
Courtney Nichols

Mohawk River Basin Action Agenda

CONSERVING, PRESERVING, AND RESTORING THE MOHAWK RIVER WATERSHED

2021–2026

Kathy Hochul, Governor | Basil Seggos, Commissioner

Acknowledgements

This document was prepared by the staff of the New York State Department of Environmental Conservation's Mohawk River Basin Program, with the assistance of the Mohawk River Basin Steering Committee and technical working groups comprised of DEC staff and Steering Committee members addressing the key topics of Water Quality, Fisheries and Habitats, Flooding and Resilience, and Recreation and Stewardship. The member organizations of the Mohawk River Basin Steering Committee are listed on page 3.

Additional information about the Mohawk River Basin Action Agenda or the New York State Department of Environmental Conservation's Mohawk River Basin Program can be obtained by visiting:

http://www.dec.ny.gov/lands/58571.html

or by contacting:

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Purpose and Overview

The Mohawk River Basin Program Mission

> Conserving, preserving, and restoring the environmental quality of the Mohawk River while helping to manage the watershed's resources for a sustainable future.

DEC's Mohawk River Basin Program (MRBP) works to promote the integrated and coordinated management of the many environmental resources of the Mohawk River and its unique watershed. As a partnership-based initiative, the MRBP fosters collaborative decision-making based on an understanding of the entire ecosystem, recognizing that the complex issues within the region cannot be fully resolved by managing certain sectors, species, or pollutants on an individual basis. To this end, the Mohawk River watershed is an excellent area for advancing New York State's ecosystem-based management goals by integrating environmental sustainability with the many compatible components of economic growth and development. To be adaptive and responsive to our ever-changing environment, the MRBP promotes coordination and cooperation among public and private sectors to balance competing uses and inspire compromise between users.

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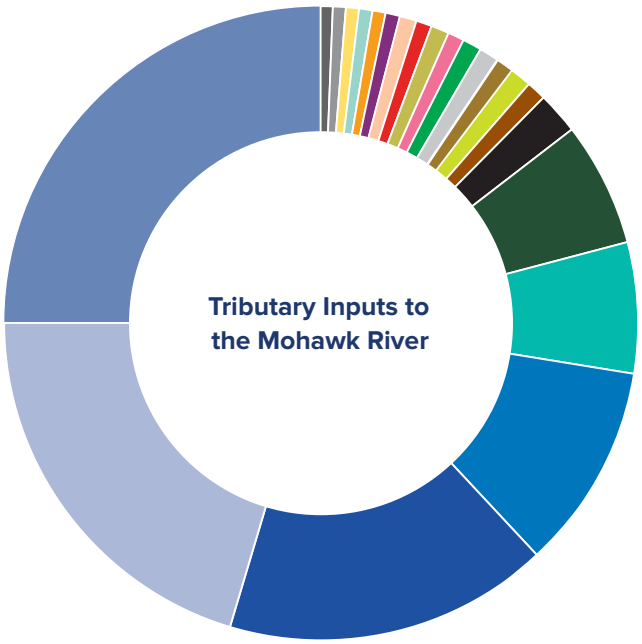

Schoharie Creek
West Canada Creek
64 small tributaries
East Canada Creek
Mohawk River headwaters
Oriskany Creek
Sauquoit Creek
Otsquago Creek
Canajoharie Creek
Ninemile Creek
Stony Creek
Fulmer Creek
Cayadutta Creek
Alplaus Creek
Lasher Creek
South Chuctanunda Creek
Steele Creek
Poentic Kill
Lisha Kill
Moyer Creek

Percent contributions of major Mohawk River tributaries to total Mohawk River discharge. Largest tributaries displayed separately, with remaining tributaries depicted with one aggregate slice.

John Garver

The Mohawk River Basin Steering Committee

The Mohawk River Basin Program and Action Agenda reflect the collective vision of many stakeholders, partners, and organizations seeking to conserve, preserve, and restore the environmental quality and future of the Mohawk River and its watershed. The Mohawk River Basin Program Steering Committee oversees the development of the Mohawk River Basin Action Agenda and brings together appropriate partners in the watershed to implement the targeted actions of the Action Agenda to fulfill the mission of the Mohawk River Basin Program. Committee members also serve as a communication bridge to a wider group of partners, communities, and stakeholders who share a common vision. The Steering Committee members at the time of Action Agenda publication are listed below.

Mohawk River Basin Program Steering Committee Partner Organizations

- Capital District Regional Planning Commission
- Capital Mohawk Partnership for Regional Invasive Species Management
- Cornell University – Water Resources Institute
- Ducks Unlimited
- Herkimer-Oneida Counties Comprehensive Planning Program
- Mohawk River Watershed Coalition of Soil and Water Conservation Districts
- Mohawk Towpath Scenic Byway
- National Audubon Society – New York Chapter
- National Oceanic and Atmospheric Administration
- National Parks Service – Erie Canalway National Heritage Area
- New York State Canal Corporation/New York Power Authority
- New York State Department of Agriculture and Markets
- New York State Department of Environmental Conservation
- New York State Department of State – Coastal Management Program
- New York State Division of Homeland Security and Emergency Services
- New York State Energy Research and Development Authority
- Riverkeeper
- Schoharie County Soil and Water Conservation District
- Schoharie River Center
- State University of New York – Cobleskill
- State University of New York College of Environmental Science and Forestry
- State University of New York Polytechnic Institute – Utica
- Trout Unlimited – Clearwater and Mohawk Chapters
- Union College
- United States Army Corps of Engineers
- United States Fish and Wildlife Service
- United States Geological Survey

About the Mohawk River and Its Watershed

Located in eastern New York State, the 147-mile-long Mohawk River originates between the Adirondack Mountains and the Tug Hill Plateau in south-central Lewis County. From there, it flows 140 miles eastward to its confluence with the Hudson River at Cohoes. The approximately 2.2-million-acre Mohawk River Watershed is the largest tributary to the Hudson River, comprising roughly 25 percent of the Hudson's entire drainage area. Two of the Mohawk River's largest tributaries, West Canada Creek and Schoharie Creek, drain significant land areas of the southern Adirondack Mountains in Hamilton County and the Catskill Mountains in Greene and Schoharie counties. The Mohawk River occupies a unique position in the Appalachian Mountains because it is one of the few major rivers that transect the mountains and allowed early passage to the continental interior. It was this unique geographic position that resulted in the establishment of the Erie Canal in the early 19th century, and the canal has had a long-term impact on the watershed. As a result, the Mohawk River has been altered for navigational purposes since the Erie Canal was completed in 1825. Thus, the Mohawk River is intimately intertwined with the New York State Barge Canal (formerly the Erie Canal), which runs along and locally occupies the Mohawk River, comprising 14 locks, 9 removable dams, and 5 permanent dams. There are also six hydropower facilities located on the mainstem of the Mohawk River, with nine other hydropower facilities located on major tributaries within the watershed.

The Mohawk River is itself the primary or backup source of drinking water for more than 100,000 people in Albany County. The river's associated Great Flats Aquifer serves as the primary source of drinking water for nearly 150,000 people, primarily in Schenectady County. Major reservoirs in the watershed include the Hinckley Reservoir, the source of drinking water for over 125,000 people in Oneida County, and the Schoharie Reservoir, part of the New York City water supply system that serves more than 9 million people.

The Mohawk River watershed lies entirely within the boundaries of New York State and encompasses 14 counties and 172 municipalities. The counties located in the Mohawk River watershed include all of Montgomery County, most of Schoharie County, much of Schenectady, Greene, Fulton, Herkimer and Oneida counties, and smaller parts of Albany, Saratoga, Delaware, Hamilton, Madison, Lewis, and Otsego counties.

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Lewis
Hamilton
Herkimer
Oneida
Fulton
Saratoga
Montgomery
Madison
Schenectady
Schoharie
Otsego
Albany
Greene
Delaware
N
0 5 10 20 Miles

The Mohawk River Basin Action Agenda, Past and Present

In 2009, DEC developed the first Mohawk River Basin Action Agenda, in collaboration with partners from local, state, and federal agencies, academia, and many non-governmental organizations. The first Action Agenda addressed goals and objectives specific to the watershed and supported a "whole Hudson" approach to managing the Mohawk River, Hudson River, and Hudson River Estuary watersheds. Both the 2009 agenda and its successor, the 2012–2016 Action Agenda, established five goals designed to achieve the mission of conserving, preserving, and protecting the Mohawk River watershed:

1. Fish, Wildlife and Habitats: Conserve and protect fish, wildlife, and their habitats in the Mohawk River watershed, and inform the public about their value to human communities and natural processes. This will allow people to enjoy the unique natural character of the watershed and its living ecosystem.

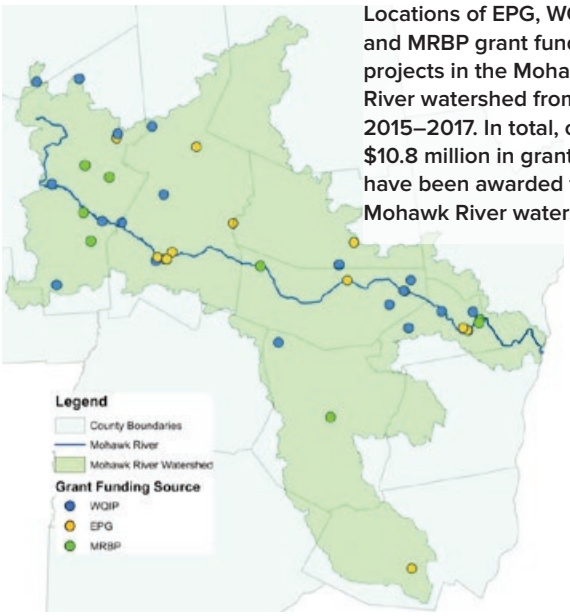
2. Water Quality: Protect and improve water quality in the Mohawk River watershed and communicate critical issues to the public so that people are protected from health hazards, drinking water supplies are conserved, aquatic ecosystems flourish, and natural processes are sustained.

3. Flood Hazard Risk Reduction: Promote flood hazard risk reduction and enhanced flood resilience by providing important tools to ensure that communities are prepared for climate change, and important cultural, recreational, economic, and environmental assets are protected.

