New York State
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Mohawk River Basin Action Agenda

2012 – 2016

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

Additional information is available from:

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The Mohawk River has played an integral role in the development of not only New York State, but of the nation. The location of the river made it an important transportation route, strengthened by the creation of the Erie and Barge Canals. Today the river, with its many recreational and transportation opportunities, continues to be an economic engine for the region. The Mohawk also serves as a connector of several important natural resources areas of New York State, including the Great Lakes and the Adirondack and Catskill Mountains. An abundance of wildlife thrives within the boundaries of the Mohawk River Basin, including an exceptional warm-water fishery, known for its smallmouth bass. The river valley is also home to important terrestrial habitats that provide refuge for sensitive bird, reptile, amphibian and mammal populations.

The environmental quality of the Mohawk River and its basin, harmed during the industrial expansion of the 19th and early 20th centuries, has improved; however the substantial progress New York State has made needs continued protection. There are areas of pollution remaining that prevent full use of available resources, and the Mohawk Valley recently experienced firsthand the catastrophic flooding that is likely to continue as a result of a changing climate. Therefore, we must take bold steps toward managing the Mohawk River basin, to preserve and protect its natural resources, protect our communities, and improve our resiliency.

In June 2012, Governor Cuomo announced the creation of a cabinet-level *Mighty Waters* Working Group, to be co-chaired by the Commissioner of the Department of Environmental Conservation and the Secretary of State. The purpose of this group is to support the Regional Economic Development Councils and integrate economic development, community revitalization, environmental quality, and flood hazard risk reduction in the Mohawk River basin. The Department of Environmental Conservation oversees the working group in the areas of environmental sustainability and flood hazard risk reduction, while the Department of State oversees economic development and community revitalization. We are carrying out these responsibilities through implementation of the Mohawk River Basin Program and this Action Agenda.

The New York State Department of Environmental Conservation and its partners developed the Mohawk River Basin Action Agenda to promote coordinated management of the environmental and cultural resources of the Mohawk River and its watershed. Five areas serve as the benchmarks by which the Action Agenda defines its goals: fish, wildlife and habitats; water quality; flood hazard risk reduction; community revitalization; and working landscapes. We look forward to working with our partners on this exciting opportunity to effect real, positive change in such an important part of New York State.

Joseph J. Martens, Commissioner
New York State Department of Environmental Conservation

Table of Contents

Introduction

Known as "Te-non-an-at-che, the river flowing through mountains" by the region's native peoples (Hislop, 1948), the Mohawk River has long been a driving force in shaping the natural environment and the life of communities throughout the Mohawk River Basin. It is a grand and magnificent river.

The Maquas, the Mohaugs, the Mohawk, many and one,
Depending on your angle and when you were born.
Our creeks and kills belong to us and none else;
The Chuctanunda, Potash Creek, Burch,
Briggs Run, Kayaderosseras, the Sandsea Kill,
Schoharie, Otsquago, Alplaus and the Stony;
Garoga, Canajoharie, the Sauquoit and the Flat;
They all make one river, friend,
The Maquas, the Mohaugs, the Mohawk, many and one,
Many yet one, compounding a thousand streams
That drain these hills. . . . .

- *Codman Hislop, The Mohawk (Rivers of America) 1948*

For centuries people have flocked to the Mohawk Valley to capitalize on its fertile floodplain soils, abundant fisheries, and transportation opportunities provided by the Mohawk River and Erie Canal. For over 100 years, starting in the early 19th century, the environmental quality of the river and many of its tributaries declined due to the overwhelming pressures of human settlement and economic activity. Manufacturing and transportation brought dams, factories, roads, and rails to the basin and adjacent to the river. Substantial areas were cleared for agriculture. Waterfront centers of population were established and grew. Many unknowingly contributed to reducing the quality of the river they relied so much upon. Environmental laws and regulations enacted in the 1970's, especially the Clean Water Act, have helped reduce these impacts and reverse the degradation of the river. Today the environmental quality of the river and many of its tributaries has substantially improved. However, we must protect these gains and manage the river and its associated resources sustainably. Unresolved legacy problems, such as inundation of flood prone areas, PCB contamination, erosion of stream banks, and remaining sewage pollution must still be addressed. External forces such as climate change, competing human uses, invasive species and economic transition continue to challenge the health of the region.

