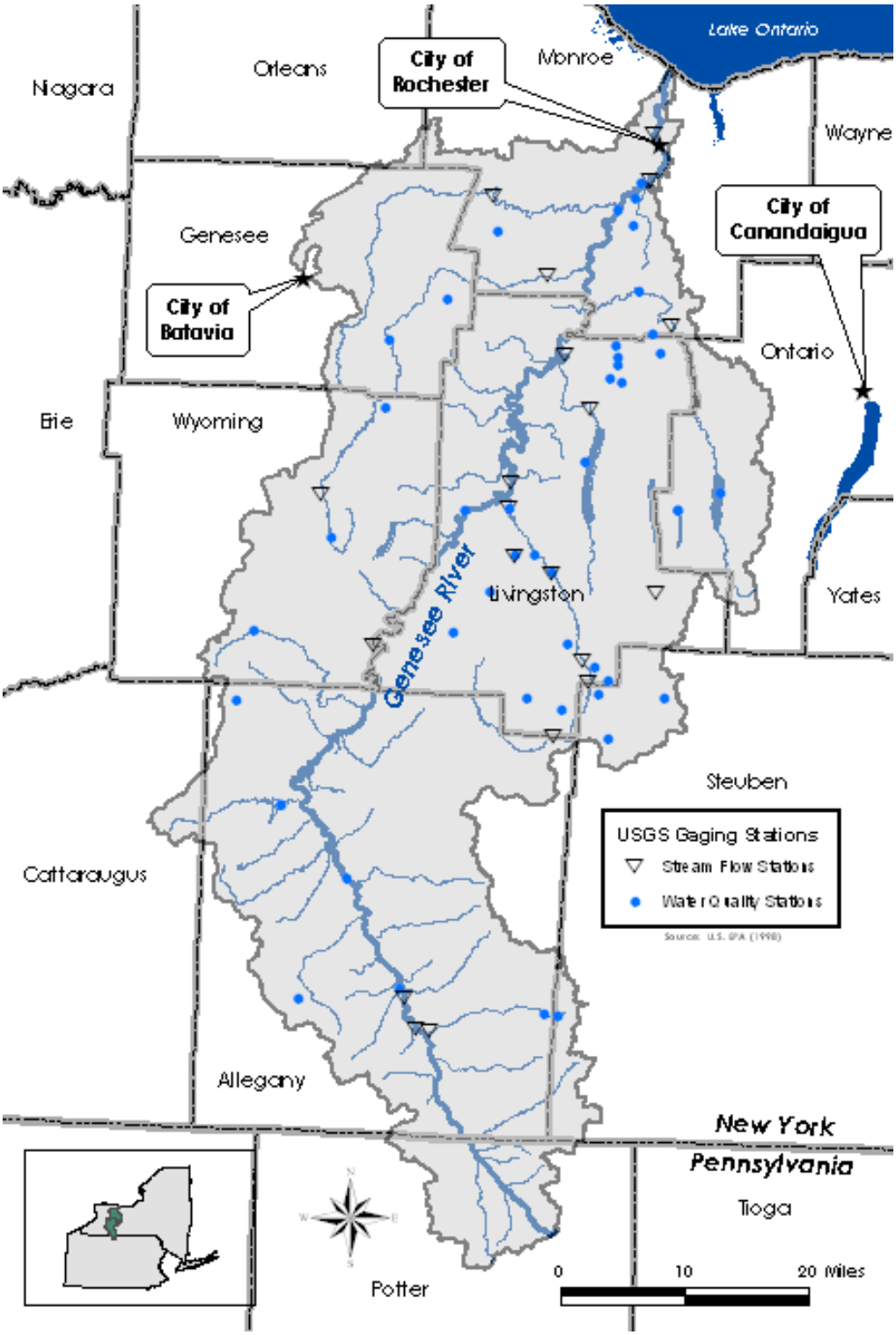
## Map C-4: Genesee River Basin Drinking Water Supply Sites



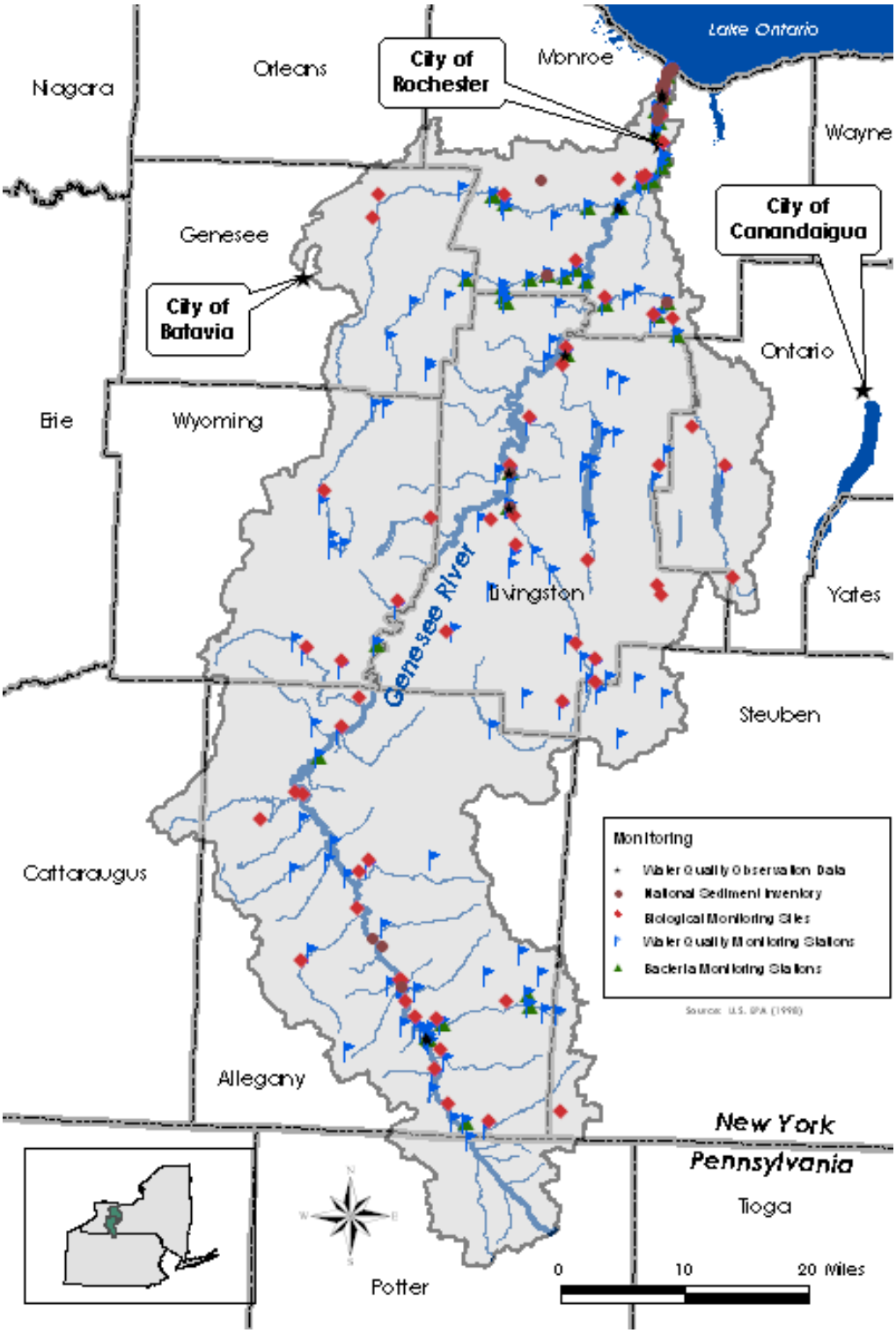
## Map C-5: Genesee River Basin Flood Plains: (Areas with a 1% or greater chance of flooding annually: Federal Emergency Management Agency)