4. Community Revitalization: Revitalize Mohawk River Basin communities by utilizing sustainable development principles and integrating environmental, social, historic, cultural, recreational, and economic factors to shape the region as a vibrant, healthy, desirable place to live, work, and visit.

5. Working Landscapes: Maintain and encourage land uses within the Mohawk River watershed that support working landscapes, such as well-managed farms and forests that help sustain the regional economy, protect and enhance open space and rural development patterns, and provide for the sustainable use and protection of local resources.

The Mohawk River Basin Program Progress Report, highlighting the projects, partners, and work completed toward these five goals, was released by DEC in March 2018 (https://dec.ny.gov/docs/water_pdf/mohawkprgrpt18.pdf). The report highlighted seminal projects, funding awards for restoration and improvement projects, and expansion of existing conservation programs. With funding provided through DEC and other grant sources, projects undertaken included the U.S. Geological Survey's (USGS) river-



Locations of EPG, WQIP, and MRBP grant funded projects in the Mohawk River watershed from 2015–2017. In total, over $10.8 million in grant funds have been awarded the Mohawk River watershed.

wide survey of the status of Mohawk River fisheries, an expansion of the Hudson River Environmental Conditions Observing System (HRECOS) into the Mohawk River watershed, and state funding of approximately $7.9 million in wastewater infrastructure and water quality improvement projects within the watershed.

Since 2009, the MRBP has offered grant opportunities to municipalities, not-for-profits, and academic institutions for projects that implement the goals and objectives of the Action Agenda. In total, more than $1 million in funding has been awarded for projects, such as:

- Creation of a Schoharie County Recreation Map, development and distribution of Along the Bike-Hike Trail guides, and establishment of a connectivity plan from the hamlet of Sprakers in the Town of Root to the Town of Glenville;

- Stream restoration projects to stabilize and restore the natural function and habitat of portions of Sauquoit Creek, Ninemile Creek, and Big Creek;

- Collection and analysis of samples to identify baseline conditions and trends of chronic contamination of microbial indicators and microplastics within the Mohawk River and its tributaries;

- Creation of lesson plans and teacher trainings to incorporate Mohawk River watershed-based lessons into schools, and the hosting of a Youth Climate Summit; and

- Development of a Beavers, Wetlands and Watershed Protection Program at the Utica Zoo's Conservation Education Center, "Beaversprite," located in Fulton County.

Challenges and Opportunities for the Future

The Mohawk River Basin Program and the Mohawk River Basin Action Agenda provide an opportunity to promote the protection, restoration, and fostering of the resources within the watershed utilizing an ecosystem-based management approach. This innovative approach to resource management recognizes that humans are integral parts of the ecosystem, and that ecosystems are equally vital to supporting human life. Through implementation of the goals and objectives of this Action Agenda, New York State and collaborating partners seek to promote the integrated and coordinated management of the many environmental and cultural resources of the river and its watershed, as well as promoting a "whole Hudson" approach to managing the Mohawk and Hudson Rivers and the Hudson River Estuary. The Mohawk River watershed's unique concerns, culture, and history warrant organizing its own regional, landscape-scale approach to addressing its particular challenges, but the approach should be implemented in a way that is mindful of the Mohawk's relationship within the larger Hudson-Mohawk watershed.

Today's challenges for conserving, preserving, and restoring the Mohawk River watershed create unique opportunities for action. Among these challenges are:

Climate change and resilience: Warmer mean temperatures, extreme weather events, and more precipitation affect every aspect of the Mohawk's ecosystem, creating challenges on a much larger scale than ever before. These changes impact our communities, our water resources, and our fisheries and habitats.

Water and wastewater infrastructure: Water and sewer systems are aging throughout the watershed, requiring large sums to repair, upgrade, or expand facilities to ensure adequate capacity for current and future regional growth and larger and more frequent hydrologic events.

Land use and development: Existing land uses, as well as changes in land use and impacts of development, affect the region's water resources, economy, wildlife habitats, and viewsheds. Incompatible land uses within the watershed can impact the quality of water downstream, and the ecosystem of the river and watershed, as well as the ability to make communities more resilient.

Fisheries and habitats: Excessive habitat alteration, water level management practices, invasive species, and the Mohawk's connection to the Barge Canal all have an impact on the fisheries, habitats, wildlife, and recreational opportunities of the watershed. The Mohawk's connection of the Great Lakes and the Hudson River via the Barge Canal makes preventing introduced and invasive fish species and aquatic plants a critical, but difficult challenge, as they can enter the river from both the east and the west.

Point and nonpoint source pollution: Threats to water quality from priority pollutants and those of emerging concern from both point and nonpoint sources impact drinking water supplies, ecosystem health, recreational opportunities, and habitat quality within the watershed.

Drinking water: The Mohawk River, its associated aquifer, and large reservoirs in its watershed are major sources of drinking water for the region and state. Protecting and restoring water quality and ensuring adequate water quantity are critical challenges in the face of pollution and climate extremes.

Recreation: Increasing numbers of residents and visitors are using the Mohawk and its tributaries for boating, fishing, swimming, and other recreational activities, raising awareness and concerns about water quality and the public's knowledge of river conditions.

Canal infrastructure: The coexistence of the Barge Canal in and in parallel with the Mohawk River presents important opportunities for commerce, recreation, and drinking water supply management, as well as challenges for water quality, tributary connectivity, flood management, wildlife habitat, and fish migration.

Building on the progress made under the previous Action Agendas, the 2021–2026 Action Agenda continues to work to achieve additional improvements in water quality, a reduction of point and nonpoint source pollution, improvements in fish populations and habitats, increased recreational opportunities, and a reduction in flood risks, while also promoting community resilience. In creating this new Action Agenda, an in-depth analysis of previous Action Agenda goals and objectives, as well as the progress made in achieving those goals and objectives, was performed to determine our path forward. In a desire to highlight goals that have evolved since publication of the first Action Agenda, the goals and objectives have been modified and condensed into four key areas. This new Action Agenda continues to be a vision for collective action, promoting and fostering stewardship opportunities within the watershed. It does not assume that any one entity will carry out all the work, but rather should be viewed as a framework to guide continued achievement of targeted actions through implementation of strategies, activities, and projects by the many stakeholders and partners in the watershed, with each action leading us closer to conserving, preserving, and restoring the environmental quality and resources of the Mohawk River and surrounding watershed.

Abbreviations and Definitions

AEM . . . . . .Agricultural Environmental Management

AGM . . . . . .New York State Department of Agriculture and Markets

BMP . . . . . .Best management practice

CDRPC. . . . .Capital District Regional Planning Commission

DEC . . . . . .New York State Department of Environmental Conservation

DHSES. . . . .New York State Division of Homeland Security and Emergency Services

DOH. . . . . .New York State Department of Health

DOS . . . . . .New York State Department of State – Coastal Management Program

DOW. . . . . .New York State Department of Environmental Conservation – Division of Water

EFC. . . . . .Environmental Facilities Corporation

EPA. . . . . .United States Environmental Protection Agency

EPG . . . . . .Wastewater Infrastructure Engineering Planning Grant

ESF. . . . . .State University of New York College of Environmental Science and Forestry

FEMA. . . . . .Federal Emergency Management Agency

HABs . . . . . .Harmful algal blooms

HOCCPP . . .Herkimer-Oneida Counties Comprehensive Planning Program

HRECOS . . .Hudson River Environmental Conditions Observing Systems

ISCS . . . . . .New York State Department of Environmental Conservation – Invasive Species Coordination Section

LTCP. . . . . .Long-Term Control Plans

MRBP. . . . . .Mohawk River Basin Program

MRWC . . . . .Mohawk River Watershed Coalition of Soil and Water Conservation Districts

MS4 . . . . . .Municipal Separate Storm Sewer System

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NAACC . . . .North Atlantic Aquatic Connectivity Collaborative

NYSERDA . .New York State Energy Research and Development Authority

OEI . . . . . .Onondaga Environmental Institute

POSSs . . . . .Publicly Owned Sewer Systems

POTW. . . . . .Publicly Owned Treatment Works

PRISM . . . . .Capital Mohawk Partnership for Regional Invasive Species Management

SPDES . . . . .State Pollutant Discharge Elimination System

TMDL . . . . . .Total Maximum Daily Load

USGS . . . . . .United States Geological Survey

WIIA . . . . . .Water Infrastructure Improvement Act

WQIP . . . . . .Water Quality Improvement Project Program

WRI. . . . . .Cornell University – Water Resources Institute

2021–2026 Goals

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Water Quality

Improve water quality to reduce risks to human health, safeguard water supplies, provide safe recreational opportunities, and protect aquatic habitats.

Targeted Actions

- Increase water quality monitoring and research
- Reduce point and nonpoint source pollution
- Protect source waters

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Fisheries and Habitats

Enhance aquatic and riparian habitats, increase populations of desirable fishes, mitigate the spread of invasive species, and support recreational angling opportunities within the Mohawk River watershed.

Targeted Actions

- Understand and manage fisheries and invasive species
- Improve habitat health and connectivity

Flooding and Resilience

Support community planning and the sustainable use of working landscapes to enhance the resilience of Mohawk River communities and their ability to recover from extreme weather events and disturbances.

Targeted Actions

- Increase resilience to climate change
- Reduce flood risk and increase flood resilience

Recreation and Stewardship

Improve and increase recreation and stewardship of the Mohawk River watershed by creating and fostering partnerships and stakeholder engagement through education, outreach, and collaboration.