In April of 2009, the New York Ocean and Great Lakes Ecosystem Council issued a report to the Governor and the Legislature of NY titled "Our Waters, Our Communities, Our Future". The report outlined a set of recommendations to help New York State better manage natural resources and human activities by implementing an ecosystem-based management (EBM) approach. EBM is an innovative approach to management that recognizes that humans are integral parts of ecosystems and that ecosystems are vital in supporting human life. Development of a regional EBM program for the Mohawk River Basin was specifically recommended in the report.

The Mohawk River Basin Program and the Mohawk River Basin 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. Using the model of the Hudson River Estuary Program and other successful watershed and estuary programs, New York State is seeking to undertake an ecosystem-based management (EBM) approach to the Mohawk Basin through the Department of Environmental Conservation's Mohawk River Basin Program. In addition to addressing key goals and objectives that are specific to the region, this Action Agenda is also intended to support undertaking a "whole Hudson" approach for managing the Hudson River and Hudson River Estuary. The Mohawk River and its watershed drain directly into the Hudson

River, providing major upstream inputs that can affect the estuary and ultimately, the Atlantic Ocean. The Mohawk River Basin's unique concerns, culture, and history warrant organizing its own regional, landscape-scale approach to address its particular challenges, but can be done in a way that is mindful of its relationships within the larger Hudson-Mohawk Basin.

As a partnership-based initiative, the Mohawk River Basin Program and Action Agenda promote collaborative decision-making based on an understanding of the whole ecosystem. The many complex issues within the region cannot be fully resolved based by managing certain sectors, species or pollutants on individual basis. The Mohawk River Basin is an excellent area for advancing New York State's EBM goals by integrating our goals for environmental sustainability with our many compatible goals of smart and sustainable economic growth, and heritage protection and development. To be adaptive and responsive to change, the Action Agenda seeks to promote coordination and cooperation among sectors, balance competing uses, and to inspire compromise. In addition, results of planned actions must be monitored to guide future actions and to see that the use of our limited resources are effectively achieving the desired results. It is hoped that all parties interested in sustaining the Mohawk River Basin will come together to assist in reaching the goals set forth in this Action Agenda.

Mohawk River Basin Action Agenda and "Mighty Waters" Working Group

Under direction from Governor Cuomo, in 2012 a multi-agency "Mighty Waters" Cabinet-level Working Group was established to promote community revitalization, environmental sustainability and flood-hazard risk reduction in the Mohawk River Basin. This Action Agenda is intended to help guide those efforts. The Department of Environmental Conservation (DEC) will coordinate the Working Group's partnership efforts to related to environmental sustainability and flood hazard risk reduction. DEC's specific roles will be carried out through implementation of its Mohawk River Basin Program and other core DEC programs. Coordination of the Working Group efforts related to economic development and community revitalization will be undertaken by NYS Department of State (DOS). This effort builds upon, and will work within, the Governor's Regional Economic Development Councils for the Capital Region and Mohawk Valley. Within the framework of the Mighty Waters Working Group, DEC and DOS will coordinate their management of these two facets through the process of developing and implementing the Mohawk River Basin Action Agenda.

Steering Committee

The involvement of partners in the development of the Action Agenda is essential to develop a plan that integrates a shared set of goals for the Basin and establishes a clear set of priority actions. The Mohawk River Basin Program Steering Committee oversees the development and implementation of the Mohawk River Basin Action Agenda and reports to the Mighty Waters Working Group. Duties of the Steering Committee include bringing together the appropriate partners in the Basin to implement the Action Agenda, advising on the use of program resources for current and long-term environmental issues facing the Mohawk River Basin, and suggesting revisions to the Agenda as appropriate over time. The Steering Committee is comprised of individuals from the DEC, DOS, other State agencies and partnering stakeholder organizations working in the region including academia, not-for-profits, and local municipal government.

The Steering Committee forms subcommittees, as necessary to accomplish each of the goals listed in the Action Agenda. The role of subcommittees is to provide greater in-depth focus on the identified priority action steps, work plans and project proposals which will achieve the Action Agenda's goals and targets. The membership in each subcommittee draws together the relevant expertise and interests necessary to oversee the particular goal in their purview.