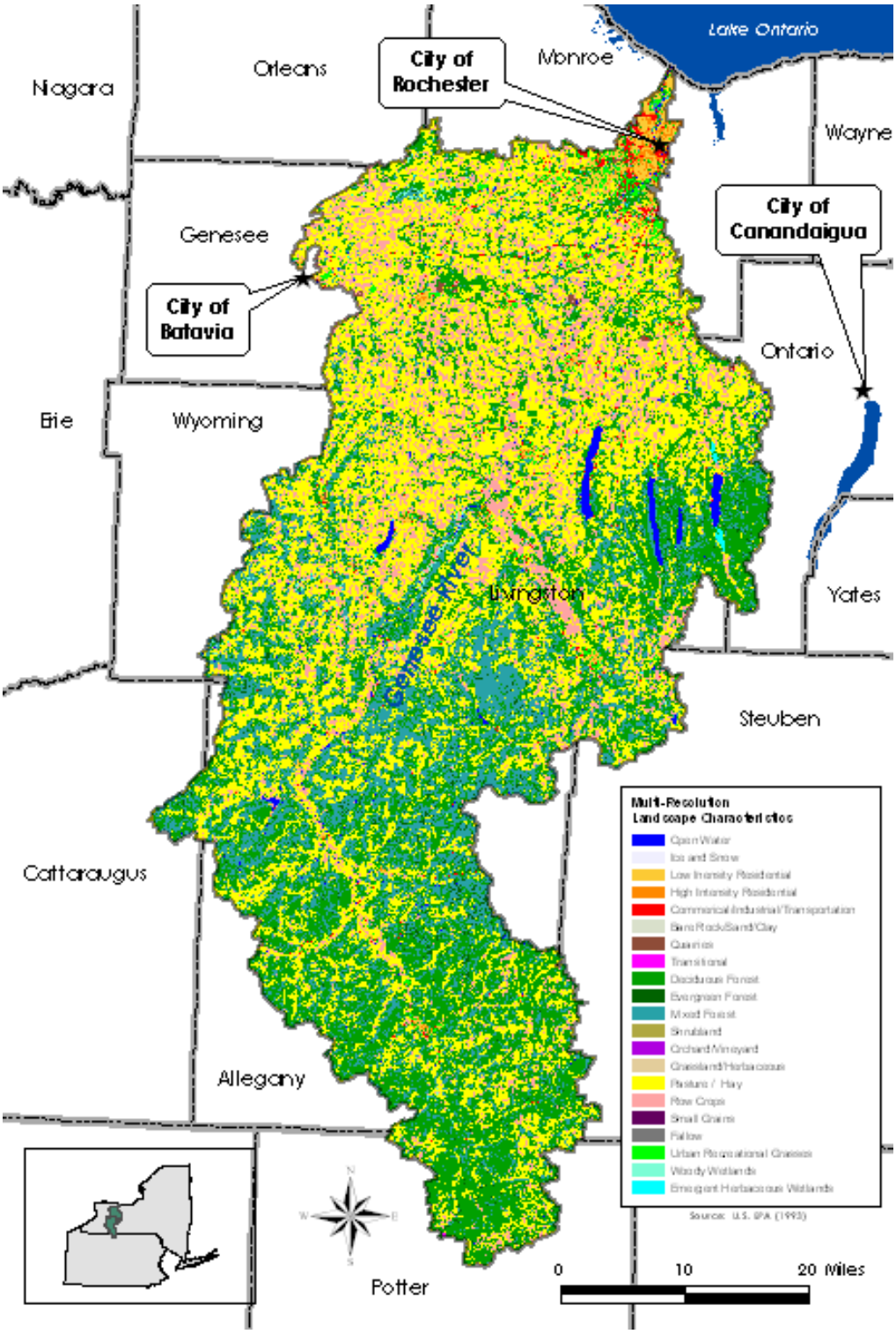
## Map C-6: Genesee River Basin Gauging Stations



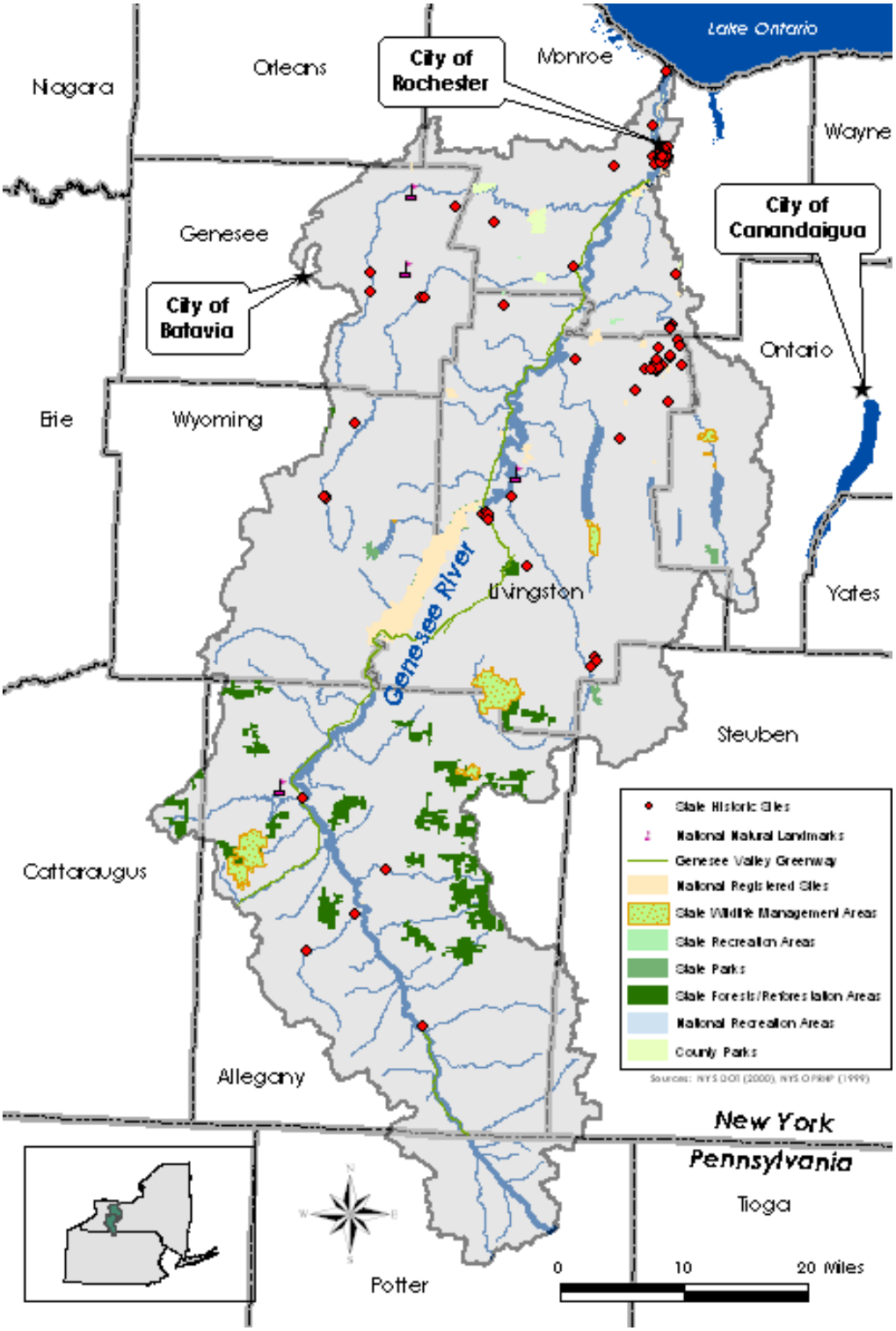
## Map C-7: Genesee River Basin Miscellaneous Monitoring Sites