Targeted Actions

- Improve and increase recreational opportunities
- Increase awareness of natural, cultural, recreational, and historic resources
- Engage communities and stakeholders in decision making and community science
- Promote community-based environmental education programs

Water Quality

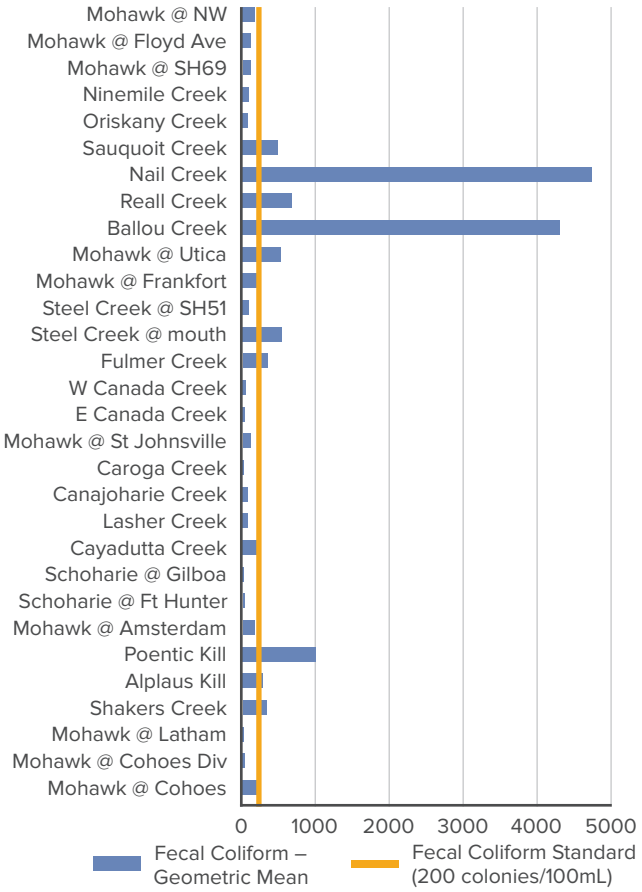
Goal: Improve water quality to reduce risks to human health and safeguard water supplies.

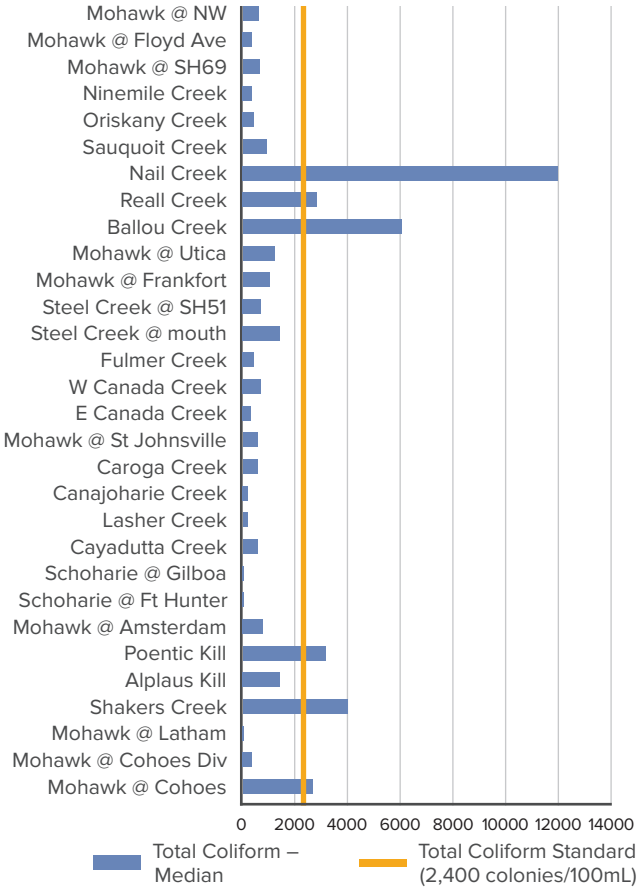
The Mohawk River serves as a source of drinking water, and the surrounding landscape contains groundwater aquifers, such as the Great Flats Aquifer. Serving hundreds of thousands of residents in the Mohawk River watershed, these surface and groundwater sources are used every day for a variety of purposes, from drinking water to irrigation. The water quality of the Mohawk River and its tributaries has been improving with concerted efforts to safeguard drinking water supplies, while allowing greater opportunity for increased recreational activities throughout the watershed.

Thousands of people visit the Mohawk River and its tributaries to participate in recreational activities such as boating, swimming, and fishing, all of which bring them in direct contact with water. Although water quality is improving, there is still potential for these activities to be hindered by pollution from the surrounding landscape and tributaries that impact the river. Point source pollution typically comes from urban areas with inputs from sources such as industries, wastewater treatment plants, and combined sewers. Nonpoint source pollution comes from water that runs over the surface of the land, including stormwater in cities, suburban areas, and agricultural areas. Both types of pollution have the potential to impact drinking water, make water less habitable for aquatic species such as fish, and raise health risks for recreational users. Discharges that include untreated human or animal waste can increase the transmission of waterborne diseases. Between 2016 and 2019, 335 sewage discharge notifications of untreated or partially treated wastewater into the Mohawk River were reported to DEC (Sewage Pollution Right to Know, http://www.dec.ny.gov/chemical/90315.html).

Many pollutants have decreased dramatically in the Mohawk River in the past 30 years, but the trend has plateaued at a level that may hinder some uses of the river. Nutrients such as nitrogen and phosphorus are essential to life at low levels, but can cause the excessive growth of algae and aquatic plants that can degrade drinking water quality, impact boating, swimming, and fishing, and cause unpleasant odors. High levels of suspended sediment from streambank erosion can degrade drinking water quality, impede recreation by giving the water a dark and cloudy appearance, and impact navigation by settling and decreasing the depth of the river. The impact of emerging contaminants of concern to aquatic life and human health in the watershed has yet to be investigated.

Results of 2016 monitoring for fecal and total coliforms
Showing the stations where samples exceeded DEC water quality standards.





Targeted Actions to Increase Water Quality Monitoring and Research

Action A: DEC's Division of Water (DOW) and partners will continue ambient surface water quality monitoring for priority pollutants and those of emerging concern found in point and nonpoint source discharges. This monitoring should include:

- Nutrients such as phosphorus and nitrogen and other priority pollutants river-wide;
- Emerging contaminants of concern;
- Fecal contamination, with a focus on areas that previously exceeded bacteria total and/or fecal coliform standards.

Action B: Establish or increase monitoring of unassessed waters within the watershed through programs such as DEC's Rotating Integrated Basin Studies, and collaboration and acceptance of data from external partners.

Action C: Monitor the prevalence of harmful algal blooms (HABs) throughout the basin through targeted studies and encourage citizen reporting of blooms using the NYHABs public website.

Action D: Investigate the distribution of sediment loads (both bedload and suspended load) over space and time utilizing existing MRBP sediment-monitoring data and other sources. Publish findings on sediment transport in the Mohawk and make recommendations for an overall sediment management plan for the mainstem Mohawk River.

Action E: Use monitoring and land cover data to identify sites with high water quality that can be used as reference sites for the entire Mohawk watershed.

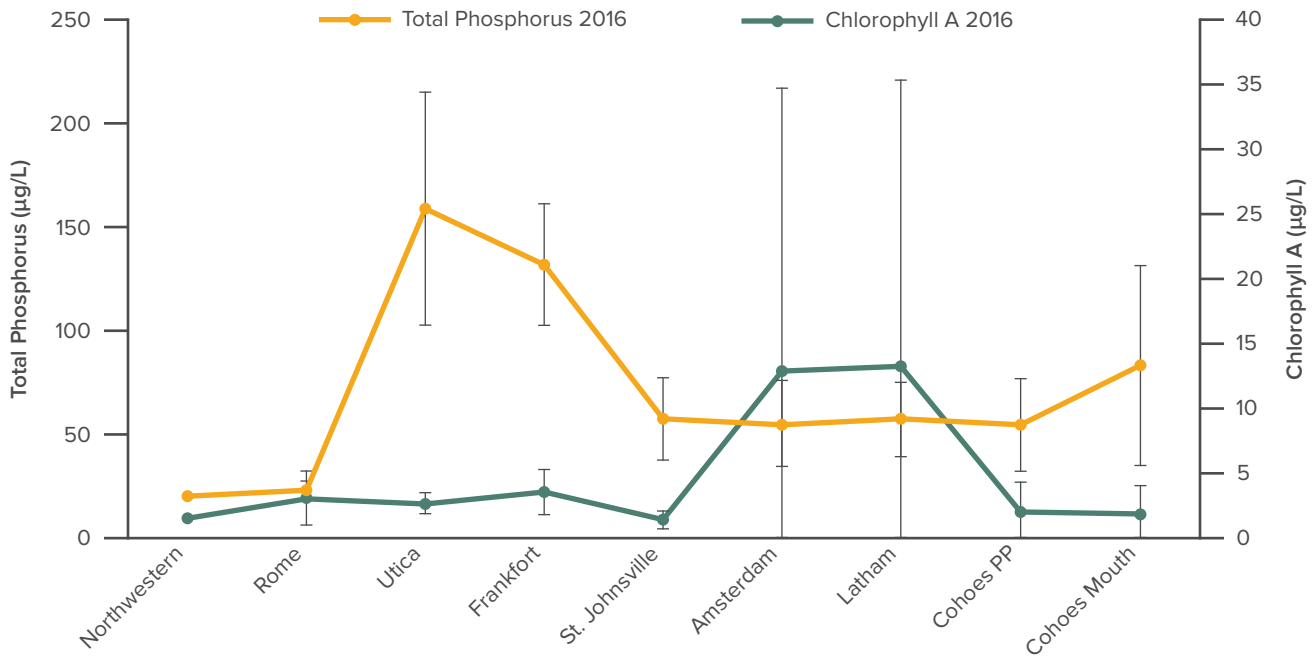
Action F: Monitor Trees for Tributaries (Trees for Tribs) riparian zone plantings and support targeted expansion of the program. This should include:

- Documenting survival and growth of trees planted, including maintenance of plantings for a five-year time period, and encouraging additional plantings to address tree and shrub mortality;
- Developing a long-term monitoring strategy to assess the impact of tree plantings on the riparian ecosystem and water quality; and
- Using modeling tools on riparian buffer corridors to prioritize planting areas with high return on investment.

Action G: Investigate the impacts of landfills, their leachate, and their runoff on water quality in the Mohawk River watershed.

Action H: Investigate the impacts of sewage sludge landscape application on surface water quality in the Mohawk River watershed. This should include documenting, mapping, and publishing the extent and frequency of sewage sludge landscape application in the watershed.