Progress in the Basin

There are many federal, state, regional, county and local organizations within the Mohawk River watershed working on enhancing or preserving the natural, social, economic, and cultural resources of the Mohawk River Basin. These include but are not limited to the DEC, DOS, New York State Department of Agriculture and Markets, and Transportation, New York State Canal Corporation, Federal Emergency Management Agency (FEMA), US Army Corps of Engineers, Erie Canalway National Heritage Corridor, Capital District Regional Planning Commission and Herkimer-Oneida Counties Comprehensive Planning Program, Mohawk River Basin Coalition of Soil and Water Conservation Districts, Schoharie River Center, New Netherlands Routes, Inc., and various colleges, universities and not-for profit organizations. Many municipal governments also have specific programs and activities focused on enhancing and protecting the natural, social, economic and cultural resources within the Mohawk River Basin.

Fostering partnerships and relationships with these organizations is vital to ensuring the successful achievement of the Mohawk River Basin Program and the Action Agenda's goals and objectives. The following is a sampling of activities taking place:

Mighty Waters

Conceived at Congressman Paul Tonko's first annual Mighty Waters Conference in July of 2010, the mission of the Mighty Waters Task Force is to help create a climate of investment, recovery and public awareness for the waterways and communities of the Mohawk River, Erie Canal and related waterways by mobilizing federal resources that encourage policy reform, economic development, public access and enjoyment and effective environmental and cultural resource management.

Following information collected at three successive Mighty Waters Conferences held each June, meetings of the Mighty Waters Task Force, listening tours with key constituencies, dozens of meetings with federal and state agencies and maintaining a close connection with the region's higher education and non-profit community, Congressman Tonko introduced federal legislation (H.R. 5927), to create a Hudson-Mohawk Basin Commission, a federal-state commission that will enhance and preserve the economic, environmental, historic and cultural values of one of the most demographically and politically important regions in the nation. The Commission would require the cooperation of the governors of the states included in the Hudson-Mohawk River Basin (New York, New Jersey, Vermont, Massachusetts, and Connecticut). The Commission would coordinate activities being undertaken by the states, advisory committees, local governments, institutions of higher education, and nongovernmental organizations to address environmental, economic, and cultural issues associated with the management and use of resources in the Hudson-Mohawk Watershed.

Working with the Mighty Waters Task Force, Governor Cuomo's cabinet working group and DEC's Mohawk River Basin Program and other key stakeholders, Congressman Tonko hopes to inspire greater collaboration and a long term commitment to the environmental and economic sustainability within the Mohawk Basin.

Erie Canal

In 2000 Congress adopted the 524 mile New York State canal system, its historic districts, and the more than 230 communities along its shores as a federally designated National Heritage Corridor (NPS 2006). This designation recognizes the significant heritage of the Mohawk Valley associated with Native Americans, European settlement and other epochs of American history, including the building of the Erie Canal. One of the major products of the Erie Canalway is its Preservation and Management Plan for the corridor. The plan offers guidance on implementing policies that protect and preserve the historic, natural, cultural, and recreational resources in the corridor (NPS 2005).

The Erie Canalway is a dynamic example of emerging area-wide programs that recognize major themes of our heritage and advance the intersecting goals of conservation, recreation, education and sustainable development. Under New York State law, heritage areas are defined as an amalgam of natural and cultural resources. Both state and national heritage programs are compatible with the mission of a Mohawk River Basin Program and Action Agenda. Similar to the Erie Canalway, counties such as Oneida have begun to work collaboratively to set in place "Greenways" along sections of the Mohawk River corridor that course through their jurisdictions. A Greenway is a network of open spaces bringing together the ecological, cultural and recreational aspects of an area (Oneida County 2008). These greenways, like the Erie Canalway National Heritage Corridor provide for the protection of natural resources while maintaining their availability for use by the public.