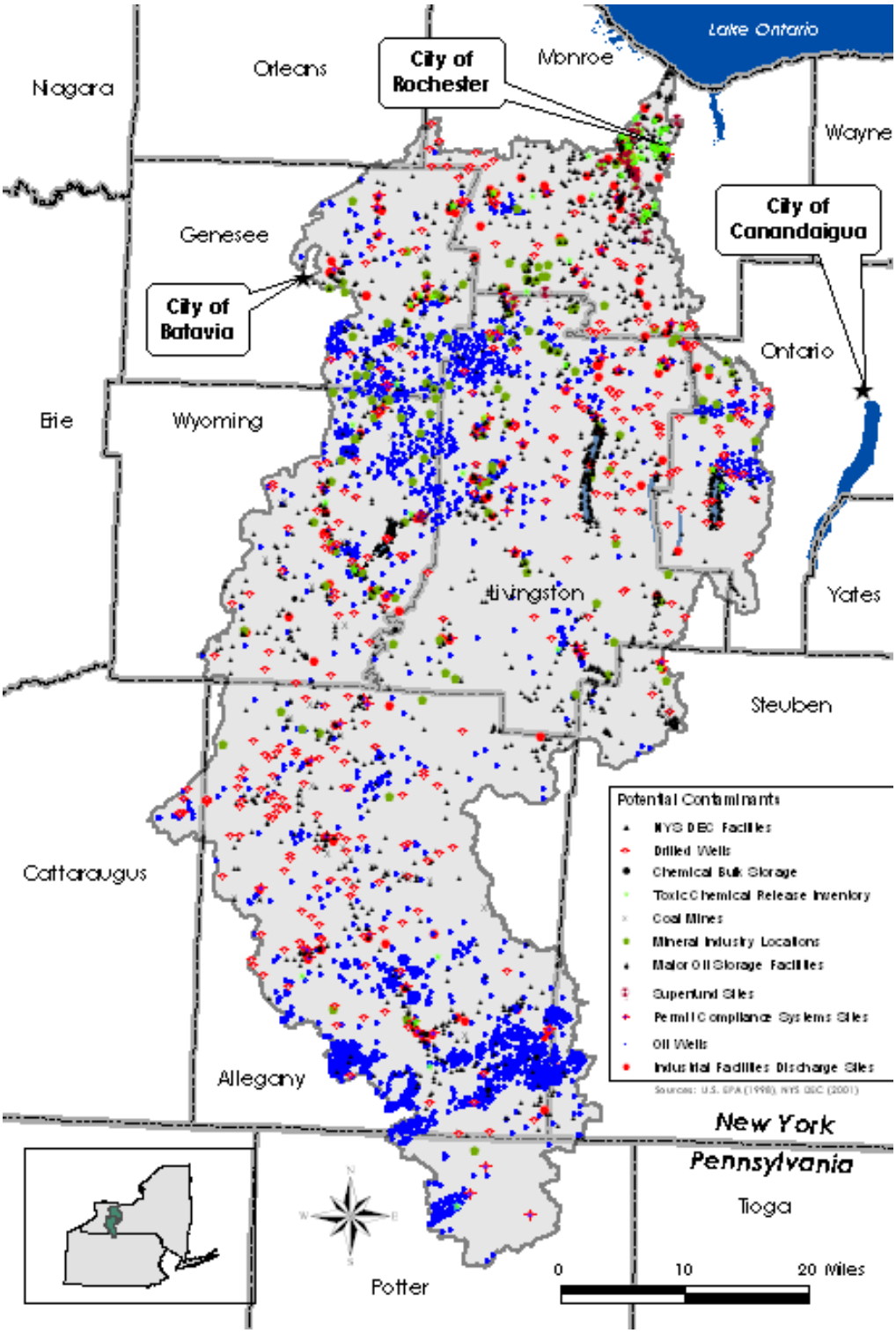
## Map C-8: Genesee River Basin Multi-Resolution Landscape Characteristics



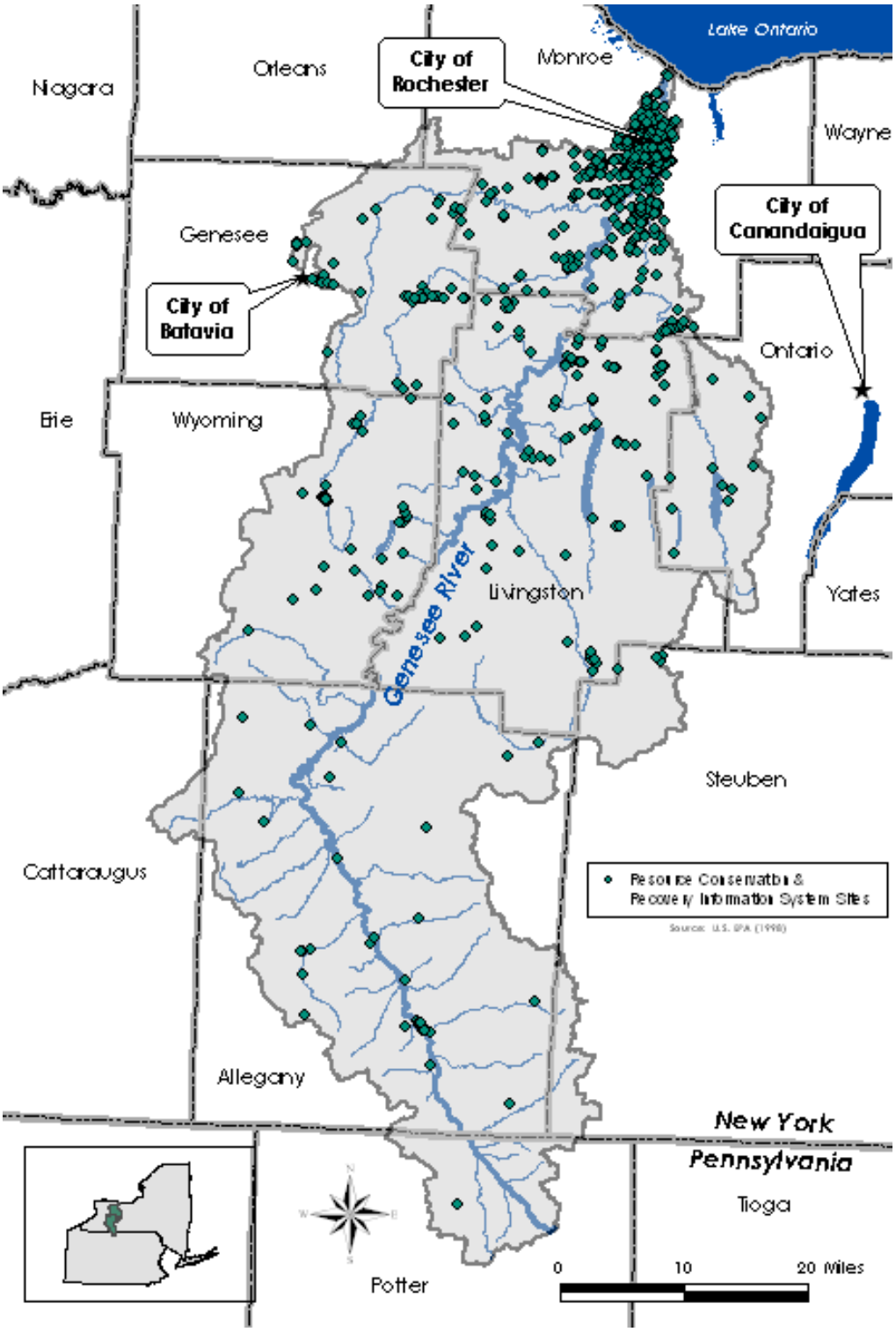
## Map C-9: Genesee River Basin Parks and Recreation



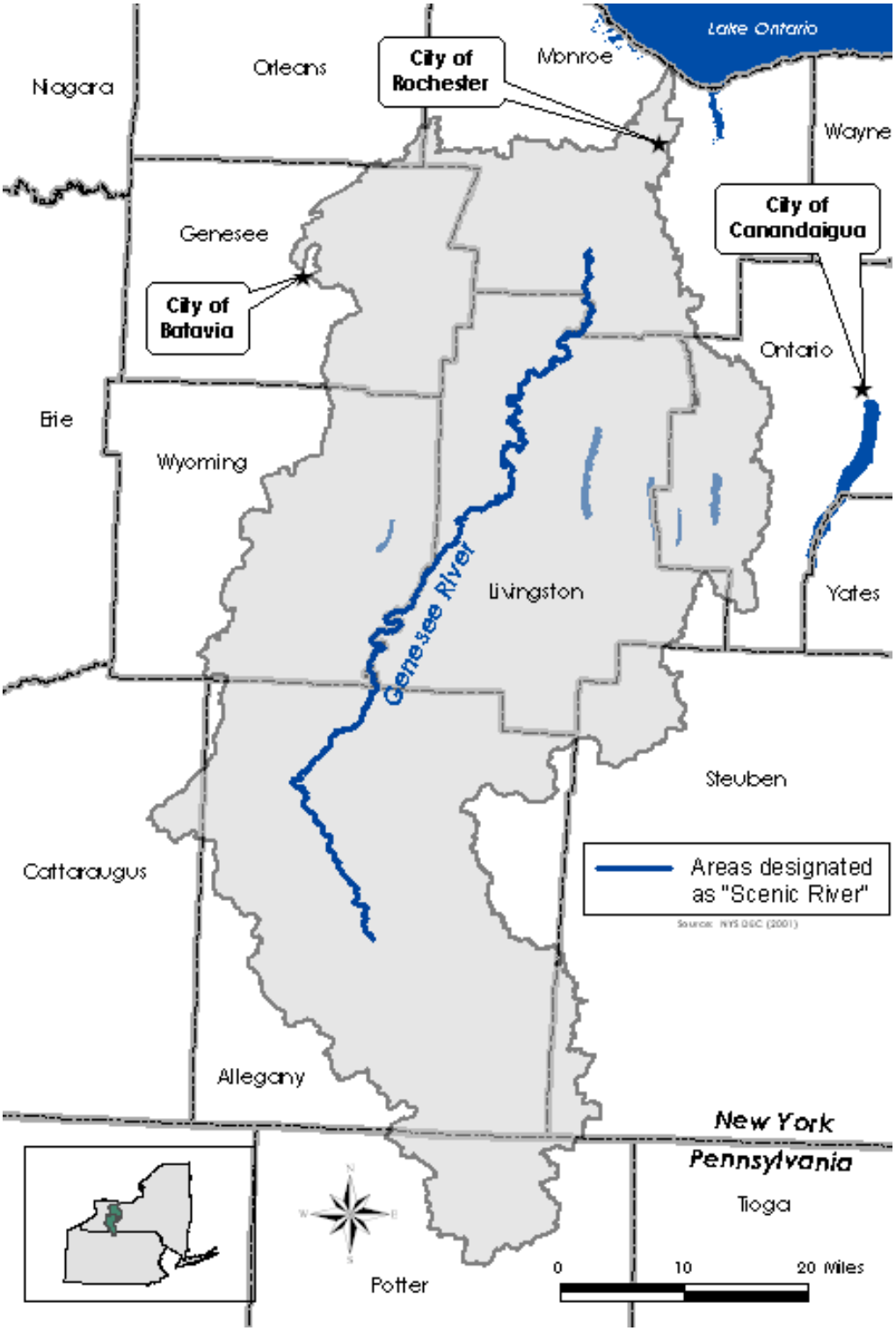
## Map C-10: Genesee River Basin Potential Sources of Contamination