Results of 2016 monitoring of the mainstem Mohawk River for chlorophyll A and total phosphorus



2026 Measures of Success

Measure 1: Conduct a preliminary assessment of legacy and emerging contaminants of concern from point and nonpoint sources within the Mohawk River and its tributaries.

Measure 2: Document trends in priority pollutants based on monitoring results in the Mohawk River and its tributaries.

Measure 3: Document the survival and growth of 100 percent of all previous Trees for Tribs planting sites and 50 percent of new sites to determine which species and ages of trees and shrubs are most likely to succeed.

Measure 4: Develop a list of at least 25 target sites for riparian buffer improvement through the Trees for Tribs Program.

Measure 5: Identify all waterbodies frequently impacted by HABs through expanding public awareness of the NYHABs program.

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2031 Measures of Success

Measure 1: If necessary, identify potential sources and trends in concentrations of legacy and emerging contaminants of concern in the Mohawk River and its tributaries and develop monitoring strategies, as needed.

Measure 2: Continue to monitor trends in priority pollutants.

Measure 3: Expand the Trees for Tribs Program to include a long-term monitoring component for at least 20 percent of previously planted and new sites.

Measure 4: If necessary, implement intensive monitoring in at least one waterbody that is significantly impacted by HABs to determine potential mitigation strategies.

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Targeted Actions to Reduce Point and Nonpoint Source Pollution

Action A: Complete landside and in-channel water quality models and develop a phosphorus Total Maximum Daily Load (TMDL) for the entire Mohawk River watershed. Implement best management practices (BMPs) to reduce phosphorus loading, as recommended in the TMDL implementation plan or other priority Mohawk River and tributary watershed plans.

- Using management strategies already identified in the Mohawk River Watershed Coalition's (MRWC) Mohawk River Watershed Plan, incorporate phosphorus reduction measures into the TMDL implementation plan to meet pollutant load targets.
- Develop a plan to track both historic and future BMPs implemented in the watershed for inclusion in the statewide nonpoint source database. This plan can be created through modification of existing best management tracking mechanisms being utilized in other watersheds.

Action B: Continue to reduce and eliminate overflow discharges from combined and separate sewer systems and identify and eliminate unauthorized discharges of untreated or partially treated sewage from collection systems, publicly owned treatment works (POTW), and publicly owned sewer systems (POSS).

- Work with municipalities watershed-wide, encouraging development and implementation of policies consistent with regional long-term control plans that reduce or eliminate combined and sanitary sewer overflows, thus reducing nutrients and pathogens in the Mohawk River.
- Support and encourage the development of inflow/infiltration reduction plans, including constructed improvements and green infrastructure practices, to reduce stormwater runoff that contributes to overflows, with an emphasis on combined sewer systems.
- Support and encourage collection system and treatment facility upgrades to reduce sewage overflow, including better monitoring, engineered improvements like sewer pipe sliplining, and pump station improvements.
- Support and encourage public education for sanitary sewer users.

Action C: Support and encourage wastewater treatment improvements that include:

- Support POTWs and POSSs in seeking infrastructure improvement funding through loan/grant programs such as New York State's EFC's Clean Water State Revolving Fund (CWSRF) and the federal Water Infrastructure Improvement Act (WIIA), and grants from DEC's EPG and WQIP.
- Explore the feasibility of extending sewer connections to areas of dense development, areas with poor soils, and areas with a history of failing septic systems.
- Encourage communities to seek grants to study sewer rehabilitation or replacement projects to address historic issues associated with poorly constructed or maintained facilities.

Action D: Reduce nutrient, bacteria, and sediment loads released into the Mohawk River from active farmland.

- With the Soil and Water Conservation Districts of the MRWC, provide assistance and education about Federal Farm Bill programs available for BMP implementation on agricultural land, such as the Conservation Reserve Enhancement Program, Regional Conservation Partnership Program, and Environmental Quality Incentives Program.
- With the Soil and Water Conservation Districts of the MRWC, provide assistance and education about programs available for conservation planning and BMP implementation on agricultural land, such as the Agricultural Environmental Management (AEM) and Agricultural Nonpoint Source Abatement and Control programs.
- In partnership with the New York State Department of Agriculture and Markets (AGM):
  - Promote Cornell University's Dairy Acceleration Program to increase investment in environmentally responsible dairy farming throughout the watershed; and
  - Accelerate enrollment in existing Farm Bill and New York State BMP funding programs by reducing the cost share burden of individual farmers.

- Expand existing contracts with MRWC and AGM to support implementation of priority BMPs (e.g., cover crops, riparian buffers) at the watershed or county level.
- Identify and work to increase enrollment in the state's AEM program at the county level.
- Develop and implement comprehensive nutrient management plans for non-permitted facilities.

Action E: Reduce discharges and pollutant loads from urban stormwater to the Mohawk River. This should be accomplished for all communities of the watershed regardless of designation as an MS4.

- Assist communities with maintaining compliance with the minimum control measures of the SPDES MS4 General Permit, including assisting in quantifying MS4 and CSO permit program costs and promoting education about funding sources for stormwater management programs.
- Assist municipalities and regulatory agencies in identifying, investigating, and eliminating sources or potential sources of illicit and unintentional discharges within the watershed.
- Assist communities in implementing roadway and ditch BMPs (e.g., hydroseeding) and support training of municipalities through the Cornell Local Roads Program and other education programs targeted toward reducing stormwater.

Action F: Develop a comprehensive riparian buffer program for both agricultural and urban land within the watershed.

- Work with local land trusts and municipalities to purchase conservation easements on land adjacent to streams, stabilize streambanks, and restore riparian buffers.
- Support expanded implementation of the Trees for Tribs Program in the watershed.
- Support adoption of local ordinances or zoning provisions that restrict development adjacent to streams, and recommend restoration of riparian buffers.

2026 Measures of Success

Measure 1: Complete the phosphorus TMDL for the Mohawk River watershed and identification of targeted implementation strategies.

Measure 2: Implement Trees for Tribs riparian buffer plantings at five target sites within the watershed.

Measure 3: Increase riparian buffer conservation and protection projects through streamside planting of 10,000 trees and shrubs along the Mohawk River and its tributaries through the Trees for Tribs Program.

Measure 4: Initiate partnerships with the Soil and Water Conservation Districts of the Mohawk River Watershed Coalition for two projects that implement nonpoint source best management practices.

Measure 5: Provide assistance to five MS4 communities within the watershed for implementation of stormwater management program plans.

2031 Measures of Success

Measure 1: Initiate or complete 25 percent of the Mohawk River phosphorus TMDL targeted implementation strategies.

Measure 2: Implement Trees for Tribs riparian buffer plantings at 10 target sites within the watershed.

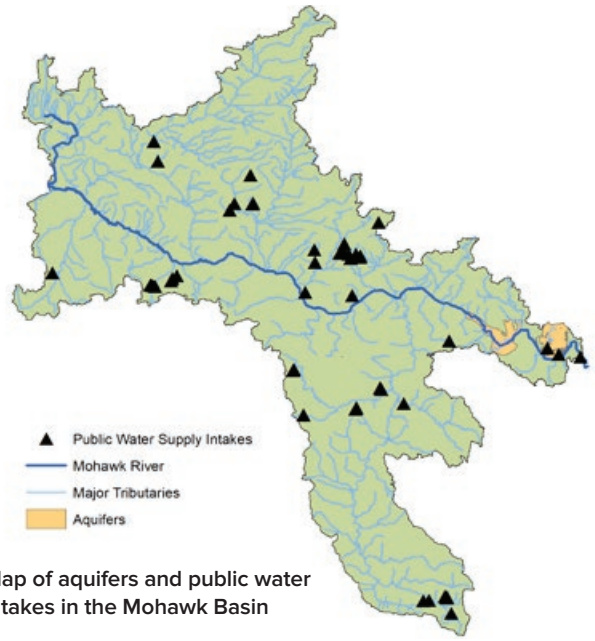
Measure 3: Increase riparian buffer conservation and protection projects through streamside planting of 20,000 trees and shrubs along the Mohawk River and its tributaries through the Trees for Tribs Program.

Measure 4: Partner on five projects with the Soil and Water Conservation Districts of the Mohawk River Watershed Coalition to implement nonpoint source BMPs.

Measure 5: a) Provide assistance to five additional MS4 communities within the watershed for implementation of stormwater management program plans.

b) Develop a pilot stormwater master plan program for non-regulated MS4 communities.

Targeted Actions to Protect Source Waters



Map of aquifers and public water intakes in the Mohawk Basin

Action A: Promote a watershed-wide approach to administering permits for wastewater treatment facilities through the SPDES for the protection of drinking water sources.

- Review all SPDES-permitted facilities discharging to a 10-mile upstream area of public drinking water supply surfacewater intakes, as well as larger municipal wastewater treatment facilities in the watershed, to ensure they meet all current state and federal regulations.
- Provide outreach and education to small permitted facilities that discharge to Class A segments to assist them with permit compliance.
- Assist permittees in locating and evaluating system conditions and discharges, collecting effluent water samples for evaluation, and reporting results.
- Conduct education and outreach campaigns to emphasize the importance of effluent monitoring and disinfection for the protection of drinking water sources.
- Support communities with implementation of disinfection to achieve New York State's ambient water quality standards for fecal coliform as follows:
  - Continue to require wastewater treatment facilities discharging into sections of the Mohawk River mainstem classified for use as a drinking water supply to disinfect year-round.
  - By 2030, where appropriate, implement seasonal disinfection (May 1–October 31) for publicly owned wastewater treatment facilities within the watershed.

Action B: Assist DEC and DOH in disseminating information about the Drinking Water Source Protection Program (DWSP2) and the DWSP2 Framework (https://www.dec.ny.gov/chemical/115250.html) to Mohawk River Watershed Communities.

- Provide presentations or webinars to communities or intermunicipal groups within the Mohawk River watershed about protecting their drinking water sources.
- Connect communities or intermunicipal groups with a Technical Assistance Provider.

Action C: Assist communities in developing a DWSP2 Plan using actions from the Framework, such as:

- Forming a stakeholder group to guide development and implementation of the plan, which will include overarching goals, such as formulating a community-specific vision for drinking water protection, and the development of a protection plan and timeline for project implementation; and
- Updating and expanding the Drinking Water Source Assessment by gathering information on the source water, preparing a drinking water source protection map, and developing a potential contaminant source inventory to identify all potential contaminant sources within the established protection areas.