The NYS Canal Corporation, a subsidiary of the NYS Thruway Authority, is responsible for the operation, maintenance and promotion of four historic canals including the Mohawk River portion of the 524 mile New York State canal system. As the Mohawk River is directly integrated with the Canal for much of its length, the operation and maintenance of the canal system has a vital bearing on the health of the River and the availability of its resources. One of the Canal Corporation's major goals is to transform the canal system into a world-class recreational facility, fostering tourism and economic development. With an integral role in redeveloping the canal corridor, the Canal Corporation will be an important partner in the success of the Mohawk River Basin Program and Action Agenda.

Watershed Management Plan

With support from the DOS and DEC, the Mohawk River Watershed Coalition of Soil and Water Districts was formed in March of 2009 and includes the 14 counties of Albany, Delaware, Fulton, Greene, Hamilton, Herkimer, Lewis, Madison, Montgomery, Oneida, Otsego, Saratoga, Schenectady, and Schoharie. The Coalition's mission is to implement conservation initiatives that protect, promote, and enhance the resources of the Mohawk River Watershed in partnership with local, state, and federal stakeholders.

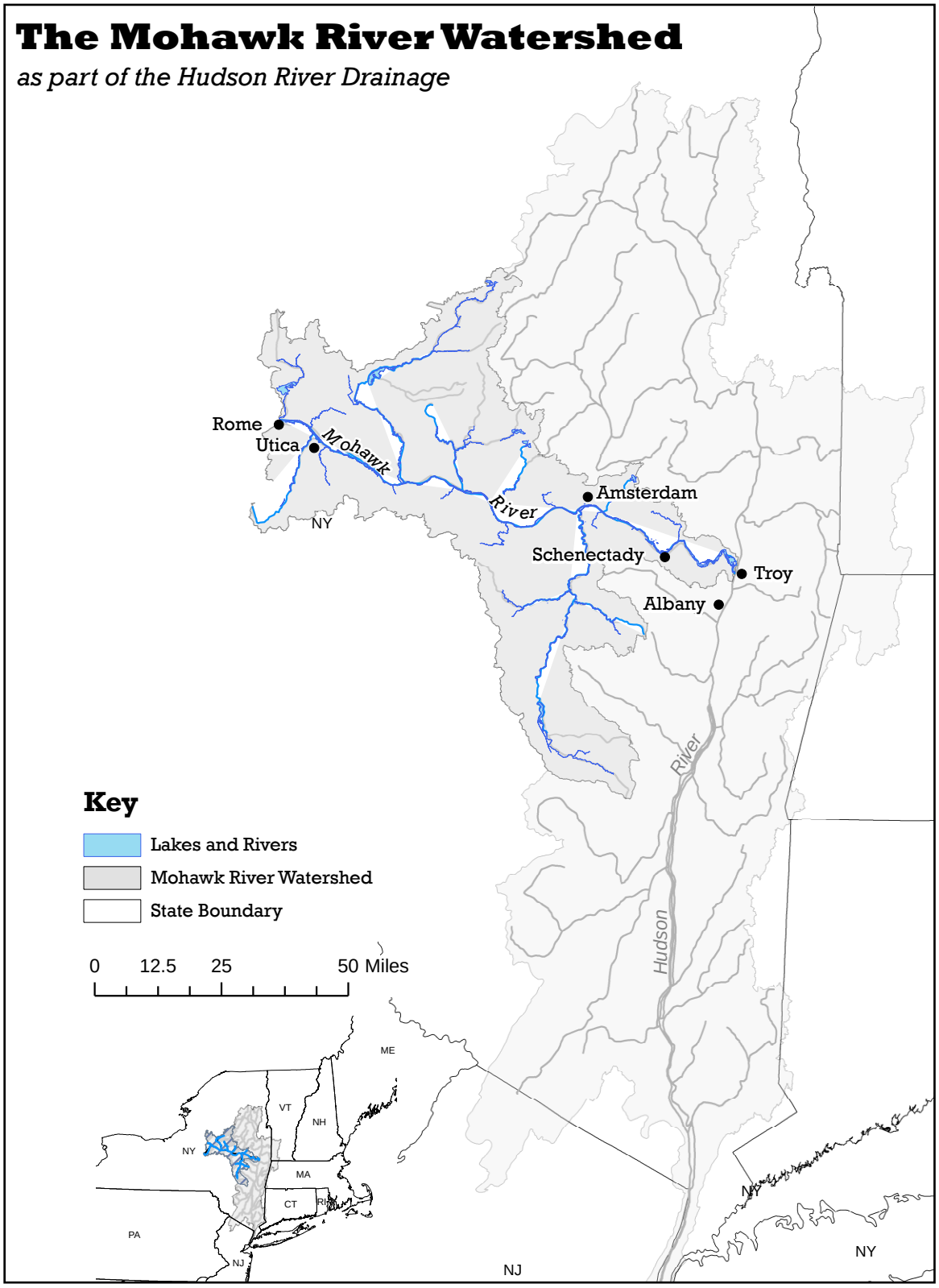
The Coalition is currently developing a watershed management plan funded through the Department of State's Local Waterfront Revitalization Program. The management plan is designed to advance the efforts of the DEC and other members of the NY Oceans and Great Lakes Ecosystem Conservation Council by introducing the concepts of Ecosystem-Based Management at the local level in the Mohawk River watershed. By