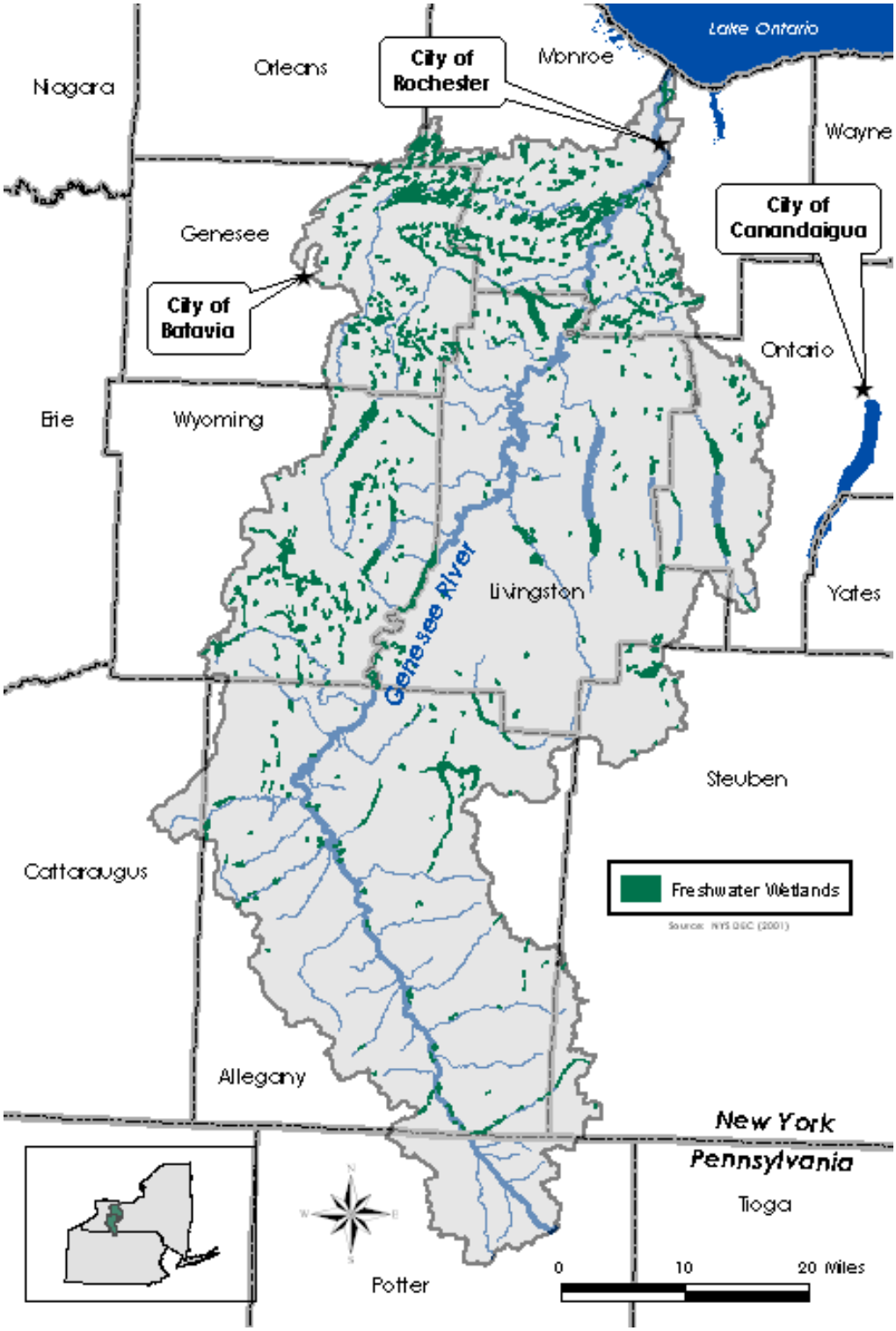
## Map C-11: Genesee River Basin Resource Conservation and Recovery Sites



## Map C-12: Genesee River Basin Designated Scenic River Area



## Map C-13: Genesee River Basin Designated NYS Freshwater Wetlands



# Appendix D: Genesee River Basin Institutional/Program Assessment

## Allegany County

### *A. NETWORKS AND PARTNERSHIPS*

1. County Water Quality Coordinating Committee

Frederick Sinclair, Allegany County SWCD Manager and Council Coordinator, Agricultural Service Center, 5425 County RT. 48, Belmont, NY 14813, 585-268-7831 x102

Organizations Represented:
DEC Division of Water, Region 9
DEC Fisheries Allegany
Allegany County Planning
USDA NRCS District Conservationist, Local Ag. Work Group
Federation of Sportsmen, Cuba Lake District
Office of Emergency Services
County Health Department
County Resource Management Committee
Cornell Cooperative Extension
Rushford Lake District.
Soil and Water Conservation District Board
Alfred University
Houghton College
Southern Tier West Regional Planning Board

2. Watershed or Lake Associations:
Rushford Lake Recreation District
Rhonda Kozlowski

3. Watershed Drainage/Drainage Officer: none

4. Conservation Advisory Committees:
Soil and Water Conservation District Board
Cooperative Extension Board
FSA County Committee
Agricultural and Farmland Protection Board
EQIP Local Work Group
Water Resources Council

5. Land Trusts
Western New York Land Conservancy, 21 S Grove St, Rm 120, East Aurora, NY 14052, 585-687-1225
Genesee Valley Conservancy, 1 Main Street, Geneseo, NY 14454, 585-243-2190

### *B. ASSESSMENTS*

1. Surface Water Monitoring :
   - CSLAP
   - DEC Fisheries, Allegany, monitoring
   - Rushford Lake sampling
   - RIBS in Genesee and Allegany and Chemung Basin
   - Water Intake from Genesee River at Wellsville water intake.

2. Ground Water Monitoring:
   - Routine Public Water Supply testing program
   - Domestic bacterial

3. Natural Resources Inventory
   - Local Agricultural Work Group Inventory 4/3/97

### *C. PLANS*

1. County Water Quality Committee Strategy:
   - (under revision by Water Resources Council)

2. Farmland Protection Plans:
   - Fully active Ag District Program
   - Farmland preservation planning in progress

3. Aquifer/ Wellhead Protection Plans:
   - Village of Belmont

### *D. LOCAL REGULATIONS*

1. Watershed Rules and Regulations: not actively pursued or enforced

2. Aquifer Protection Zones
   - Village of Belmont

3. Timber Harvesting Laws: none

4. Conservation Easement Programs
   - Wetland Reserve Program

5. Stormwater Regulations
   - Village of Wellsville

6. Flood Mitigation Action Plans
   - Village of Canaseraga working toward one

7. Other

*Information provided spring 2002 by Frederick Sinclair, Allegany County SWCD, (585) 268-7831 x 3. Last updated fall, 2004.*

# Genesee County

## *A. NETWORKS AND PARTNERSHIPS*

1. County Water Quality Coordinating Committee
   Committee is comprised of representatives from the county legislature, the County Planning Department, and municipalities
   George Squires, Genesee Co. SWCD, USDA Center, 29 Liberty St., Suite #3, Batavia, NY 14020, 585-343-2362

2. Watershed or Lake Associations
   Oatka Creek Watershed Committee:
   Rick Venvertloh, Chairperson, 300 State St., Rochester, NY 14614, 585-454-6110

3. Watershed Drainage/Drainage Officer: none

4. Conservation Advisory Committees:
   LeRoy CAC
   Andy Olenick, 8675 Oatka Tr., LeRoy, NY 14482

5. Land Trusts: none

## *B. ASSESSMENTS*

1. Surface Water Monitoring
   Lake LeRoy
   Lake LaGrange
   Oatka Creek
   Black Creek
   Carolyn Dowling, "The Geochemistry of Oatka Creek," University of Rochester, 2001.