Action D: Assist communities in implementing a DWSP2 through actions such as:

- Raising community awareness of source water protection areas through education and outreach efforts.
- Encouraging stakeholders and partners to apply for grants through programs such as WQIP or the Source Water Buffer Program to protect identified priority source water areas.
- Incorporating source water protection strategies into local planning decisions through adoption of EPA's Model Ordinances for Source Water Protection or the creation and adoption of source water protection overlay zoning districts.
- Working with local businesses and industries to ensure that appropriate BMPs are implemented during facility operations to reduce risks of accidental water supply contamination.

2026 Measures of Success

Measure 1: Support communities in implementing seasonal disinfection (May 1–October 31) for 50 percent of all publicly owned wastewater treatment facilities within the watershed.

Measure 2: Continue successful implementation of year-round disinfection for 100 percent of all wastewater treatment facilities discharging into sections of the Mohawk River classified as a drinking water supply

Measure 3: Assist two communities in the development of protection plans for public drinking water supplies within the Mohawk River watershed, utilizing the DWSP2 Framework.

Measure 4: Partner with DEC and DOH to provide outreach and education on the DWSP2 to four communities or intermunicipal groups within the Mohawk River watershed to protect their drinking water supplies.

2031 Measures of Success

Measure 1: Support communities in implementing seasonal disinfection (May 1–October 31) for 100 percent of all publicly owned wastewater treatment facilities within the watershed.

Measure 2: Continue successful implementation of year-round disinfection for all wastewater treatment facilities discharging into sections of the Mohawk River classified as a drinking water supply.

Measure 3: a) Assist two additional communities in developing protection plans for drinking water supplies within the Mohawk River watershed, utilizing the DWSP2 Framework;

b) Assist one community with implementation of newly developed source water protection plans.

Measure 4: Partner with DEC and DOH to provide outreach and education on the DWSP2 to 10 communities or intermunicipal groups within the Mohawk River watershed to protect their drinking water supplies.

John Garver

Fisheries and Habitats

Goal: Enhance aquatic and riparian habitats, increase populations of desirable fishes, mitigate the spread of invasive species, and support recreational angling opportunities within the Mohawk River watershed.

Courtney Nichols

The fisheries of the Mohawk River watershed are in a state of transition due to several internal and external factors. Extensive habitat alteration, water level management practices, hydroelectric facility operation, introductions of invasive species, and recent improvements in water quality have shaped the present-day fish communities across the watershed. Smallmouth bass and walleye are among the most popular gamefish species targeted by anglers, but more than 70 fish species have been identified in the Mohawk River and adjacent sections of the New York State Canal System. Approximately half of these species are native to the Mohawk River watershed, while the remainder are introduced or invasive. Understanding the ecology of this diverse and highly altered watershed is complex, yet essential for maintaining sustainable fisheries in the Mohawk River. The Mohawk River's connection with the Hudson River and Atlantic Ocean provides important habitat for diadromous fish (those requiring both freshwater and saltwater habitats to complete their lifecycle). Each spring, the Mohawk River receives an annual spawning run of blueback herring, which utilize the lock system to travel as far west as Utica or Rome. Another migratory species, the American eel, is also believed to inhabit the Mohawk River at low densities, but its current distribution and population status are unknown.

Conversely, the Mohawk River's connection to the Barge Canal and the Hudson River makes introduced and invasive fish species difficult to manage because they can come from both the east via the Hudson River, and the west from the Great Lakes through the New York State canal system. Gizzard shad and freshwater drum are two species that migrated from the Great Lakes through the canal system, while white perch entered the Mohawk from the east. The round goby, a small benthic fish invading from the west, has been the subject of much recent attention because it has the potential to alter Mohawk River fish communities. In other regions of North America, round goby have been shown to outcompete native benthic fish, increase transfer of contaminants to fish that eat other fish, carry a pathogen that has been linked to fish kills in New York State, and, in some areas, can impact reproductive success of desirable nest-building fish, such as smallmouth bass, through egg predation. Many other non-native fish also pose a threat to invade and alter the Mohawk River ecosystem in the future, most notably Asian carps.

In addition to non-native fishes, many other invasive species threaten the integrity of the Mohawk River ecosystem, including zebra mussels and aquatic plants such as water chestnut and hydrilla. Zebra mussels have colonized the canalized portion of the Mohawk River, creating problems with infrastructure, as well as introducing further competition with native species for food sources. Water chestnut and hydrilla both form mats on the water surface, reducing sunlight penetration and inhibiting the growth of native species. When the plants decay, their decomposition can deplete dissolved oxygen from the water, killing fish. These invasive plants can also affect boaters when their stems and roots wrap around boat motors and cause stalling.

Operation of the canal system should continue to balance the navigational needs of system users with the need to sustain native biodiversity. Improving water quality, enhancing fish habitat through ecologically based water level management, and acting to reduce the influx of invasive species will improve Mohawk River fisheries and are goals of the MRBP.

Targeted Actions to Understand and Manage Fisheries and Invasive Species

Action A: Implement surveys of individual fish species and their habitats in both the Mohawk River and key tributaries to increase knowledge on their condition and health. This should include:

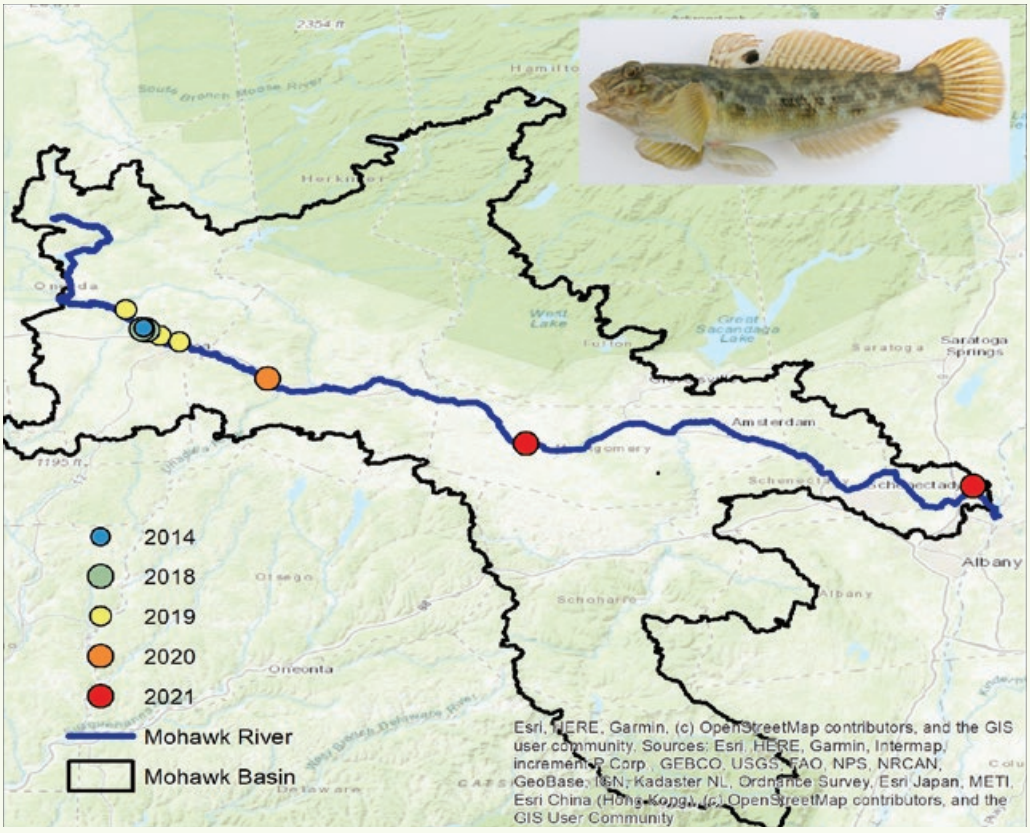
- Assess the condition of and population trends in important species and assemblages such as game-fish, including smallmouth bass, northern pike, muskellunge and walleye, native fish, or keystone species, to better understand their resilience and responses to invasive species and climate change.
- Understand the relationship of fish populations to Mohawk watershed hydrology, including gaining insight into how extreme events such as major floods and droughts affect population dynamics and fish distribution.

Action B: Investigate and gather baseline information to better understand the status of the migratory American eel in the Mohawk River. This should include:

- Conduct watershed-wide surveys to determine the density and spatial distribution of American eel in the Mohawk River and tributaries. Identify prime eel habitat, as well as limiting factors for juvenile migration into the watershed.
- If feasible, implement the Hudson River Eel Project: Citizen Science Juvenile American Eel Survey in the Mohawk River and its tributaries to document the movement of glass, yellow, and silver life stages of American eel.

Action C: Study blueback herring populations to determine if the Mohawk is currently a source of population growth or decline to the overall Hudson River herring population, and whether management changes could support the Mohawk as a source of growth.

- Quantify the size and survivorship of the annual adult spawning run and young-of-year (born within the last year) density to predict future changes in populations.
- Investigate habitat usage by life stages, critical spawning habitat, limiting factors for in-migration and recruitment (survivorship of young-of-year fish), competition with resident fish, and how water level management could be optimized to benefit in-migration and recruitment.
- Investigate the influence of the first lock passage of the Mohawk River, located at the Waterford Flight, on fish populations and habitat.



Map illustrating Round Goby found in mainstem Mohawk River (data from USGS Nonindigenous Aquatic Species mapper)

Action D: Work with the New York Power Authority/Canal Corporation to develop and implement a monitoring plan to understand impacts of a modified seasonal canal lockage plan on fish species in the Mohawk River.

- Develop and implement comprehensive management actions that help grow, recover, or restore desirable fish populations that are struggling or on the edge of extirpation (local extinction).

Action E: Analyze the impact of hydroelectric dams on fish mortality and recommend management actions to limit mortality and promote passage at all key life stages, including an emphasis on migratory species.

Action F: Work with DEC's Invasive Species Coordination Section, local PRISM offices, and the New York Power Authority/Canal Corporation to develop strategies to monitor the spread and mitigate the impacts of invasive species in the entire river ecosystem.

