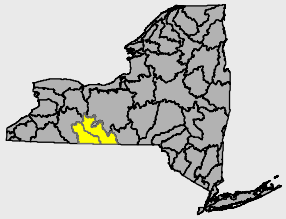
Figure 2

Chemung River Basin

2004 WI/PWL Water Quality Assessment



The Chemung River Basin

Basin Description

The Chemung River Basin is located in the south central region of New York State – also known as the Southern Tier of the state – and north central Pennsylvania. The Chemung River is a significant tributary to the 27,580 square mile Susquehanna River Basin; it joins the Susquehanna River just south of the New York-Pennsylvania state line. The 41 mile long Chemung river is formed by the confluence of the Cohocton and Tioga Rivers. About 70% of the basin is within New York State; the remainder is in Pennsylvania. Together the rivers of the basin drain about 1,740 square miles of New York State, including most of Chemung and Steuben Counties, portions of Schuyler and Allegany Counties, and very small parts of Yates, Ontario and Livingston Counties.

The Chemung River Basin is mostly rural in character, with considerable agricultural lands and large tracts of forest and woodlands along the northern fringe of the Allegheny Mountain range. The basin is best described as lightly populated, with an estimated 187,579 residents (2000). However significant population centers of Elmira/Horseheads and Corning/Painted Post are located along the Chemung River valley. These areas are comprised of the cities/villages of Elmira (30,940), Corning (10,842), Horseheads (6,452), Elmira Heights (4,170) and Painted Post (1,842) and are home to a number of industries (including the Corning Glass Works), manufacturing and significant commercial development. Other population centers in the basin include the City of Hornell (9,019) and the Villages of Bath (5,641) and Canisteo (2,336).

There are about 2,940 miles of rivers and streams and about 90 lakes and ponds in the basin. Many of the ponds are too small to be individually assessed, but 23 significant* lake, pond and reservoir waterbody segments (covering over 2,900 acres) are included in the Chemung River Basin Waterbody Inventory. The steep slopes and flashy nature of the tributary streams make the Chemung Basin prone to flooding and flood control structures line much of the Chemung River and some of the tributaries. The largest tributaries to the Chemung River include the Cohocton River with about 1,099 miles of streams or 37% of the basin total and Tioga/Canisteo Rivers (979 miles, 33%); Newtown Creek is the next largest tributary (145 miles, 5%). Of the lakes and reservoirs, the largest are Lamoka Lake/Mill Pond (825 acres, or 28% of lake waterbody acres in the basin), Waneta Lake (781 acres, 27%) and Almond Lake (480 acres, 17%).

Water Quality Issues and Problems

Water quality in the Chemung River Basin is generally satisfactory but conditions in some specific waters varies. The vast majority of river segments support uses and nearly one-half (49%) of assessed river miles were found to have no know impacts to uses. However minor impacts – primarily due to nonpoint sources of silt/sediment and/or nutrients – are evident in about one-third of basin river miles. Agricultural activities and other nonpoint sources are frequently cited as contributing to impacts in the rivers. In basin lakes, water quality and aquatic life support is also generally satisfactory. However habitat modification (invasive nuisance species) and other excessive aquatic weed growth restricts recreational activities in varying degrees. Hydrologic modification related to flood control activities also comes into conflict with recreational uses of some of the lake waters in the basin. These and other water quality issues and problems are discussed in further detail below.

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* *Significant Lakes* are lakes of 6.4 acres (0.01 square miles) or larger and are included the New York State Lakes Gazeteer.

Agricultural Activity

Considerable agricultural activity in the rural Chemung River Basin has an impact on aquatic life use support and recreational uses of the waters. Agricultural runoff contributes nutrient and silt/sediment loads to the streams and lakes. If not properly managed agricultural practices can have significant impacts on the water quality rivers and lakes in the basin. Agricultural activities are a frequently cited source of PWL waters in the basin. However agriculture is largely seen as a potential threat – rather than a current source – of water quality impacts in the basin. Various state and local (county) agencies are working with the farming community to continue to manage these threats.

Streambank Erosion

Silt and sedimentation from the erosion of stream banks is a source of impacts to stream habitat and resident fisheries. Steep gradient streams that cut through silty soils are highly susceptible to erosion. Sediment loads and deposition in creek can be severe in the county. The municipal highway departments remove considerable volumes of gravel from streams each year. The maintenance of flood control structures require regular sediment removal.

Invasive Species/Habitat Modification

Recreational uses (swimming, boating, fishing) in basin lake waters can be limited by dense rooted vegetation. The predominant problem plant species are Eurasian water milfoil (Myriophyllum spicatum) and Curly-leafed Pondweed (Potamogeton crispus). Mechanical weed harvesting and chemical treatments are often used by area lake associations to control emergent aquatic vegetation and maintain recreational uses. Though these habitat alterations are not typically viewed as the result of specific water quality pollutants, nutrients and silt/sediment loadings can increase weed growth.