2. Ground Water Monitoring: none

3. Natural Resources Inventory: none, but Oatka Creek State of the Basin Report forthcoming

## *C. PLANS*

1. County Water Quality Committee Strategy: updated in 2000

2. Farmland Protection Plans: yes
   Genesee County Farmland Protection Plan (2001)

3. Aquifer/ Wellhead Protection Plans: none

4. Other

## *D. LOCAL REGULATIONS*

1. Watershed Rules and Regulations:
   Village of LeRoy

2. Aquifer Protection Zones: none

3. Timber Harvesting Laws: none

4. Conservation Easement Programs:
   public fishing access along Oatka Creek

5. Stormwater Regulations:
   Town of Bergen Zoning Ordinance

6. Flood Mitigation Action Plans:
   County has grant funding together with Wyoming County to prepare plan for Tonawanda and Oatka Creeks

7. Other

*Information provided spring 2002 by George Squires, Genesee County SWCD, (585) 343-2362 and Matt Balling, Genesee County Department of Planning, (585) 344-2580. Last updated fall, 2004.*

# Livingston County

### *A. NETWORKS AND PARTNERSHIPS*

1. County Water Quality Coordinating Committee
   Peter Kanouse, District Manager, Livingston County Soil and Water Conservation District, 129 Main Street, Leicester, NY 14481, 585-382-3214

2. Watershed or Lake Associations
   Conesus Lake Association:
      Joe Kane, President, 5615 West Lake Road, Conesus, NY 14435
   Conesus Lake Watershed Management Plan:
      David Woods, Project Manager, Livingston County Planning Department, 6 Court Street, Room 305, Geneseo, NY 14454

3. Watershed Drainage/Drainage Officer
   Richard Davin, Conesus Lake Watershed Inspector, Livingston County Department of Health, 2 County Campus, Mount Morris, NY 14510

4. Conservation Advisory Committees: none

5. Land Trusts
   Genesee Valley Conservancy
      Eric Grace, Director, 1 Main Street, Geneseo, NY 14454

## B. ASSESSMENTS

1. Surface Water Monitoring
   Mt. Morris Dam Water Quality Analysis (U.S. Army Corps of Engineers):
   *Water quality analysis that compares the water quality within and outside of the zone of influence of Mt. Morris Dam. Nine sampling stations will be established from the Route 436 bridge in Portageville downstream to the Route 36 bridge in Mt. Morris. Parameters to be analyzed include pH, temperature, dissolved oxygen, conductivity, turbidity, redox, ammonia, phosphorus, nitrate, transparency and benthic invertibret*
   Village of Avon water intake on Conesus Lake
   Village Office, 74 Genesee Street, Avon, NY 14414, 585-226-8118
   Village of Geneseo water intake on Conesus Lake
   Village Office, 119 Main Street, Geneseo, NY 14454, 585-243-1177
   City of Rochester water filtration plant, Hemlock Lake, Hemlock, NY, 585-346-2617

2. Ground Water Monitoring
   Village of Caledonia water supply
   Village Office, 3095 Main Street, Caledonia, NY 14423, 585-538-6565

3. Natural Resources Inventory
   "Resource Assessment of Livingston County" (1997)

## C. PLANS

1. County Water Quality Committee Strategy
   Livingston County Water Quality Management Strategy (1992)
   Livingston County Comprehensive Water Supply Study (1991)

2. Farmland Protection Plans: not yet
   The County is looking into creating an Ag & Farmland Protection Plan when funding is available from the State.

3. Aquifer/ Wellhead Protection Plans
   Aquifer Protection Plan
   Town and Village of Dansville
   Wellhead Protection Plan
   Village of Caledonia (?)

4. Other

## D. LOCAL REGULATIONS

1. Watershed Rules and Regulations
   Conesus Lake Watershed Rules and Regulations, 1962

2. Aquifer Protection Zones: none

3. Timber Harvesting Laws: none

4. Conservation Easement Programs
   Through the Genesee Valley Conservancy – no municipal programs

5. Stormwater Regulations

The Town of Geneseo, the Town of Livonia, and the Town of Conesus are looking into adopting an Erosion and Sediment Control Law. Many of the municipalities in the watershed address stormwater in their zoning laws.

6. Flood Mitigation Action Plans: none, though several towns have adopted Flood Damage Prevention Laws.

7. Other

*Information provided spring 2002 by Heather Hogarty, Planner, Livingston County Planning Department, (585) 243-7550 and Scott Livingstone, U.S. Army Corps of Engineers, (716) 879-4423. Last updated fall, 2004.*

# Monroe County

## *A. NETWORKS AND PARTNERSHIPS*

1. County Water Quality Coordinating Committee (WQCC): yes - includes representatives from nearly all municipalities in the County.

Charles Knauf, Water Quality Coordinator, Environmental Health Project Analyst, Monroe County Department of Health, 111 Westfall Rd., Room 976, P.O. Box 92832 Rochester, NY 14692-8932, Phone: 585-274-8440.

Subcommittees: Stormwater Coalition, Small Business Pollution Prevention Task Group, Streambank Erosion Assessment Program Committee, RAP Oversight Committee Stormwater Award Task Group—now under American Public Works Association ,

2. Watershed or Lake Associations: yes

Black Creek Watershed Coalition:

Rochelle Bell, Environmental Planner, Monroe County Department of Planning and Development, 50 Main St. West, Suite 8100, Rochester, NY 14614 585-428-5464

North Chili Tributary of Black Creek Committee: *report completed in 2002, currently inactive*

Joe Carr, Planner, Monroe County Department of Health, 111 Westfall Rd., P.O. Box 92832, Room 962 Rochester, NY 14692-8932, 585-292-3935

Charles Knauf, Water Quality Coordinator, Environmental Health Project Analyst, Monroe County Department of Health, 111 Westfall Rd., Room 976, P.O. Box 92832 Rochester, NY 14692-8932, Phone: 585-274-8440.

Oatka Creek Watershed Committee:

Rick VenVertloh, Committee Chair, PO Box 181, Scottsville, NY 14546.

3. Watershed Drainage/Drainage Officer

The Pure Waters Division of the Monroe County Department of Environmental Services operates five county sewer districts:

City of Rochester Pure Waters District (entire storm water and sewer system)

Gates-Chili-Ogden Sewer District (entire sewer system)

North-West Quadrant Pure Waters District (Greece, Parma, Hamlin, Clarkson, Sweden, part of Ogden – trunk sanitary sewer system)
Irondequoit Pure Waters District (trunk sanitary sewer system)
South-Central Pure Waters District (Henrietta, part of Mendon - trunk sanitary sewer system)
Kevin Quinn, Monroe County Department of Environmental Services, Pure Waters Division, Rochester, NY, 585-760-7610 x7066

Municipal sewer districts:

Town of Brighton Sewer District, Thomas Low, Superintendant of Sewer Maintenance, 2300 Elmwood Ave., Rochester, NY 14618, 585-784-5250.

Town of Henrietta, Paul Pettrone, Drainage Supervisor, 475 Calkins Rd., Henrietta, NY 14467, 585-334-7700.

Town of Chili, Greg Gardner, Drainage Officer, 3333 Chili Ave., Rochester, NY 14624, 585-889-2630.

Town of Ogden Sewer District, David Widger, Highway Superintendent, 269 Ogden Center Rd., Spencerport, NY, 14559, 585-352-2023.

Town of Sweden Sewer District, Roy Huscher, Sewer District Superintendant, 18 State St., Brockport, NY, 14420, 585-637-1095.

Town of Gates, John Lathrop, Drainage Officer, 1605 Buffalo Rd., Rochester, NY 14624, 585-247-6100 x245.