- Characterize the presence and/or colonization potential and expansion rates for nearby and established non-native or invasive aquatic species.
- Investigate the extent and severity of ecosystem impacts caused by invasive or introduced species throughout the Mohawk River and its tributaries.
- Facilitate invasive species management activities, such as harvesting and other eradication methods, through development of an invasive species management plan for the Mohawk River watershed.
- Undertake early detection and rapid response to new invasions and develop and implement management and control plans utilizing DEC's Rapid Response Policy as a guideline https://www.dec.ny.gov/docs/lands_forests_pdf/israpidresponse1.pdf).
- Collaborate with the Regional Watercraft Inspection Steward Program to host, implement, and expand such programs along the Mohawk River and its tributaries.
- Develop and provide grants for aquatic invasive species management to include providing grant support for municipalities seeking to purchase or lease a mechanical harvester.

Action G: Support the New York Power Authority/Canal Corporation's Reimagine the Canal effort in evaluating methods to stop the spread of aquatic invasive species in those portions of the Barge Canal located within the Mohawk River watershed.

2026 Measures of Success

Measure 1: Identify and document population density and distribution of important migratory fish, including blueback herring and American eel, in the Mohawk River and its tributaries.

Measure 2: Develop a monitoring plan to identify the impacts of a modified seasonal canal lockage plan on fish species in the Mohawk River.

Measure 3: a) Identify non-native and invasive species currently present in the Mohawk River and its tributaries, and document their distribution.

b) Identify non-native and invasive species that are in nearby waterbodies and have the potential to move into the Mohawk River.

c) Develop a management plan to address existing and future non-native or invasive aquatic species throughout the watershed.

Measure 4: Assess the feasibility of modifying the Hudson River Eel Project: Citizen Science Juvenile American Eel Survey for implementation in the Mohawk River and its tributaries.

Measure 5: Develop a plan for collecting routine data for an index of game fish abundance in multiple impoundments throughout the canalized portion of the Mohawk River.

2031 Measures of Success

Measure 1: Identify trends in key resident and migratory fish populations and, if needed, draft management strategies to address those trends.

Measure 2: Implement a monitoring plan to measure the impacts of a modified seasonal canal lockage plan on migratory fish species in the Mohawk River.

Measure 3: Implement an invasive species management plan to address existing and future non-native or invasive aquatic species throughout the watershed.

Measure 4: Adapt the Hudson River Eel Project: Citizen Science Juvenile American Eel Survey program for expansion into the Mohawk River and its tributaries.

Measure 5: Use an index of game fish abundance to evaluate effects of future changes to the watershed (e.g., water level management, invasive species introduction, etc.).

Targeted Actions to Improve Habitat Health and Connectivity

Winner, 2016 Montgomery County Water Quality Coordinating Committee photo contest

Action A: Inventory and assess bridges and culverts for their impacts on ecological connectivity and flood risk in the Mohawk River watershed.

- Conduct road/stream crossing assessments utilizing the North Atlantic Aquatic Connectivity Collaborative (NAACC) protocol (http://streamcontinuity.org) and enter data into the online NAACC database.
- Perform flood risk capacity modeling of NAACC-assessed sites, then create and share results with infrastructure owners.

Action B: Develop and provide implementation grants that improve connectivity by replacing, removing, or retrofitting road/stream crossings and dams based upon prioritization of NAACC-assessed sites.

Action C: Work with communities to promote adoption of local ordinances or zoning provisions that include preservation and restoration of natural landscape features such as forests, floodplains, and wetlands.

Action D: Identify areas of high-quality fish habitat and water quality, and work to preserve them through best management, stewardship, and land protection practices.

Action E: Maintain viable traditional agricultural and forested landscapes through implementation of land protection options, such as conservation easements, purchase of development rights, and other stewardship agreements, to protect key farm and forest lands within the Mohawk River watershed.

Action F: Encourage forestland owners to practice sustainable forest management through the development of forest management plans, implementation of BMPs, and participation in state and federal programs.

2026 Measures of Success

Measure 1: Create a Mohawk River watershed inventory of road/stream crossing assessments for 25 percent of the watershed area utilizing the North Atlantic Aquatic Connectivity Collaborative protocol.

Measure 2: Develop an inventory of parcels recognized as regional conservation priorities for habitat, connectivity, clean water, climate resilience, and priority natural areas in the watershed to be protected through land acquisition by New York State and partners.

Measure 3: Develop a catalog of viable land protection options, such as conservation easements, the purchase of development rights, and other stewardship opportunities, to protect agricultural and forested lands within the watershed.

2031 Measures of Success

Measure 1: Create a Mohawk River watershed inventory of road/stream crossing assessments for 50 percent of the watershed utilizing the North Atlantic Aquatic Connectivity Collaborative protocol.

Measure 2: a) Acquire two parcels recognized as regional conservation priorities for habitat, connectivity, clean water, climate resilience, and other priority natural areas in the watershed.

b) Assist two municipalities in establishing local land acquisition programs (e.g., Community Preservation Act, open space bond, land trust partnership) for protection of conservation priority areas.

Measure 3: Complete two planning projects that support landscape conservation and habitat connections (e.g., core forests, stream corridors, wetland complexes, source watersheds, dam removal).

Flooding and Resilience

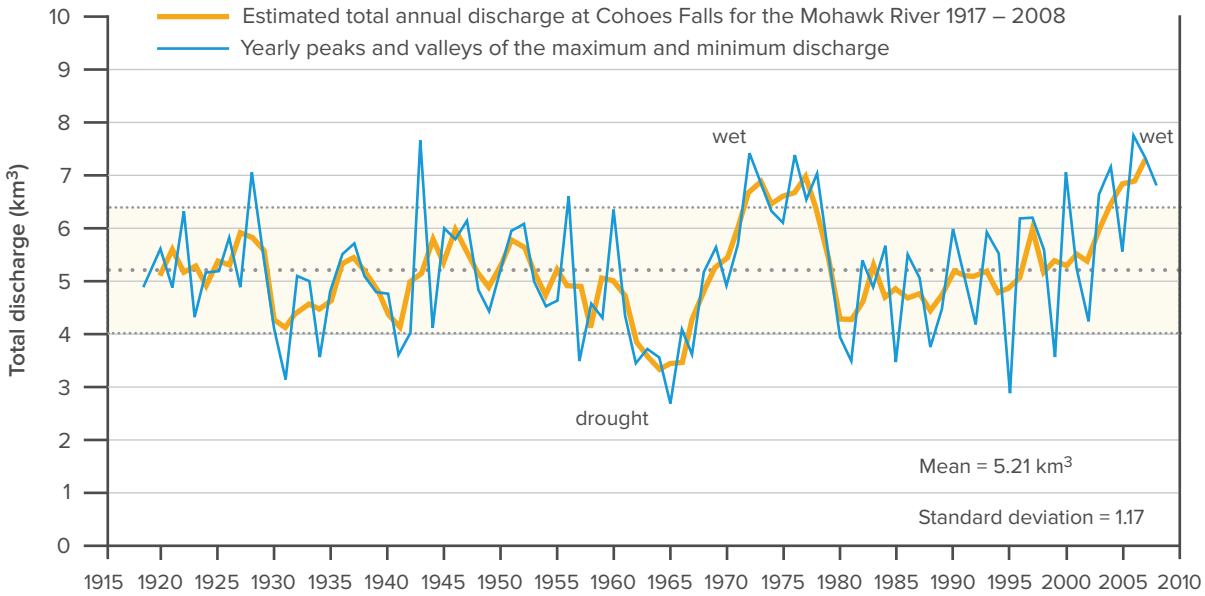
Goal: Support community resilience to extreme precipitation and flooding.

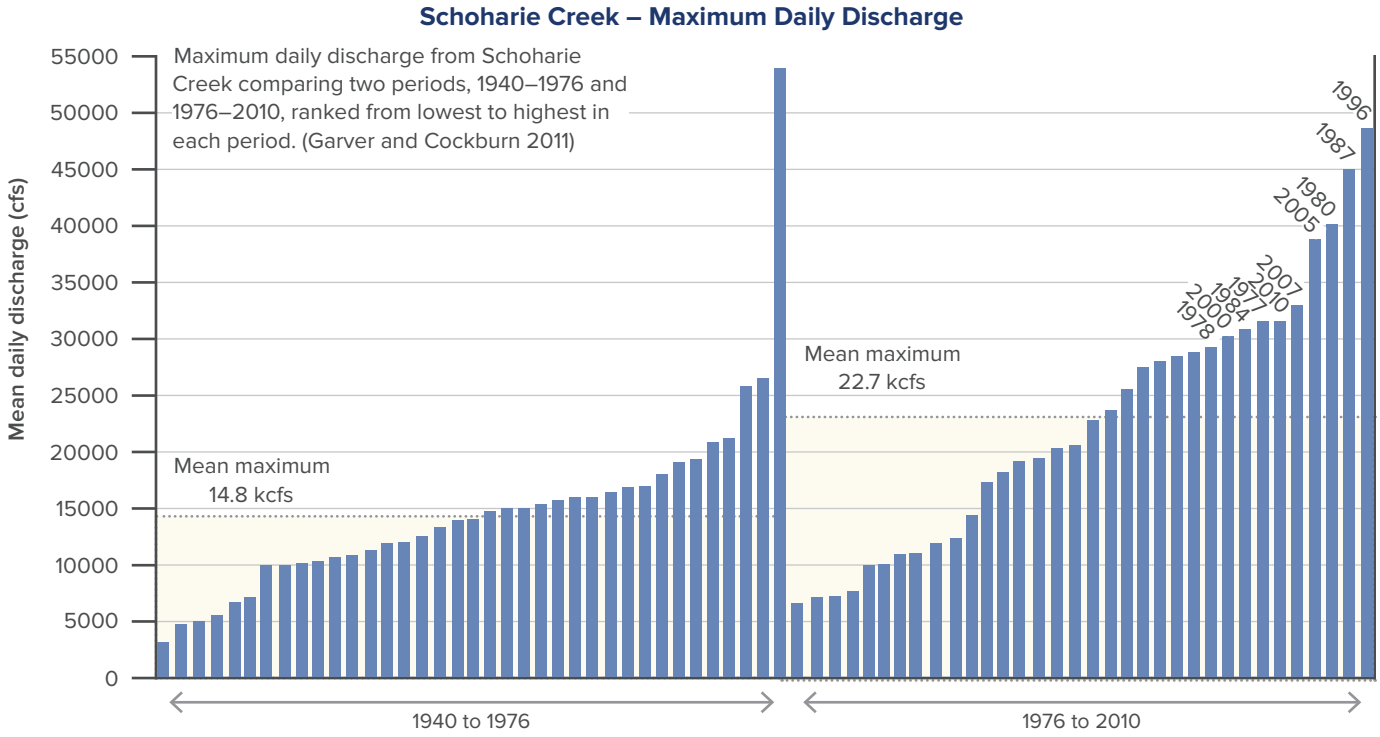
Flooding within the Mohawk River watershed has been a long-standing problem since inhabitation of the valley. Vulnerability to flood hazards is influenced by factors such as stream and river channel regulation, flood plain conveyance and constriction, ice jam formation, storm dynamics, and climate change. Landscape changes and human development have contributed to the impacts of flooding, as land uses and development in flood-prone areas change the hydrology of the watershed and limit the natural function of floodplains. The Mohawk River watershed, like other areas of the world, has been and will likely continue to be subjected to episodes of extreme weather of increasing severity and frequency. In the Mohawk River watershed, this is evidenced by floods that have become more frequent and more destructive, such as the back-to-back severe flooding events caused by Hurricane Irene and Tropical Storm Lee in 2011. These storms affected the watershed within two weeks of each other, with up to 13 inches of precipitation. In June 2013, a severe precipitation event and subsequent flooding in Herkimer, Oneida, and Montgomery counties resulted in significant loss of infrastructure, property, and human life. In July 2017, an extreme precipitation event resulted in substantial flooding in Herkimer and Oneida counties.