developing the watershed management plan and partnering with DEC and others, the Coalition hopes to make significant contributions toward the accomplishment of many of the goals outlined in the Action Agenda, most notably Goal 1: Understanding and managing the natural systems in the Mohawk River watershed; Goal 2: Protecting and improving water quality in the Mohawk River watershed; and Goal 5: Preserving working landscapes" (MRBCCD 2009).

Flood Mitigation Planning

Following the floods of 2006, Congress requested the U.S. Army Corps of Engineers conduct a reconnaissance study of the Mohawk River (Army Corps 2008). The study intends to develop recommendations to enhance flood resiliency in the watershed and determine if a cost-shared feasibility study would be warranted. This project is ongoing, and the Army Corps will be partnering financially with the Mohawk River Watershed Coalition of Soil and Water Districts while working with various other partners such as DEC and DOS to carry out the purposes of the feasibility study.

There are many other examples of important cooperative work being conducted in the Mohawk River Basin. The efforts mentioned here only briefly introduce some of the progress partnerships in the basin are making. Much of this work has been carried out by various government agencies, not-for-profits, colleges, and universities. Each organization has a specific expertise and a valuable role to play in sustainably managing the Basin's resources. Bringing all groups together to work towards a common end will ensure the greatest success.


The Mohawk River Watershed
as part of the Hudson River Drainage
Rome
Utica
Mohawk
River
Amsterdam
Schenectady
Troy
Albany
NY
Hudson
River
Key
Lakes and Rivers
Mohawk River Watershed
State Boundary
0 12.5 25 50 Miles
ME
VT
NH
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MA
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RI
PA
NJ
NJ
NY
NY

Action Agenda Goals and Targets

Five priority goals have been identified for the Mohawk River Watershed, which if fully realized, would enhance ecosystem health and the vitality of the region for people and their communities. This list draws on the input from many partners working in the region (Table 1) who share a passion for the conservation and revitalization of the Mohawk River, its watershed and its communities.These goals will serve as a benchmark by which the Mohawk River Basin Action Agenda will define its priority actions. Specific measureable actions and timeframes have been identified and are expected to lead to the fulfillment of each Action Agenda goal.The proposed actions for each goal are described on the pages that follow. These goals represent an initial list of priorities for the near-term. As conditions change and scientific knowledge expands our understanding of the river and its watershed, the Action Agenda will be revisited and revised.

Goal 1: Fish, Wildlife and Habitats

Conserve and protect fish, wildlife and their habitats in the Mohawk River watershed while communicating to the public about their value to human communities and natural processes so that people can enjoy the unique natural character of the watershed and its living ecosystem.

Goal 2: Water Quality

Protect and improve water quality in the Mohawk River watershed and communicate the issues so that people are protected from health hazards, drinking water supplies are conserved, aquatic communities flourish and natural processes are sustained.

Goal 3: Flood Hazard Risk Reduction

Promote flood hazard risk reduction and enhanced flood resiliency by providing the tools to ensure that communities are prepared for climate change and important cultural, recreational, economic and environmental assets protected.