Monroe County Stormwater Coalition:

Todd Stevenson, Water Quality Coordinator, Water Quality Planning Bureau, Monroe County Department of Health, 111 Westfall Rd., Room 962, P.O. Box 92832 Rochester, NY 14692-8932, Phone: 585-274-8442

*An intermunicipal agreement exists among all municipalities in Monroe County to identify and analyze options for pooling resources to*

*a) meet the Phase II Federal Stormwater Regulations that will be placed on small municipal separate storm sewer system operators in 2003 and*

*b) protect and/or improve the water quality of local waterways in accordance with State, County, and local water quality planning documents and policies. All municipalities within Monroe County have signed an intermunicipal agreement committing them to the work of this Coalition.*

4. Conservation Advisory Committees (as of 2004)

Louise Hartshorn, Coordinator, Monroe County Environmental Management Council, Monroe County Department of Health, 111 Westfall Rd., Room 962, P.O. Box 92832 Rochester, NY 14692-8932 (585) 274-8063

City of Rochester Environmental Commission, Contact: Dorraine Carr, 30 Church St., Rochester, NY 14614

Town of Brighton Conservation Board, C/O Town of Brighton, 2300 Elmwood Ave, Rochester, NY 14618 (585) 784-5250 Mark Weider, Chair

Town of Chili Conservation Board, C/O Town of Chili, 3333 Chili Avenue, Rochester, NY 14624, (585) 889-3550 Richard J. Schickler, Chair

Town of Gates Conservation Board, C/O 1605 Buffalo Road, Rochester, NY 14624 (585) 247-6100

Town of Greece Environmental Board, C/O Greece Town Hall, 1 Vince Tofany Blvd., Rochester, NY 14616, (585) 225-2000 Chair: John Tofany

Town of Henrietta Conservation Board, C/O Henrietta Town Hall, 475 Calkins Road, Henrietta, NY 14467, (585) 334-9667 Chair: William Santos

Town of Irondequoit Conservation Board, C/O Irondequoit Town Hall, 1280 Titus Ave, Rochester, NY 14617, (585) 467-8840 Chair: Edwin Davis

Town of Mendon Conservation Board, C/O Mendon Town Hall, 16 West Main St., Honeoye Falls, NY 14472 (585) 624-6065 Chair: Andy Vaughn

Town of Ogden Conservation Board, C/O Ogden Town Hall, 269 Ogden Cntr. Rd., Spencerport, NY 14559 (585) 352-4590 Chair: Richard Davie

Town of Riga Conservation Board, C/O Riga Town Hall, 6460 East Buffalo Road, Churchville, NY 14428 (585) 293-3880 Chair: Dave Mundie

Town of Rush Conservation Board, C/O Rush Town Hall, 5977 E. Henrietta Road, Rush, NY 14543 (585) 533-9364 Chair: David Watson

Town of Sweden Conservation Board, C/O Sweden Town Hall, 18 State St, Brockport, NY 14420, (585) 637-2144 Chair: Kathy Harter

Town of Wheatland Environmental Conservation Board, C/O Wheatland Town Hall, 22 Main St. PO Box 15, Scottsville, NY 14546 (585) 889-1553 Contact: Michael Grasso

Village of Honeoye Falls Conservation Board, C/O Village Office, 5 East Street, Honeoye Falls, NY 14472 (585) 624-1711 Chair: Kathy Gilda

5. Land Trusts

Finger Lakes Land Trust:

Betsy Darlington, 202 East Court St., Ithaca, NY 14850, 607-275-9487

Genesee Land Trust:

Gay Mills, Director, 100 Office Parkway, Pittsford, NY 14534, 585-381-7310, glt@frontiernet.net

Mendon Foundation:

Carl Foss, Director, PO Box 231, Mendon, NY 14506-0231, 585-385-2330

Nature Conservancy:

David Klein, Director or Jim Howe, Deputy Director, 339 East Avenue, Suite 300, Rochester, NY 14604, Jhowe@tnc.org, 585- 546-8030

6. Other

Monroe County Water Education Collaborative:

The Collaborative is a coalition of public and private agencies and organizations whose purpose is to educate and inspire people to help protect water quality in the Genesee Region watersheds. The Collaborative was established as a result of recommendations made in the Rochester Embayment Remedial Action Plan.

Margit Brazda-Poirier, Director (scheduled for departure fall 2004; pending replacement) 585-271-4552 x 320

Monroe County Water Quality Management Agency (WQMA):

The agency was established according to New York State Enabling Legislation. Its role is to protect and improve Monroe County water quality at the watershed level by developing, implementing, and monitoring the effectiveness of policies and programs. The WQMA is comprised primarily of Monroe County Department heads. The Agency publishes an annual report.

Chairperson: Deputy County Executive Richard Mackey

Water Quality Intermunicipal Agreements:

Intermunicipal agreements have been established to coordinate and cooperate on activities related to water quality. Monroe County has individual agreements with the Town of Greece, Chili, Brighton, and Penfield. (Penfield is not in the Genesee River Basin).

## *B. ASSESSMENTS*

1. Surface Water Monitoring:

The Monroe County Health Department has a cooperative agreement with the U. S. Geological Survey to conduct water quality monitoring on selected waterways in Monroe County. Currently, monitoring activities are ongoing in areas that include Genesee River, Black Creek, and Oatka Creek.

Charlie Knauff, Monroe County Department of Health, 740 East Henrietta Road, Rochester, NY 14620, 585-274-6884

2. Ground Water Monitoring:

Monroe County Wastesite Advisory Committee

Rick Elliott, Monroe County Department of Health, 740 East Henrietta Road, Rochester, NY 14620, 585-274-6067

3. Natural Resources Inventory:

The Preservation of Environmentally Sensitive Areas Report (PESA), 1996

Monroe County Wetlands/ PESA Committee

Contact: Louise Hartshorn, Monroe County Environmental Management Council, Rochester, NY 14614 585-760-7540

## *C. PLANS*

1. County Water Quality Strategy:

Water Quality Coordinating Committee

Charlie Kanauf, Water Quality Coordinator, Environmental Health Project Analyst, Monroe County Department of Health, 111 Westfall Rd., Room 976, P.O. Box 92832 Rochester, NY 14692-8932, Phone: 585-274-8440.

2. Farmland Protection Plans

County Extension Agent: Bob King, Agriculture Program Leader, Cornell Cooperative Extension of Monroe County, 249 Highland Avenue, Rochester, NY 14620, 585 461-1000, x 239

Agricultural and Farmland Protection Board, Chairman: The Honorable Bill Smith. Contact: Bob King, Agriculture Program Leader, Cornell Cooperative Extension of Monroe County, 249 Highland Avenue, Rochester, NY 14620, 585 461-1000, x 239

Monroe County Soil and Water Conservation Board, Contact: W. Selden Chase, 5874 E. Henrietta Road, Rush, NY 14543, 585-533-1028.

3. Aquifer/ Wellhead Protection Plans: none

4. Other:

Rochester Embayment Remedial Action Plan (Stage 1 and Stage 2).

*The Rochester Embayment RAP is a plan to restore and protect the water quality of the Rochester Embayment of Lake Ontario and its watersheds. Many citizens, government agencies, and community organizations provided input on the development of this plan. The Plan was developed in two stages.*

*The Stage I RAP (which was completed in 1993):*

- *established water quality goals and objectives,*
- *described water quality conditions/problems, and*
- *identified pollutant sources.*

*The Stage II RAP:*

- *provides additional information regarding the causes and sources of water quality problems,*
- *describes completed and ongoing actions/remedial measures,*
- *identifies new actions/remedial measures that are needed to restore water quality,*
- *describes studies and monitoring programs that are needed to complete identification of water quality problems and track progress in restoring water quality,*
- *outlines a strategy to fund implementation of the Plan, and*
- *describes who should implement the Plan.*

*(Rochester Embayment Remedial Action Plan Stage 2 Executive Summary. 1997.)*

North Chili tributary of Black Creek Watershed Plan

Pure Waters Master Plan

Water Quality Coordinating Committee 1-year Workplan

Water Quality Coordinating Committee 5-year Workplan

## *D. LOCAL REGULATIONS*

1. Watershed Rules and Regulations: yes, see above

2. Aquifer Protection Zones: none

3. Timber Harvesting Laws: none

4. Conservation Easement Programs

Town of Perinton – Conservation Easement Program, Supervisor James E. Smith, 1350 Turk Hill Road, Fairport, NY 14450, 585-223-0770

Town of Penfield – (term easement program and permanent Open Space plan) Doug Fox, Director of Planing and Zoning, Town of Penfield, 3100 Atlantic Avenue, Penfield, NY 14526, 585-340-8600

Town of Pittsford – Greenprint for the Future, Greg Duane, Director of Finance, Town of Pittsford, 11 South Main Street, Pittsford, NY 14534, 585-248-6200.