In the Mohawk River watershed, snowmelt and the annual breakup and thaw of stored waters from winter-accumulated snow commonly results in ice jams in the river, which bring an increased risk of flooding. As climate change leads to warmer temperatures, snow melt is predicted to occur earlier and more rapidly, increasing the risk of flooding. An example of these increasing intensities and occurrences of ice jams and accompanying flooding was witnessed during the early months of 2018, when the Mohawk River experienced an unprecedented 17-mile ice jam that blocked water near Schenectady and caused back-up flooding. In response to the numerous flooding and ice-jam events, an assessment of flood and ice-jam hazard mitigation alternatives for the mainstem Mohawk River and confluences with select tributaries was undertaken in 2019. The purpose of this assessment was to collect and analyze information relative to recent and historic flooding events, to identify critical areas subject to flooding and ice-jam occurrence, and develop and evaluate flood and ice-jam hazard mitigation alternatives for each high-risk area within the mainstem Mohawk River corridor and confluences with select tributaries.

The communities of the Mohawk River watershed are integral to resilience, as they work to withstand or recover quickly from hazardous events such as flooding and drought. By protecting vulnerable undeveloped lands, promoting site development in safer locations, and designing development so that it is more resistant to flooding and other severe weather events, communities can become more resilient to future hazardous events and avoid damage. Improving community planning and the sustainable use of working landscapes to enhance the resilience of Mohawk River communities and their ability to recover from hazardous events are goals of the MRBP.

Mohawk River: Total Annual Volume (Garver 2010)





Targeted Actions to Increase Resilience to Climate Change

Action A: Support community participation in New York State's "Climate Smart Communities Program," which is dedicated to reducing greenhouse gas emissions, improving climate resilience, and adapting to a changing climate. This should include:

- Conduct climate vulnerability assessments and develop plans to increase natural resource resilience and decrease vulnerability to future flood risks and other climate hazards, such as extreme heat and drought at the community (i.e., town, city, village) or watershed level.
- Develop and implement priority project lists based on results of climate vulnerability assessments.

Action B: Promote community implementation of Climate Resilient Farming and Climate Resilient Forestry practices to reduce greenhouse gas footprints of farms, mitigate environmental impacts of agriculture-related activities, and enhance farm resilience. Model the practices after those developed by the U.S. Department of Agriculture (https://www.usda.gov/oce/climate_change/), or New York State AGM's Climate Resilient Farming Program (https://www.nys-soilandwater.org/programs/crf.html).

Action C: Foster development and implementation of comprehensive plans consistent with the principles of smart growth and other sustainable growth and development principles, integrating environmental, social, historic, cultural, recreational, and economic factors.

Action D: Foster development and implementation of a comprehensive green infrastructure program, including adoption of local ordinances or zoning provisions to preserve and restore habitats, protect against flooding, and restore natural hydrology.

Action E: Encourage communities in the development of ecologically sound community resilience plans based on evaluation of the impacts of stormwater discharges, flooding, and climate change, including future changes in land use throughout the watershed.

2026 Measures of Success

Measure 1: Pilot NYS Climate Smart Communities Program climate vulnerability assessments and resilience plans for two communities within the watershed.

Measure 2: Develop a comprehensive green infrastructure program to preserve and restore habitats, protect against flooding, and restore natural hydrology within the watershed.

Measure 3: Develop an inventory of Climate Resilient Farming Program practices to reduce greenhouse gas footprints of farms, mitigate environmental impacts of agriculture-related activities, and enhance farm resilience.

Measure 4: Develop an ecologically sound community resilience plan template for use by communities to evaluate the impacts of stormwater discharges, flooding, and climate change, including future changes in land use throughout the watershed.

2031 Measures of Success

Measure 1: a) Pilot NYS Climate Smart Communities Program climate vulnerability assessments and planning for two additional communities within the watershed.

b) Assist two communities that have completed climate vulnerability assessments and plans with identification and implementation of priority projects.

Measure 2: Assist two communities with implementation of the green infrastructure program to preserve and restore habitats, protect against flooding, and restore natural hydrology.

Measure 3: Promote implementation of Climate Resilient Farming Program practices to reduce greenhouse gas footprints of farms, mitigate environmental impacts of agriculture-related activities, and enhance farm resilience.

Measure 4: Assist two communities in the development of ecologically sound community resilience plans, utilizing a previously developed and approved template.

Targeted Actions to Reduce Flood Risk and Increase Flood Resilience

Action A: Develop policies, practices, and tools to help communities maximize the flood protection benefit of floodplains.

Action B: Assist communities in implementing community flood prevention strategies through the National Flood Insurance Program Community Rating System. For example, conducting flood assessments and implementing flood mitigation projects for those communities.

Action C: Update and improve floodplain and flood risk mapping within the Mohawk River watershed, utilizing current technologies. Expand mapping efforts to include previously unmapped tributaries, sub-basins, and upstream areas, as well as revised studies of outdated mapped or flood-prone segments of the Mohawk River and its tributaries.

Action D: Expand existing flood alert systems through the installation of new real-time stream gages throughout the watershed. Continue to improve emergency preparedness and response systems for anticipated extreme weather events that might cause increased flood risk.

Action E: Investigate impacts of historic water level control structures on flood frequency and events throughout the Mohawk River watershed and adjoining canal.

Action F: Develop comprehensive inventories of all artificial structures, such as dams, road/stream crossings, gates, canal locks, gaging stations, and hydropower facilities located within the watershed. Create publicly accessible GIS base maps for use in various research and planning activities.

Action G: Understand and predict the hazards associated with ice jams through monitoring, investigating, and assessing events. Using monitoring data and developing predictive models, enable emergency responders to provide reasonable warning of where ice jam flooding might occur.

Action H: Reduce flood risk and flood damage by working with the communities in redesigning bridges and culverts, evaluating floodplain impairment, and increasing stream buffers and riparian zones.

Action I: Support development of projects that create, restore, or enhance wetlands for flood attenuation to reduce flood risk and damage.

Action J: Promote, assist, and fund the implementation of projects that protect critical facilities from flooding. Such facilities include municipal well heads, wastewater facilities, transportation networks, and other key infrastructure.

Action K: Establish an advisory committee for the Mohawk River watershed focused on community-wide resilience planning.

Action L: Support the New York Power Authority/Canal Corporation's Reimagine the Canal effort in mitigating flooding from ice jams and summer storms in those portions of the Barge Canal located within the Mohawk River watershed.

2026 Measures of Success

Measure 1: a) Identify previously unmapped floodplain and flood risk areas for future flooding and ice jam resilience assessment.

b) Expand existing flood and ice jam resilience assessments to high-risk sub-watersheds.

Measure 2: Update and improve existing floodplain and flood risk mapping.

Measure 3: Develop an advisory committee focused on community-wide resilience planning that includes targeted stakeholder and partner representation.

Measure 4: Develop a plan to create a comprehensive inventory of all artificial structures, such as dams, road/stream crossings, gates, canal locks, gaging stations, and hydropower facilities, located within the watershed.

Measure 5: Complete flood and ice jam resilience assessments under the ResilientNY program and initiate public outreach on the findings.

Measure 6: Improve preparedness and response to extreme weather events and expand the existing flood alert system through the installation of real-time stream gages.

2031 Measures of Success

Measure 1: Initiate and complete flooding and ice jam resilience assessments for two targeted Mohawk River sub-watersheds.

Measure 2: Expand existing floodplain and flood risk mapping to previously unmapped tributaries, sub-basins, and upstream areas of the watershed

Measure 3: Chronicle current progress and potential concerns with the advisory committee focused on community-wide resilience planning on a regular basis.

Measure 4: a) Complete a comprehensive inventory of all artificial structures, such as dams, road/stream crossings, gates, canal locks, gaging stations, and hydropower facilities, located within the watershed.

b) Initiate removal of two dam or road/stream crossing structures located on the mainstem Mohawk River or its tributaries.

Measure 5: Complete two projects identified in flood and ice jam resilience assessments performed under the ResilientNY program.

Measure 6: Installation of real-time stream gages in two new locations in the mainstem Mohawk River or tributaries.


Shaun Gannon


Bob Carey, American Red Cross


John Garver


John Garver

Recreation and Stewardship

Goal: Improve recreation and stewardship of the Mohawk River watershed through creating and fostering partnerships and stakeholder engagement through education, outreach, and collaboration.

