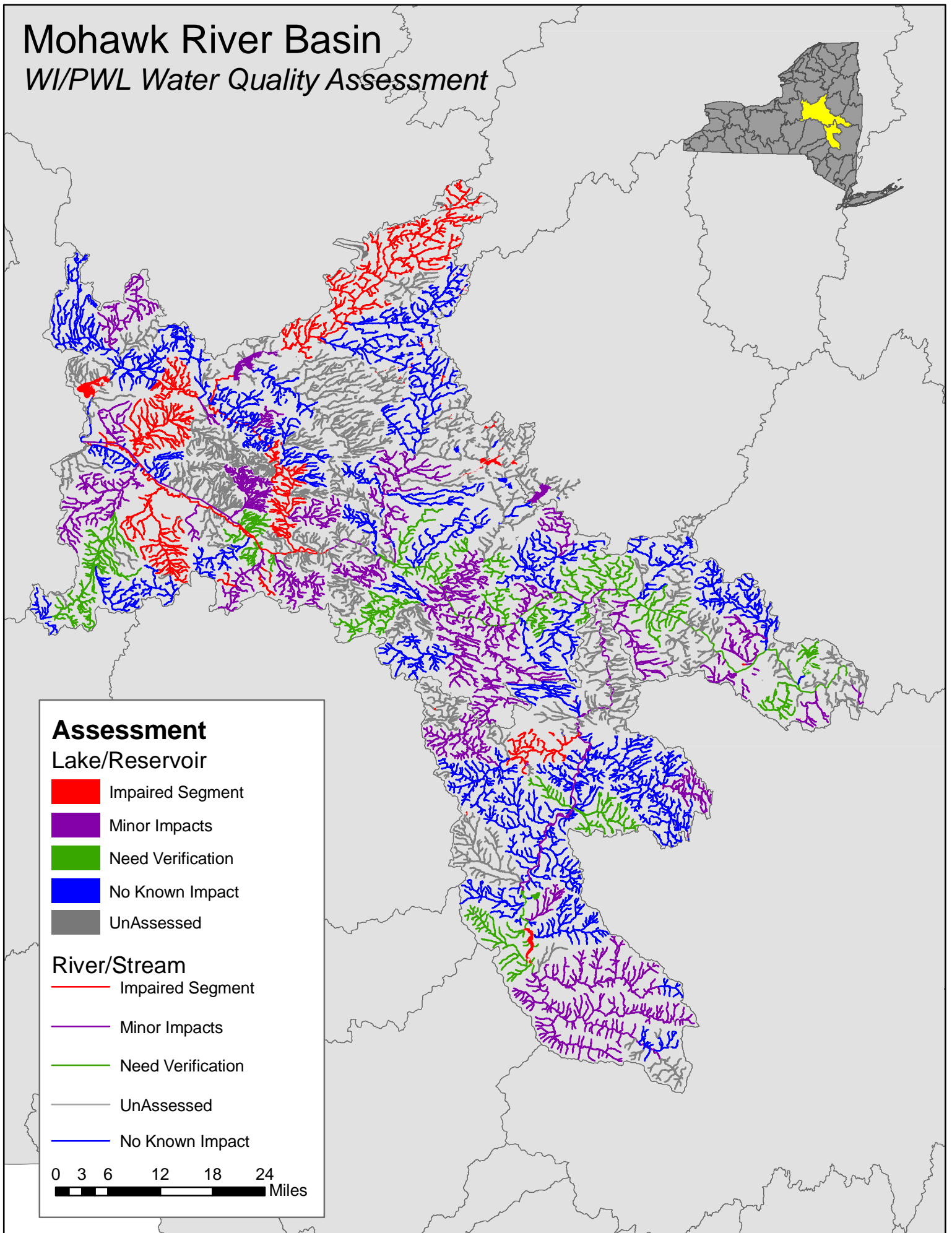


# Mohawk River Basin

## WI/PWL Water Quality Assessment



# The Mohawk River Basin

## Basin Description

The Mohawk River Basin, located in central New York State, is the largest tributary to the Hudson River. Its approximately 3,460 square mile drainage area represents just over 25% of the entire Hudson River Basin. The Mohawk originates between the Adirondack Mountains and Tug Hill Plateau in north central New York State and flows toward the east carving a wide valley between the Adirondacks to the north and the Central Appalachian Mountains to the south. Numerous population centers are located along the main stem of the Mohawk and the parallel/coincident New York State (NYS) Barge Canal, which has long served as a primary navigation route to the west. The entire Mohawk River Basin is within the borders of New York State. The drainage Basin area includes all of Montgomery County, most of Schoharie County, large parts of Schenectady, Greene, Fulton, Herkimer and Oneida Counties, and portions of Albany, Saratoga, Delaware, Otsego, Hamilton, Madison and Lewis Counties.