Goal 4: Community Planning and Revitalization

Revitalize Mohawk River Watershed communities utilizing sustainable development principles, integrating environmental, social, historic, cultural, recreational and economic factors, in order to shape the region as a vibrant, healthy, desirable place to live, work and visit.

Goal 5: Working Landscapes, Land Use and Open Space

Maintain and encourage those 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 resources.

In the pages that follow, targeted actions are provided for each of these five goals which describe the activities and timeframes needed to help fulfill each goal. Short term actions, which should be the primary focus of current efforts, are listed under the heading “2016 Targets.” Longer-range actions, those which are important but may not be either fiscally or programmatically feasible at this time, are listed under the heading “Longer-Range Targets.” These targets are likely to be implemented during the 5-15 years following the accomplishment of the 2016 targets. It is important to include these to provide a long-range vision for the Basin and to direct future action agendas.

Goal 1: Fish, Wildlife and Habitats

Conserve and protect fish, wildlife and their habitats in the Mohawk River watershed while communicating to the public about their value to human communities and natural processes so that people can enjoy the unique natural character of the watershed and its living ecosystem.

Challenge:

While the rich cultural history of the Mohawk River is widely celebrated, the Basin's natural history is under-studied and, perhaps with the exception of its warm water fishery, under-appreciated. With the wealth of natural resources in other regions of New York, such as the Great Lakes, Adirondacks, Catskills, and Hudson River Estuary, the Mohawk is often over-shadowed and dismissed as an industrial river. But the Mohawk is worthy to be counted among New York's premier natural treasures. The Mohawk River Basin is located in the center of the state and ties together many of the state's prominent ecosystems. The Mohawk connects the western watersheds of the Great Lakes and the Hudson River in the eastern part of the state, and its tributaries drain a portion of the Catskills and Adirondacks. All of these connections make the Mohawk River a transition between diverse ecosystems, adding to its biological diversity and unique character.

These connections are not without their challenges, and understanding the ecology of the Mohawk River and its surrounding watershed is a complicated task. The Erie Canal has been a significant pathway for invasive species, such as zebra mussels, to move from the Great Lakes to the Hudson River, and will likely continue to be a pathway for future invasions. Researchers, managers, and communities need to better understand what effects invasive species are having on the Mohawk River resources and be poised to predict and study new invaders, such as the round goby, and the potential risk to native fish species.

The flow of species is not necessarily dependent on the direction of water flow and can move in other directions as well. For example, every spring blueback herring move from the coast up the Hudson River and through the locks up the Mohawk River to spawn. Juvenile herring are an important food source for predatory species in the river, but the adult spawning run appears to be decreasing with unknown effects to the food webs of the river.

In general, fisheries in the Mohawk River are in a state of transition. Freshwater drum, previously absent, are now common to abundant throughout the river; Northern pike, once rare, are now common throughout the river, and most are large. Even the popular smallmouth bass fishery has shifted from one of quantity to one of quality (meaning fewer bass, but larger fish). Over twenty years has passed since the last river-wide fisheries survey of the Mohawk, and new studies are needed to better understand these transitions. Other aquatic resources are also in need of further study. For example, freshwater mussels are recognized as one of the most imperiled group of species, and two major tributaries of the Mohawk, Schoharie Creek and West Canada Creek were historically home to mussel species that are currently in decline.

Additionally, New York State has lost more than half its historic wetlands, and the Mohawk River Basin is no exception. Wetlands and riparian buffers serve important ecological functions including absorbing stormwater runoff, improving water quality and providing wildlife habitat. Restoring wetlands and riparian buffers will serve these important functions in the Mohawk Basin.

The strong agricultural land base in the Mohawk River Basin is not only important for its regional identity and economic value, but also provides important wildlife habitat. As a group, grassland birds are in decline throughout the U.S. and the Mohawk Basin is recognized as an important area for conserving grassland bird species. However, as land use changes and development continues, efforts to protect and enhance grassland habitat will continue to be needed.

Climate change is expected to bring more severe flooding and more frequent short-term droughts, and disease and invasive pests are expected to pose increased risks to human and natural resources. Changes in the regional water and temperature regime will likely affect species composition of natural communities and threaten wetlands. Diseases and pests will affect natural communities, humans, and agricultural crops. All natural resource management planning must take place in the context of changing climatic conditions and consider the best available science on the regional and local effects.