The Mohawk River is an important ecosystem and an invaluable resource for the people living within its watershed boundaries and those who take advantage of all the river and its watershed have to offer. With a history of rapid growth and development, the environmental quality of the river and its tributaries has declined as a consequence of the pressures of human settlement and development, and the resultant pollution. With these historic environmental stressors—and more current threats, such as invasive species and excess nutrients—a vision of a brighter, cleaner, healthier future for the Mohawk River must begin with those who live, work, and recreate within its boundaries.

The health of the Mohawk River and its watershed hangs in a delicate balance and relies on the diligence and care of the communities and people it benefits. Learning about the history of the Mohawk River, the changing seasons of the river, and ways to improve the health of the Mohawk can be a rewarding experience that can augment a person's appreciation of the river and forge a stronger personal connection with it. To promote a relationship between people, their home watershed, and the river, environmental stewardship should be a priority for people of all ages.

Effective management of the region's resources is dependent upon an engaged and educated community, one that not only understands the ecosystem of the Mohawk River watershed, but also appreciates its beauty, wildlife, character, and value to the region's economy. A multidimensional approach to fostering environmental stewardship among diverse stakeholders is critical. Targeted stakeholder audiences should include municipal leaders, business owners (particularly those with a direct connection to water), and residents of Mohawk River watershed communities, as well as visitors and tourists, including boaters, paddlers, and other recreational users, and students at elementary, secondary, and post-secondary institutions. The Mohawk River and its watershed are a diverse and complicated resource that offers exceptional opportunities for education to promote knowledge of the watershed's ecosystem and active participation in stewardship activities. Fostering partnerships and stakeholder engagement through education, outreach, and collaboration is key to developing stewardship within the Mohawk River watershed and to furthering a shared mission of conserving, preserving, and restoring the river and watershed.

Onondoga Environmental Institute, Inc.

John Garver

Targeted Actions to Improve and Increase Recreational Opportunities

Action A: Develop an inventory of points of access that includes boat launches, public beaches, and other sites throughout the Mohawk River watershed.

Action B: Conduct a gap analysis/needs assessment to identify areas in need of public access, the types of access needed or appropriate, and where improvements are needed to existing sites throughout the watershed.

Action C: Work to improve accessibility to the Mohawk River and its tributaries, utilizing Universal Design principles that address inclusivity, diversity, and visitor experiences for everyone, including people with disabilities, older adults, and families with small children.

Action D: Support the development of access in disadvantaged communities, urban areas, and environmental justice communities, as well as to underserved populations, and in identified areas of need throughout the watershed.

Action E: Develop historic, geologic, anthropologic, cultural, wildlife, and aquatic species interpretive signage at access points.

Action F: Explore opportunities associated with the creation of the Empire State Trail to promote on-water recreation, such as a "Great Mohawk River Paddle," and conduct a gap analysis to identify where non-motorized boating access is currently too widely spaced to promote use of the river as a water trail.

Action G: Work with the New York State Canal Corporation and other partner state agencies to identify or establish dedicated funding sources to assist municipalities in the development of habitat-friendly hand launches and promote the use of non-motorized crafts for on-water recreation.

2026 Measures of Success

Measure 1: Inventory points of access, including boat launches, public beaches, and others throughout the watershed.

Measure 2: Complete a gap analysis/needs assessment to identify areas in need of additional public access, and recommended access types for 25 percent of the watershed.

Measure 3: Inventory historic, geologic, anthropologic, cultural, wildlife, aquatic species, and other points of interest for the watershed.

2031 Measures of Success

Measure 1: Investigate the feasibility of developing a web app and interactive mapping to highlight points of interest and points of access throughout the watershed.

Measure 2: a) Complete a gap analysis/needs assessment to identify areas in need of additional public access, and recommended access types for 50 percent of the watershed.

b) Improve accessibility in four new or existing access sites, utilizing Universal Design principles.

Measure 3: Develop interpretive signage for historic, geologic, anthropologic, cultural, wildlife, aquatic species, and other points of interest.

Targeted Actions to Increase Awareness of Natural, Cultural, Recreational, and Historic Resources

Action A: Promote recognition of the natural, cultural, recreational, and historic resources of the Mohawk River watershed by working with partners in program development, festivals, recreational events, and art installations that increase public visibility of the resources of the Mohawk River watershed.

Action B: Support the New York Power Authority/Canal Corporation's Reimagine the Canal effort in expanding recreational and economic opportunities and creating a sense of place in those portions of the Barge Canal located within the Mohawk River watershed.

Action C: Use the New York Canalway Water Trail to promote recreational use of the waterway and educate paddlers about water quality. Recreational and educational programming initiatives could include:

- Ticket to Paddle – developing a recreational and educational program targeted toward youth to provide instruction on safe paddling and guide-led tours of sections of the waterways in the watershed.
- Water Trail Ambassadors – recruiting volunteers to work in collaboration with the Canalway Trails Association New York and the Canal Corporation to enhance trail users' experiences.
- Annual Canal First Paddle event – organizing a specific annual celebration centered on promoting and celebrating recreational activities available across the watershed.
- National Water Trail designation – completing and submitting an application for various national designations, such as water trails, recreation trails, etc.
- Participating in the International Trail Symposium – Water Trail Caucus.
- Developing a watershed-specific paddle-craft recreation and tourism report.
- Promoting and organizing an on-water-based cleanup as part of the Canal Clean Sweep program.
- Paddle Friendly NY program – develop a program targeted toward businesses that are willing to provide enhanced services to recreational users of the canals, rivers, and streams in the watershed.
- Adopt-A-Trail Program – encouraging volunteers to take a leadership role in protecting and advocating for identified segments of the waterways in the watershed.
- Annual watershed-users count – organizing a user survey that quantifies people partaking in activities that are identified as watershed-based.

Courtney Nichols

Action D: Target boaters, marina owners, kayak and stand-up paddleboard rental businesses, and tour operators on the NYS Canal System to convey key conservation messages and encourage best practices to prevent pollution and the spread of invasive species.

2026 Measures of Success

Measure 1: Inventory natural, cultural, recreational, and historic resources of the watershed

Measure 2: Promote recreational use of the waterway through a partnership with the New York Canalway Water Trail, and educate paddlers about water quality.

2031 Measures of Success

Measure 1: Develop list of existing or potential partners interested in developing programs, festivals, recreational events, or art that highlight the natural, cultural, recreational, or historic resources of the watershed; or in promoting the Mohawk River as a central part of existing or planned canal-themed events.

Measure 2: Develop a Paddle Friendly NY program targeted at businesses to provide enhanced services to recreational users of the canals, rivers, and streams in the watershed.

Courtney Nichols

Targeted Actions to Engage Communities and Stakeholders in Decision-Making and Community Science

Action A: Promote formation of a MRBP citizen advisory committee comprised of representatives from the communities within the watershed to better incorporate the needs and knowledge of residents into future planning for the Mohawk River Basin.

Action B: Promote the Mohawk River watershed's Trees for Tribs program, designed to improve stream buffer habitats and protect water quality through the planting of native trees and shrubs.

Action C: Support citizen water quality sampling networks through programs such as DEC's Water Assessments for Volunteer Evaluators (WAVE) and Professional External Evaluations of Rivers and Streams (PEERS) to promote volunteer water quality monitoring in Mohawk River watershed streams and tributaries.

Action D: Increase stakeholder knowledge, engagement, and participation in the Mohawk River watershed through the Annual Mohawk Watershed Symposium (http://minerva.union.edu/garverj/mws/mws.htm).

Action E: Develop an online Volunteer Portal – a website where prospective volunteers can learn about the various volunteer opportunities throughout the watershed.

2026 Measures of Success

Measure 1: Establish a citizen advisory committee comprised of representatives from the communities within the watershed to incorporate the needs and knowledge of residents into future planning.

Measure 2: Develop strategies to increase attendance and participation in the Annual Mohawk River Watershed Symposium.

Measure 3: Develop and launch an online Volunteer Portal website.

2031 Measures of Success

Measure 1: Assess the feasibility of project recommendations prepared by the citizen advisory committee.

Measure 2: Increase attendance and participation in the Annual Mohawk River Watershed Symposium by 25 percent.

Measure 3: Continue to promote participation in online Volunteer Portal website and increase membership by 25 percent.

Targeted Actions to Promote Community-Based Environmental Education Programs

Action A: Create and promote a network of community-based environmental education programs, such as those created and carried out by the Schoharie River Center, Onondaga Environmental Institute, and other partners in the watershed. These programs are designed to foster greater public awareness of the ecosystem of the Mohawk River watershed through science-based education.

Action B: Develop Mohawk River watershed-based curricula and educational materials for primary, secondary, and college and university students that promote inclusion of natural system education into programs and activities.

Action C: Increase watershed awareness through expansion of school field programs, such as the "Day in the Life of the Hudson River Estuary" program, into the Mohawk River watershed by promoting and supporting more locations within the watershed through the creation of a "Day in the Life of the Mohawk River" program.

Action D: Identify and investigate the feasibility of fixed or mobile environmental educational venues to bring education to the public, specifically geared toward highlighting the environment and history of the Mohawk River and its watershed. Education venues may be similar to the sloop Clearwater, the tug Urger, or the Wild Center in the Adirondacks. Foster development of strong, regular programming for public and student audiences.

2026 Measures of Success

Measure 1: Inventory existing community-based education programs within the watershed.

Measure 2: Develop Mohawk River watershed-based curricula and educational materials for primary and secondary schools, and colleges and universities.

Measure 3: Expand the "Day in the Life of the Hudson River" program to three sites within the watershed.

2031 Measures of Success

Measure 1: Expand the network of existing community-based environmental education programs, and investigate the feasibility of establishing a fixed or mobile environmental education venue.

Measure 2: Incorporate Mohawk River watershed-based curricula and educational materials in two school districts.

Measure 3: Expand the "Day in the Life of the Hudson River" program to three additional sites within the watershed and assess the feasibility of creating a "Day in the Life of the Mohawk River" program to be hosted in conjunction with the "Day in the Life of the Hudson River."

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