Town of Webster – Greenprint program – Contact: Open Space Committee Chair, Larry Peckham, lpeckham@rochester.rr.com

Town of Mendon – Agricultural Advisory Committee, Chair: Byron Palmer, 759 Mendon –Ionia Road, Ionia, NY 14475, 585-624-1191

5. Stormwater Regulations

Caroline Myers, Monroe County Soil and Water Conservation District, 249 Highland Avenue, Rochester, NY 14620, 585-473-2120x110

Monroe County Stormwater Coalition (see note under drainage on earlier page)

Todd Stevenson, Water Quality Coordinator, Water Quality Planning Bureau, Monroe County Department of Health, 111 Westfall Rd., Room 962, P.O. Box 92832 Rochester, NY 14692-8932, Phone: 585-274-8442

6. Flood Mitigation Action Plans

7. Other

*Information provided spring 2002 by Margy Peet, Monroe County Department of Health, (585) 274-8442; Louise Hartshorn, Monroe County EMC, (585) 760-7540; Susanne Quarterman (Retired), Monroe County EMC, (585) 760-7539; Rochelle Bell, Monroe County Department of Planning and Development, (585) 428-5464 and other individuals. Last updated fall, 2004.*

# Ontario County

## *A. NETWORKS AND PARTNERSHIPS*

1. County Water Quality Coordinating Committee: yes

Robert Pierce, Chair, Ontario Co. Planning Department, 20 Ontario St., Canandaigua, NY 14424, 585-396-4489
Thomas DeRue, Ontario County SWCD, 480 N. Main St., Canandaigua, NY 14424, 585-396-1450
Maria Rudzinski, Ontario County Planning Department, 20 Ontario Street, Canandaigua, NY 14424, 585-396-4416
Dr. Bruce Gilman, Finger Lakes Community College, 585-394-3500 ext.7255
Kevin Olvany, Canandaigua Lake Watershed Manager, 585-396-3630

2. Watershed or Lake Associations

Honeoye Lake Watershed Task Force:
Tanya Denee, Ontario County SWCD, 480 N. Main St., Canandaigua, NY 14424, 585-396-1450
Honeoye Lake Valley Association:
Jack Starke, 585-223-4425

Canandaigua Lake Watershed Task Force:
Steve Lewandowski, 585-374-5473
George Barden, 585-396-1450, Canandaigua Lake Watershed Inspector
Kevin Olvany, 585-396-3630, Canandaigua Lake Watershed Program Manager
Canandaigua Lake Pure Water, Ltd.
Seneca Lake Pure Water, Inc.,
Marion Balyszak, SLAP-5, P.O. Box 247, Geneva, NY, 315-789-3052
Robert Pierce, Ontario County Planning Department, 20 Ontario Street, Canandaigua, 585-396-4489

3. Watershed Drainage/Drainage Officer
Canandaigua Lake Watershed Inspector, George Barden, 480 N. Main St., Canandaigua, NY 14424, 585-376-9716
Canandaigua Lake Watershed Program Manager, Kevin Olvany, City of Canandaigua, 205 Saltonstal St., Canandaigua, NY 14424, 585-396-3230
Code Enforcement Officers for all Townships in Ontario County
Kevin Olvany, Canandaigua Lake Watershed Manager, 585-396-3630
Tanya Denee, Soil and Water Conservation District, Canandaigua, 585-396-1450
Dr. Bruce Gilman, Finger Lakes Community College, 585-394-3500 ext.7255

4. Conservation Advisory Committees
Town of Victor
Town of Farmington

5. Land Trusts
Finger Lakes Land Trust:
Betsy Darlington, 202 East Court St., Ithaca, NY 14850, 607-275-9487
Dr. Bruce Gilman, Finger Lakes Community College, 585-394-3500 ext.7255

## *B. ASSESSMENTS*

1. Surface Water Monitoring
County-wide sampling and monitoring by Ontario County SWCD, 480 N. Main St., Canandaigua, NY 14424, 585-396-1450
Canandaigua Lake sampling, Dr. Bruce Gilman, Finger Lakes Community College, 394-3500 ext. 7255
Honeoye Lake sampling, Tanya Denee, 396-1450, Honeoye Lake Watershed Task Force
Kevin Olvany, Canandaigua Lake Watershed Manager, 585-396-3630
Robert Pierce, Ontario County Planning Department, Canandaigua, 585-396-4489,

2. Ground Water Monitoring
Well water testing program, Kari Humphrey, Cornell Cooperative Extension of Ontario Co., 480 N. Main St., Canandaigua, NY 14424, 585-394-3977
Tom Pearson, Department of Environmental Conservation, Avon, 585-226-2466

3. Natural Resources Inventory: none

## *C. PLANS*

1. County Water Quality Committee Strategy: yes
Robert Pierce, Ontario County Planning Department, 20 Ontario Street, Canandaigua, 585-396-4489
Tom DeRue, Ontario County Soil and Water Conservation District, Canandaigua, 585-396-1450
Maria Rudzinski, Ontario County Planning Department, 20 Ontario Street, Canandaigua, 585-396-4416

2. Farmland Protection Plans: yes
Ontario County Farmland Protection and Enhancement Board, administered by Cornell Cooperative Extension of Ontario County, 480 N. Main St., Canandaigua, NY 14424, 585-394-3977
Maria Rudzinski, Ontario County Planning Department, 20 Ontario Street, Canandaigua, 585-396-4416
Robert Stryker, Ontario County Soil and Water Conservation District, Canandaigua, 585-396-1450

3. Aquifer/ Wellhead Protection Plans: yes
Town of Victor
Village Of Naples
Tom Pearsons, Department of Environmental Conservation, Avon, 585-226-2466
Maria Rudzinski, Ontario County Planning Department, 20 Ontario Street, Canandaigua, 585-396-4416

4. Other

### *D. LOCAL REGULATIONS*

1. Watershed Rules and Regulations
Canandaigua Lake Watershed Rules and Regulations
several municipalities have local laws, Josh Gossard, Ontario County SWCD, 480 N. Main St., Canandaigua, NY 14424, 585-396-1450 x21
Kevin Olvany, Canandaigua Lake Watershed Manager, 585-396-3630

2. Aquifer Protection Zones:
Mike Woodruff, Village of Bloomfield, 585-657-5455

3. Timber Harvesting Laws
Canandaigua and Honeoye Lakes Watershed groups work towards adoption of model law by municipalities
Tanya Denee, Ontario County Soil and Water District, 585-396-1450

4. Conservation Easement Programs:
no formal programs, but some cases of conservation easements
Meg Ewing, Finger Lakes Land Trust, 585-394-5436

5. Stormwater Regulations
municipalities have adopted various models
Tom DeRue, Ontario County Soil and Water District, 585-3961450

6. Flood Mitigation Action Plans: no

7. Other

*Information provided spring 2002 by Thomas DeRue, Ontario County SWCD, (585) 396-1450 x25 and Robert L. Pierce Jr., Ontario County Planning Department, (585) 396-4489. Last updated fall, 2004.*

## Potter County

## A. NETWORKS AND PARTNERSHIPS

1. County Water Quality Coordinating Committee

2. Watershed or Lake Associations
   Headwaters of the Genesee Watershed Group (forthcoming)
   Stephen Richard, Rd. 2, Genesee, PA 16923, 814-228-3651

3. Watershed Drainage/Drainage Officer

4. Conservation Advisory Committees

5. Land Trusts

## B. ASSESSMENTS

1. Surface Water Monitoring
   will be done by area school children and posted on upcoming Headwaters of the Genesee Watershed Group website

2. Ground Water Monitoring

3. Natural Resources Inventory
   Pennsylvania Natural Diversity Inventory (PNDI)

## C. PLANS

1. County Water Quality Committee Strategy

2. Farmland Protection Plans
   Farmland Preservation easements on some farms in progress

3. Aquifer/ Wellhead Protection Plans

4. Other

## D. LOCAL REGULATIONS

1. Watershed Rules and Regulations
   in the process of being updated

2. Aquifer Protection Zones

3. Timber Harvesting Laws

4. Conservation Easement Programs
   Agricultural Security Areas
      Farmland Preservation easements on some farms in progress

5. Stormwater Regulations
    no fishing in stream management projects

6. Flood Mitigation Action Plans

7. Other
    Genesee River Restoration Plan (funded with Pennsylvania Growing Greener funds)
    Farmland Preservation
    Dirt and Gravel projects (Pennsylvania DOT, Trout Unlimited, local preservation groups)

*Information provided spring 2002 by P.J. Emerick, Potter County Soil and Water Conservation District (814)274 –8411 x4. Last updated fall, 2004.*