Certainly, one of the greatest challenges the Mohawk River faces is in changing its image from a river that is defined by its industry, to a river that is appreciated for its natural resources. Education and outreach, in the form of citizen science programs, watershed associations, and community involvement, will help to reconnect people to the Mohawk River and foster a new generation of New Yorkers that value the diverse natural resources, recreational and economic opportunities available throughout the Basin.

2016 Targets:

Mohawk River Fisheries - Begin to implement the Lower Mohawk River Fisheries Management Plan including; improving angler access to the river, updating the river-wide survey of Mohawk River fisheries, and determining current angler use of the fisheries, including subsistence fishing by low-income populations. While DEC can serve an important role, these efforts should be carried out in conjunction with other agencies and institutions capable of providing fishery information.

Natural System Information - Conduct a review of historical data and literature regarding fisheries, wildlife, and natural systems within the Mohawk River Basin. Synthesize the information in a "white paper" addressing the current and historical state of the Mohawk River ecosystem and make recommendations for management.

Public Education and Awareness - Educate and involve the public in the basin's natural systems by creating a network of community-based environmental education programs such as the Schoharie River Center and the Environmental Clearinghouse of Schenectady. Determine areas where language and cultural differences may affect the success of public education programs. Work with local community leaders to develop educational programming targeted to local audiences. This would foster greater public awareness of the ecosystem, its conditions and resources.

Develop educational materials available for teachers to bring Mohawk-based curricula into their classrooms. Develop Mohawk River-based curricula targeted toward urban students, who often perceive little connection between their lives and natural resources. Create a forum for monitoring data and encourage symposia on the Mohawk to highlight research.

In addition to specific Mohawk based curricula each participating agency should be encouraged to promote natural systems education in their existing programs and activities.

Evaluate and prioritize need(s) for fixed versus mobile environmental educational venues. Options can include the creation of a floating classroom similar to the Hudson River

Clearwater Sloop using *Onrust* or other vessels such as the tugboats *Urger* or *Scow* to bring environmental and history education to the public that is specifically geared toward highlighting the Mohawk River and its watershed. Other options include the development of a "Wildlife Education Center" such as is recommended in the Oneida County Greenway Plan or through expansion of the Schoharie River Center's Environmental Study Teams. The target of these programs should be students within the region, in order to reconnect young people with nature and to influence the continued protection of the river for generations to come.

Longer Range Targets:

Mohawk River Fisheries - Continue to implement actions listed in the Lower Mohawk River Fisheries Management Plan, and begin to update management strategies for Mohawk River fisheries based on accomplishments through 2016. This would include expanding the river-wide fisheries survey to the tributaries and determining the current status of blue back herring in the river.

Habitats and Species - Restore and protect critical habitats and species of concern including grasslands, wetlands, and riparian buffers. Monitor restoration projects to measure the success and colonization of grassland and wetland birds, and conduct census studies to determine the distribution and health of populations of species of concern throughout the basin such as freshwater mussels.

Invasive Species - Track and monitor the movement of invasive species in the watershed. Support and assist the State Invasive Species Council in monitoring and managing new and existing invasive species. Cooperate with the Capital Mohawk Partnership for Regional Invasive Species Management (PRISM) and other PRISMs that intersect the basin for invasive species monitoring and management.

Implement achievable and targeted invasive species eradication projects in the Mohawk River Watershed.

Develop local action plans for invasive species management using the data and knowledge of local stakeholders and special interest groups.

Goal 2: Water Quality

Protect and improve water quality in the Mohawk River watershed and communicate the issues so that people are protected from health hazards, drinking water supplies are conserved, aquatic communities flourish and natural processes are sustained.

Challenge:

Water quality monitoring in the Mohawk River Basin has been conducted since the early 1970's as part of the DEC's statewide ambient water quality monitoring program. Monitoring is conducted in all the state's major river basins on a five-year cycle. Surface water quality is assessed by means of chemical, biological, and physical parameters. Water quality assessment can identify which contaminants are present, their sources, and the extent to which they affect the health of the waterbody. This information is important to the state and local municipalities in planning for new development, permit compliance and recreational use assessment. Although many of the sub-watersheds of the basin have been monitored through this program, there are still significant numbers of un-assessed streams, rivers, and lakes. Sampling locations are selected to give a basin-wide perspective on water quality, and sometimes this information is not of a scale appropriate for local municipalities seeking to use this information for planning and other purposes. A finer scale assessment for use by municipalities as well as basin-wide monitoring should be supported and adapted to reflect current and potential future contaminants and their sources.