The population of the Mohawk River Basin totals about 583,500 people (2000). The largest population centers (either partially or entirely within the basin) include Albany (95,658, partial), Schenectady (61,821), Amsterdam (18,355), Utica (60,651) and Rome (34,950). Outside these centers, the basin is largely rural and forested to the north of the river and agricultural along the river and to the south.

There are about 6,656 miles of rivers and streams (and canal) and 135 significant\* lakes, ponds and reservoirs (covering 18,315 acres) in the basin. The length of the main stem of the Mohawk River itself from Delta Dam to the Hudson is about 140 miles. The largest tributaries to the Mohawk include the Schoharie with 1,650 or 25% of basin stream miles, West Canada Creek (1,165 miles, 18%) and East Canada Creek (515 miles, 8%). Of the lakes/reservoirs, the four largest (Hinckley Reservoir, Delta Reservoir, Schoharie Reservoir and Peck Lake) represent about 42% of the total amount of lake acres in the basin.

## Water Quality Issues and Problems

The Mohawk River Basin, like much of New York State, encompasses a diverse area that includes highly urbanized and industrial areas, commercial strips and surrounding suburban residential communities, rural agricultural areas and lightly populated tracts of forested land. Not surprisingly, water quality issues in the basin are also quite diverse. The more significant point source impacts are located along the more urban and populated Mohawk River/NYS Barge Canal corridor. But various nonpoint source impacts are evident throughout the basin. The more significant water quality issues in the basin are discussed below.

### *Urban/Industrial Impacts*

Various recreational uses, aquatic life support and aesthetics in stretches of the urban waterways of and along the Mohawk River main stem and NYS Barge Canal are significantly restricted by pollutants from various industrial, municipal, commercial and other sources. Industrial and municipal point sources, including combined sewer overflows, are identified concerns in some parts of the basin. These impacts are most significant in the Utica and Rome areas. Nonpoint urban runoff also flushes a variety of pollutants and debris from the numerous population centers and surrounding communities along the river/canal into its waters. Contaminated sediments, inactive hazardous waste sites and other impacts attributed to past/historic discharges also limit uses.

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

### *Acid Rain/Atmospheric Deposition*

Low pH attributed to atmospheric deposition/acid precipitation has been documented in many small lakes and ponds in the basin. Such conditions are known to have a significant impact on aquatic ecosystems, impairing and often precluding the propagation and survival of fish in some lakes and ponds. Previous water quality assessments and Priority Waterbodies Lists have included large numbers of smaller (less than 10 acres) lakes and ponds impacted by acid rain/atmospheric deposition. However, with the expansion of the WIPWL database to accommodate all waterbodies, it was necessary to limit the tracking of individual lakes to those 0.01 square miles (6.4 acres) in size or larger.

Although these lakes and ponds are no longer tracked individually, and the lake area affected as a percentage of total lake area in the basin is not that large, acid rain/atmospheric deposition remains a significant water quality issue affecting a large number of waterbodies in the basin.

Previous Priority Waterbodies Lists included a significant number of small lakes impacted by acid rain/atmospheric deposition. However, with the expansion of the WIPWL database to accommodate all waterbodies, it was necessary to limit individual listing of smaller lakes. Although these lakes and ponds are no longer listed separately, and the sum total lake area affected is not that large a percentage of the total lake area in the basin, acid rain/atmospheric deposition remains a significant water quality issue affecting a large number of waterbodies in the Mohawk River Basin.

### *Fish Consumption Advisories*

Various significant waters in the Mohawk River Basin are listed as impaired due to waterbody-specific fish consumption advisories for the protection of human health. Fish consumption advisories in the Mohawk River, NYS Barge Canal and specific smaller tributaries in the Utica-Rome area are a result of elevated PCB levels. The source of PCBs is largely thought to be contaminated sediments and hazardous waste sites/landfills, although continuing sources may also be present. PAHs in sediments are also a concern. Fish consumption in Schoharie Reservoir and Ferris Lake is also limited by advisories due to mercury levels. Atmospheric deposition of mercury is the likely source.