Flood Control

The high gradient and flashy streams in the basin make the Chemung River highly vulnerable to flooding and flood control structures line much of the Chemung River and some tributaries. In some ways the flood control effort conflicts with other uses of the waters. Stream access limitations as well as the modification of hydrology and habitat in some basin waters can impact both recreation and aquatic life. Efforts are made to limit the impacts to these other uses, but need to protect life and property of basin residents from flood waters is recognized as paramount.

Threats to Elmira Drinking Water

Drinking water use of the Chemung River water supply is considered to be threatened due to the susceptibility of the water supply to possible contamination. Class A surface waters of the state that serve as the source of potable water for significant populations are typically categorized as threatened. The Chemung River provides about 70% of the raw water that is distributed to 65,000 residents of Elmira, Horseheads and surrounding communities by the Elmira Water Board.

The New York State Health Department Source Water Assessment for the water supply of the Elmira Water Board found an elevated susceptibility to contamination for this source of drinking water. The amount of agricultural lands in the assessment area results in elevated potential for protozoa and pesticides contamination. While there are some facilities present, permitted discharges do not likely represent an important threat to source water quality based on their density in the assessment area. However the total amount of wastewater discharged to surface water in this assessment area is high enough to further raise the potential for contamination (particularly for protozoa).

Chesapeake Bay Loading Reductions

The Chemung River and its watershed is tributary to the Susquehanna River and is therefore part of the 6,250 square mile Chesapeake Bay Watershed. The Chesapeake Bay and its tidal tributaries are listed as Clean Water Act Section 303(d) Impaired/TMDL Waters due to low dissolved oxygen and reduced water clarity. To address these impairments the USEPA Chesapeake Bay Program has collected water quality monitoring data and conducted watershed computer modeling that documents that these impairments are the result of sediment and nutrient loadings from sources throughout the Chesapeake Bay Watershed.

By 2002, all of the Chesapeake Bay states had adopted a Memorandum of Understanding regarding cooperative efforts for the protection of the Chesapeake Bay. The MOU cites that unless water quality standards are met by 2010, the impairments to the Bay will require the establishment of a TMDL by May 2011. In the MOU, the signatories agree to work cooperatively to achieve the nutrient and sediment load reductions that are necessary to meet water quality standards in the Bay by 2010.

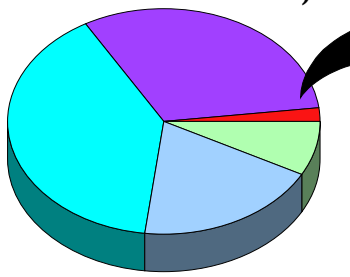
For sediment, the model predicts that New York State will achieve its sediment cap load without additional reduction efforts. However the model also shows that New York State's current nutrient loads do contribute to the impairment in the Bay; and implementation of agricultural best management practices (BMPs) and wastewater treatment plant upgrades throughout the basin that reduce nutrient (nitrogen) loadings will contribute to the restoration of the Bay. Although the waters that are the focus of this restoration lie well outside the borders of New York State, these and other activities that reduce nutrient (nitrogen) inputs to the waters of the Chemung River Basin should be viewed as high priority water quality restoration efforts deserving of particular support.

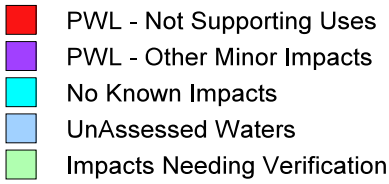
Groundwater Resources

Although groundwater resources are not specifically tracked through the WI/PWL, they are considered *Priority Waters* nonetheless. Groundwater provides drinking water for about one-third of the population of New York State and is the source of base flow for most rivers and streams in the state. Management and protection of both the quantity and quality of this resource is critical for protecting public health, and is also a key element of surface water quality and wetland management efforts. In the Chemung River Basin, the more significant threats to groundwater resources include inactive hazardous waste sites, pesticide application, animal feeding operations, on-site wastewater treatment systems, chemical spills and abandoned or improperly plugged oil and gas wells.