# Steuben County

### *A. NETWORKS AND PARTNERSHIPS*

1. County Water Quality Coordinating Committee
    c/o Steuben County Soil and Water Conservation District, 415 W Morris St., Bath, NY 14810, 607-776-7398 x3

2. Watershed or Lake Associations: none

3. Watershed Drainage/Drainage Officer: none

4. Conservation Advisory Committees: none

5. Land Trusts: none

### *B. ASSESSMENTS*

1. Surface Water Monitoring
    Stony Brook State Park
        Coliform level testing led to several closures in 2001 (no swimming)

2. Ground Water Monitoring: none

3. Natural Resources Inventory: none

### *C. PLANS*

1. County Water Quality Committee Strategy: yes
    Steuben County Soil and Water Conservation District, 415 W Morris St., Bath, NY 14810, 607-776-7398 x3

2. Farmland Protection Plans

Copies of the 2001 County Farmland Protection Plan and Right-to-Farm Law are available from the Steuben County Planning Department, 3 E Pulteney Square, Bath NY, 14810, 607-664-2268, amy@co.steuben.ny.us

3. Aquifer/ Wellhead Protection Plans
Town of Wayland Mill Creek Drainage Area
Town of Greenwood
Jennifer Fais, Southern Tier Central Regional Planning and Development Board, 607- 962-5092

4. Other

### *D. LOCAL REGULATIONS*

1. Watershed Rules and Regulations
Town of Wayland

2. Aquifer Protection Zones
Town of Wayland Zoning Law
Linda Englert, Town of Wayland, 585-728-5660

3. Timber Harvesting Laws: none

4. Conservation Easement Programs: none

5. Stormwater Regulations: follow DEC regulations

6. Flood Mitigation Action Plans: none

7. Other: none

*Information provided spring 2002 by Amy Dlugos, Senior Planner, Steuben County Planning Department, (607) 664-2268; Jeff Parker, Steuben County SWCD, (607) 776-7398 x3 and Jennifer Fais, Southern Tier Central Regional Planning and Development Board, (607) 962-5092. Last updated fall, 2004.*

## Wyoming County

### *A. NETWORKS AND PARTNERSHIPS*

1. County Water Quality Coordinating Committee: yes
Dave Reckahn, Chairperson, Wyoming County SWCD, 31 Duncan St., Warsaw, NY 14569, 585-786-5070

2. Watershed or Lake Associations
Oatka Creek Committee, Rick Venvertloh, Chairperson, 300 State St., Rochester, NY 14614, 585-454-6110
Silver Lake Association, Bill Soules, President

3. Watershed Drainage/Drainage Officer: none

3. Conservation Advisory Committees:
   Water Resources Coordinating Committee (Soil and Water Conservation Dist. Office)

4. Land Trusts:
   Genesee Land Trust:
   Gay Mills, Director, 100 Office Parkway, Pittsford, NY 14534, 585-381-7310, glt@frontiernet.net
   Nature Conservancy:
   David Klein, Director or Jim Howe, Deputy Director, 339 East Avenue, Suite 300, Rochester, NY 14604, Jhowe@tnc.org, 585- 546-8030

## *B. ASSESSMENTS*

1. Surface Water Monitoring
   Silver Lake monitoring administered by Dave Reckahn, Wyoming County SWCD
   Oatka Creek and Silver Lake monitoring occurring through contract with SUNY Brockport

2. Ground Water Monitoring: no

3. Natural Resources Inventory
   Brian Richards, Natural Resource Conservation Service, Wyoming County SWCD, 31 Duncan St., Warsaw, NY 14550

## *C. PLANS*

1. County Water Quality Committee Strategy: yes
   updated yearly

2. Farmland Protection Plans: In progress: to be completed early 2005

3. Aquifer/ Wellhead Protection Plans
   Village of Castile
   Village of Warsaw (pending state approval)
   Village of Attica
   Village of Silver Springs (pending state approval)

4. Other

## *D. LOCAL REGULATIONS*

1. Watershed Rules and Regulations: yes, see above

2. Aquifer Protection Zones: none

3. Timber Harvesting Laws: none

4. Conservation Easement Programs: none

5. Stormwater Regulations: none beyond Phase II construction

6. Flood Mitigation Action Plans
   Oatka Creek plan in progress

7. Other

*Information provided spring by Dave Reckhahn, Wyoming County Soil and Water Conservation District, (585)786-5070. Last updated fall, 2004.*

# Appendix E: The Water Education Collaborative (WEC)

The Water Education Collaborative (WEC) is a coalition of organizations that work together to increase water quality education in the community. The mission of the WEC is to focus the combined resources of member organizations to provide water quality education services to the public within the Genesee Region Watershed. This is accomplished by: 1) educating and involving citizens in protecting water quality, 2) serving as a resource/clearinghouse for water quality education programs, and 3) seeking the resources to support water education programs.

## Useful Documents and Information Sources provided by the WEC:

Inventory of Water-related Education and Outreach Activities in the Genesee River Basin
http://www.rmsc.org/communitylearning/partners/wec/publications/Publications/ZornWQEResults.doc

2002 Annual Report (outline)
http://www.rmsc.org/communitylearning/partners/wec/publications/Publications/annualreport2002.htm.

Board Member Directory
http://www.rmsc.org/communitylearning/partners/wec/publications/Publications/boardmemberdirectory2004.htm.

Water Quality Opinion Survey: Public Attitudes and Knowledge Regarding Water Quality in Monroe County
http://www.rmsc.org/communitylearning/partners/wec/publications/index.htm.

Community Water Watch Participants Manual
http://www.rmsc.org/communitylearning/partners/wec/publications/Publications/CommunityWaterWatchParti.pdf

Water Education Collaborative

**http://www.thewec.org**

# Appendix F: List of Acronyms

**AEM** .....Agriculture Environmental Management
**BSPS** .....Bergen Swamp Preservation Society
**BMPs** .....Best Management Practices
**BASINS** .....Better Assessment Science Integrating Point and Non-point Sources
**CSLAP** .....Citizen State Lake Assessment Program
**CWA** .....Clean Water Act
**CSO** .....Combined Sewer Overflow
**CNMP** .....Comprehensive Nutrient Management Plan
**CAFO** .....Concentrated Animal Feeding Operation
**CREP** .....Conservation Reserve Enhancement Program
**CONCEPTS** .....Conservational Channel Evolution and Pollutant Transport System
**DEC** .....New York State Department of Environmental Conservation (see also NYSDEC)
**DEP**.....Pennsylvania Department of Environmental Protection
**EPA** .....United States Environmental Protection Agency
**EPF** .....Environmental Protection Fund
**EQIP** .....Environmental Quality Incentives Program
**FEMA** .....Federal Emergency Management Agency
**FL/LOWPA** .....Finger Lakes/Lake Ontario Watershed Protection Alliance
**G/FLRPC** .....Genesee/Finger Lakes Regional Planning Council
**GRBAS** .....Genesee River Basin Action Strategy
**GIS** .....Geographic Information System
**GLC** .....Great Lakes Commission
**HUC** .....Hydrologic Unit Code
**MUSLE** .....Modified Universal Soil Loss Equation
**MS4**.....Municipal Separate Storm Sewer System
**NPDES** .....National Pollution Discharge Elimination System
**NYSDEC/DEC** .New York State Department of Environmental Conservation (see also DEC)
**WI/PWL** .....New York State Waterbody Inventory/Priority Waterbody List
**NPS** .....Nonpoint Source
**NOI**.....Notice of Intent
**OWTS** .....Onsite Wastewater Treatment Systems
**PWL** .....Priority Waterbodies List (see also WI/PWL)
**RAP** .....Remedial Action Plan for the Rochester Embayment
**SSO** .....Sanitary Sewer Overflow
**SWCD** .....Soil and Water Conservation District
**SPDES** .....State Pollution Discharge Elimination System
**SWPPP** .....Stormwater Pollution Prevention Plan
**SWAT** .....Soil and Water Assessment Tool
**TMDL** .....Total Maximum Daily Load
**UWA** .....Unified Watershed Assessment
**USACE** .....United States Army Corps of Engineers
**USDA ARS** .....United States Department of Agriculture Agricultural Research Service
**USGS** .....United States Geologic Service
**USLE** .....Universal Soil Loss Equation
**WEC** .....Water Education Collaborative
**WI/PWL** .....Waterbody Inventory/Priority Waterbodies List
**WQMP** .....Water Quality Management Plan
**WRDA** .....Water Resources Development Act
**WRAPS** .....Watershed Restoration and Protection Action Strategies