### *New York City Water Supply Reservoir System*

The Schoharie Reservoir is part of the New York City Water Supply's Catskill District, which makes up about 24% of the entire City water supply, and which serves nearly half the population of the state. Reservoir water is diverted from the Schoharie/Mohawk Basin to the Upper Esopus Creek and the Ashokan Reservoir in the Lower Hudson Basin via the Shandaken Tunnel. The turbidity in the reservoir is sufficiently high as to limit its use as a drinking water supply. The water discharged through the Shandaken Tunnel, has the potential to be a major contributor of suspended sediment to the Esopus Creek. The discharge is currently a matter of litigation in federal court and is expected to result in future SPDES control measures. These problems are primarily the result of the erosion of glacial clay deposits indigenous to the watershed. Some in-reservoir processes, such as near shore wave action, can contribute to reservoir turbidity. However, the ultimate source of most turbidity in the reservoir is watershed streams. New York City Department of Environmental Protection (NYCDEP) has undertaken an extensive program of stream stabilization upstream of the reservoir. Beyond these efforts NYCDEP is currently managing turbidity in the reservoir and its impact on the water supply operationally, by regulating (limiting) the amount of water being diverted from the Schoharie to the Ashokan Reservoir. However, this approach represents a trade of water quantity for quality and does not address the underlying sources of turbidity in the watershed.

### *Agricultural Activity*

Considerable agricultural activity in rural watersheds of the Mohawk River Basin also have a significant impact on aquatic life support and recreational uses of the waters. Agricultural runoff and various other nonpoint sources contribute nutrient and silt/sediment loads to the streams. Poor agricultural management practices, including permitting livestock unrestricted access to streams, improper manure application on fields, lack of silage leachate, manure or milkhouse wastewater treatment facilities, intensively cultivated row croplands with little riparian buffer and nutrient (fertilizer) and pesticides application to fields in the absence of approved nutrient/pesticide management plans, have a significant impact on water quality. Various state and local (county) agencies are working with the farming community to address these issues.

### *Failing and/or Inadequate On-site Septic Systems*

Recreational uses and aesthetics of lakes and streams in a number of rural communities are impacted by failing and/or inadequate on-site septic systems. In many cases, raw sewage discharges to the waters have been observed. Such conditions also raise obvious public health concerns as well. Efforts to address these problems are hindered by fiscal considerations. Correcting individual systems and/or the sewerage of a larger neighborhood or community results in significant (often insurmountable) financial burden.

### *Hydrologic Modification*

Natural resources (fishery) habitat and recreational (fishing, boating) uses in various waters of the basin are significantly affected by hydrologic modifications. Fluctuations in stream flows and lake water levels are a result of various uses, including hydropower generation, flood control, drinking water supply use, and augmentation of water in the NYS Barge Canal. The impacts of the conflicting uses of these water resources will be difficult to resolve.

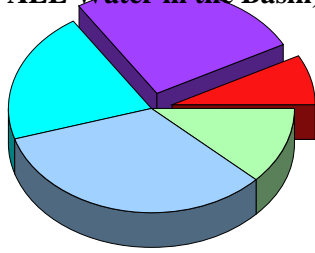
### *Groundwater Resources*

Although groundwater resources are not specifically tracked through the WIPWL, 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.

Groundwater is not incorporated into the WIPWL because of the difficulties with regard to monitoring, assessing and even defining “waterbody segments.” In addition, the emphasis on *protection* of groundwater now (rather than *restoration* later) also makes the WIPWL an inadequate tool to manage this resource. While the WIPWL discusses water quality threats to some degree, the more typical WIPWL approach tracks the need for periodic assessment, the determination of impacts and impairments, and the progress toward restoration of uses. While this approach is adequate for surface waters, the use of groundwater for drinking water supplies, the corresponding impact on public health, and the considerable difficulty in restoring groundwater resources once degraded, requires a different approach. The proper management of groundwater resources requires a greater emphasis on threats (both known and potential) than the WIPWL provides, and less focus on restoration. In the Mohawk River Basin, the more significant of these threats include agricultural sources, inadequately maintained and/or failing on-site septic systems and salt storage and application for road deicing.

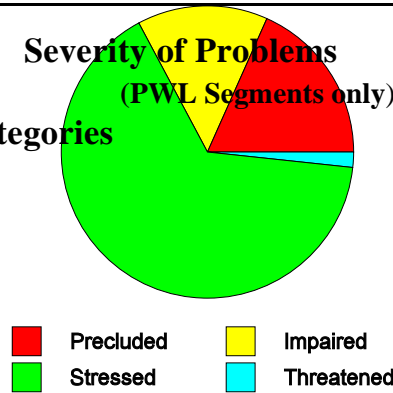
# Rivers/Streams

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



- PWL - Not Supporting Uses
- PWL - Other Minor Impacts
- No Known Impacts
- UnAssessed Waters
- Impacts Needing Verification