Rivers/Streams

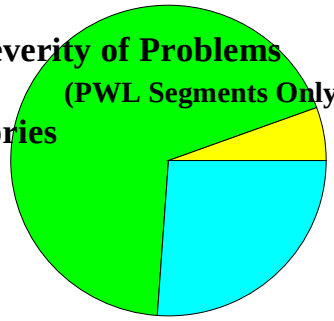
Water Quality Assessment Categories
(for ALL Waters in the Basin)

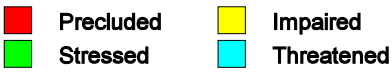




Affected

Severity of Problems
(PWL Segments Only)

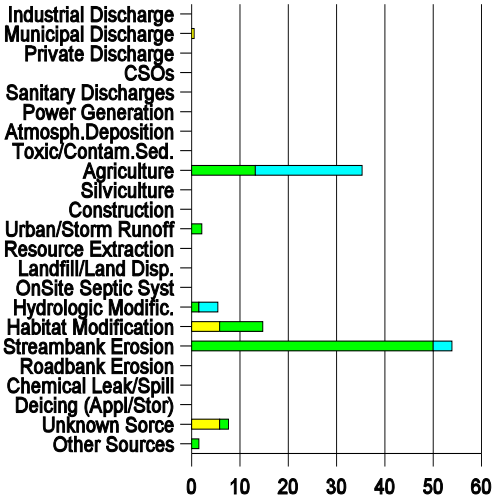




Chemung River Basin

Total River Miles:	2,941
Total PWL Miles:	986

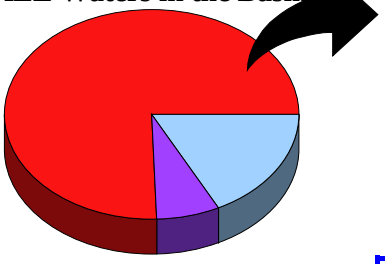
Major Sources of Impact
(PWL Segments Only)

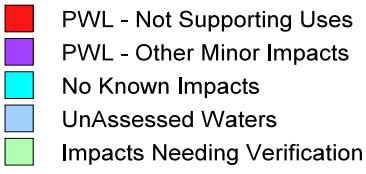


Percent of PWL Waters

Lakes/Reservoirs

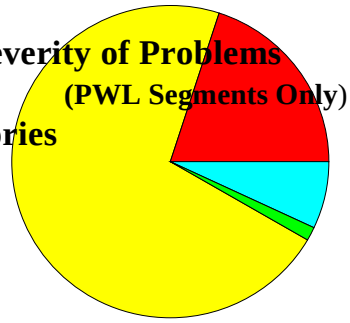
Water Quality Assessment Categories
(for ALL Waters in the Basin)

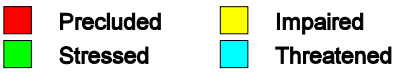




Affected

Severity of Problems
(PWL Segments Only)

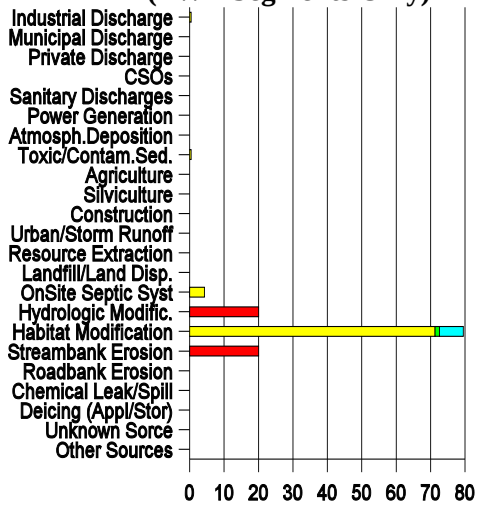




Chemung River Basin

Total Lake Acres:	2,904
Total PWL Acres:	2,397

Major Sources of Impact
(PWL Segments Only)



Percent of PWL Waters

Basin Water Quality Summary

About one-third (34%) of the river miles in the Chemung River Basin (986 miles) are listed on the Priority Waterbodies List as either not supporting uses or having minor impacts or threats to water quality. The great majority (94%) of these river miles are considered *Stressed* or *Threatened* waters that fully support appropriate uses, but that have minor impacts/threats to uses. Only about six percent (6%) of basin river miles are *Impaired* and do not support appropriate uses.

Eight of the 23 separate lake segments in the basin are included on the PWL as having impaired uses or minor impacts/threats to uses. However these 8 lakes impaired/impacted lakes represent 83% of the total lake acres in the basin. These water quality problems are primarily the result of excessive aquatic weed growth and/or invasive species that restrict recreational uses. However hydrologic modification in support of flood control efforts also impact recreational uses of other reservoirs.

Significant sources of impact and impairment to the waters of the basin include streambank erosion that increase silt/sediment loadings to the streams and lakes and agricultural nonpoint sources that increase nutrient loadings. Habitat modifications (invasive species and excessive weed growth) and hydrologic modifications (related to flood control) are also frequently cited sources of impairment/impact.