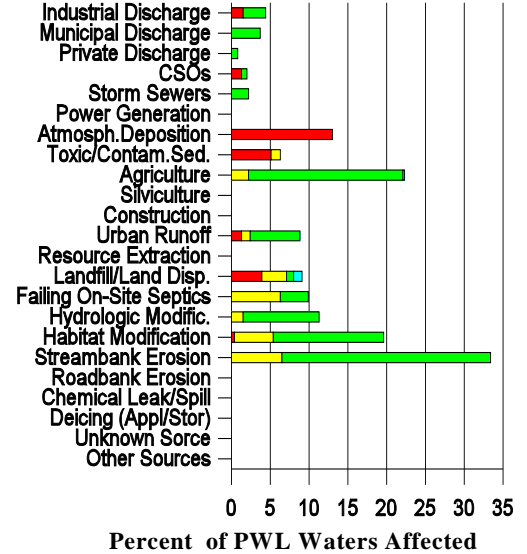
## Severity of Problems (PWL Segments only)



- Precluded
- Stressed
- Impaired
- Threatened

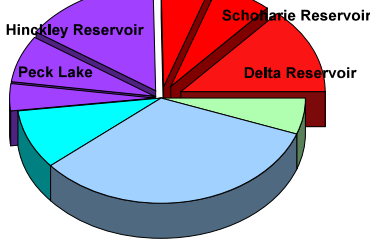
**Mohawk River Basin**  
 Total River Miles: 6,656  
 Total PWL Miles: 2,265

## Major Sources - Priority Waterbodies



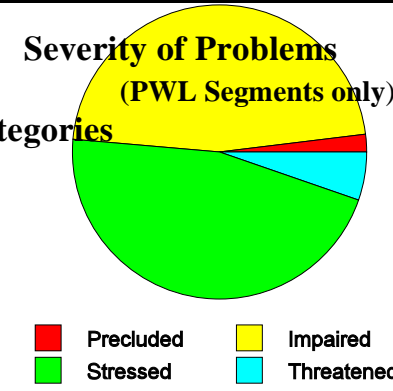
# Lakes/Reservoirs

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



- PWL - Not Supporting Uses
- PWL - Other Minor Impacts
- No Known Impacts
- UnAssessed Waters
- Impacts Needing Verification

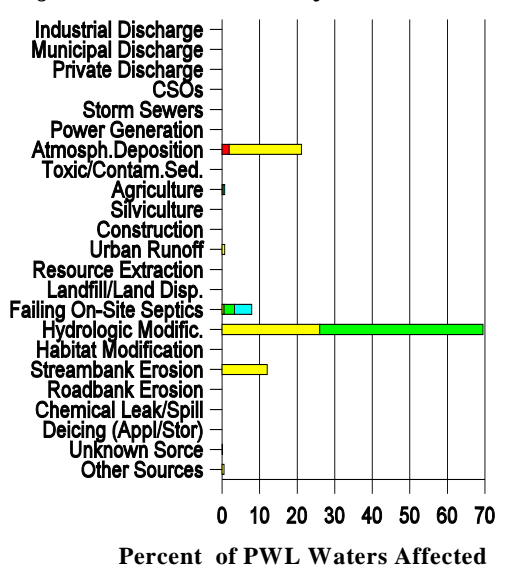
## Severity of Problems (PWL Segments only)



- Precluded
- Stressed
- Impaired
- Threatened

**Mohawk River Basin**  
 Total Lake Acres: 18,315  
 Total PWL Acres: 9,542

## Major Sources - Priority Waterbodies



## Basin Water Quality Summary

About one-third of the river (and canal) miles in the Mohawk River Basin (2,265 miles) are listed on the Priority Waterbodies List as either not supporting uses or having minor impacts or threats to water quality. About two-thirds of these miles are listed as *Stressed* or *Threatened* waters that fully support appropriate uses, but with minor impacts/threats. Just over eleven percent of basin river miles are *Precluded* or *Impaired* and do not support appropriate uses.

A larger percentage (about 52%) of lake/reservoir acres in the basin are included on the PWL. Impacts to the four largest lakes/reservoirs in the basin (Hinckley, Delta and Schoharie Reservoirs and Peck Lake) represent nearly 82% of the lake waters on the PWL. About one-half of the lake/reservoir acres on the PWL do not support uses; about 78% of these impaired lake waters are a result of impairments to two reservoirs: Delta and Schoharie Reservoirs. Much of the remaining lake/reservoir acres that do not support uses are the result of acid rain impacts. Hydrologic modification, atmospheric deposition and streambank erosion are the