Addressing PCB contamination has been a focus of the DEC for many years, and these efforts have reduced the discharge of PCB from point sources and hazardous waste sites. However, in the western main stem Mohawk River near Utica and some tributaries, sources remain that contribute PCBs to the river, continuing to threaten the health of fish, wildlife, and human populations. In the Utica area, PCBs are present in fish at levels that exceed the US Food and Drug Administration tolerance value of 2 parts per million, resulting in continued fish consumption advisories. Identifying the remaining sources of PCB contamination followed by remediation and control procedures is imperative to improve water quality and the safety of fish, wildlife and humans in the Mohawk River Basin.

The headwaters of the Mohawk River are in the southwestern corner of the Adirondacks. In this area, acid precipitation, combined with low buffering capacity of the waters, increases the availability of some contaminants, such as aluminum and mercury, as well as producing low pH waters. Available information suggests the headwater region of the Mohawk River has high levels of mercury in aquatic invertebrate tissues compared to other regions across the State. Stream studies have indicated that the increased acid deposition in the region has also contributed to the release of nutrients into surface waters from natural sediments causing eutrophication in some streams. Information on the regional effects of acid deposition and other atmospheric pollutants, such as mercury, is limited. The effects on water supply systems and stream, river and lake water quality is not completely known; more extensive monitoring should be conducted to determine the extent of the problem in this portion of the Mohawk Basin.

The transport of sediment by rivers is a natural process associated with the evolution of river systems. However, land use and human activities such as agriculture, development (residential and commercial), increasing impervious surface cover, removal of vegetation along riparian buffers, and poor road ditch, bridge, and culvert design can dramatically increase the amount of sediment available for transport. Too much sediment has

a detrimental impact on the ecological health of a river by limiting light penetration and in general reducing the viability of aquatic organisms. Suspended sediment can be a transport mechanism for spreading hydrophobic chemicals such as PCBs and dioxins from contaminated areas to more pristine waters downstream. Bedload sediment clogs the mouths of tributaries as well as receiving waters in the Mohawk main stem, necessitating dredging to maintain channel conveyance and navigation depths. The U.S. Geological Survey (USGS) has been periodically collecting suspended sediment data from the mouth of the Mohawk since the mid-1950s. Its data indicate the Mohawk annually exports on the order of 500,000 metric tons of suspended sediment. A recent 4-year study by the USGS indicated the yield of suspended sediment from the Mohawk watershed was 2.8 times that of the Upper Hudson (48.3 versus 17.3 metric tons/km^2) just above its confluence with the Mohawk – some of this difference is likely attributable to the differing geology and geography between watersheds, but some of the difference is also attributable to the relative amount of development and land uses in the watersheds

Warmer water temperatures and increased weather extremes associated with climate change are expected to lead to greater intensity and duration of stratification, nutrient loading, turbidity and eutrophication. These conditions will increase the risk of harmful algal blooms and could affect drinking water quality and function of wastewater treatment plants.

2016 Targets:

Ambient Water Quality Monitoring - Continue to support DEC's ambient surface-water quality monitoring program; reduce the number of unassessed waters by 40% giving priority to trout spawning and water supply waters in the basin. A 20% reduction in unassessed waters should be accomplished through efforts of the DEC Ambient Water Quality Monitoring Program, and the remaining 20% can be achieved through the enhanced relationships fostered among volunteer water quality monitoring groups and water quality coordinating committees. This translates to an assessment of approximately 24 unassessed river/stream segments, the equivalent of approximately 636 river/stream miles.

Integration of Additional Water Quality Monitoring Information - In addition to DEC's state water quality monitoring programs, other government and not-for-profit organizations collect useful information on the quality of surface waters. Incorporating this information into New York State water assessment efforts will expand the coverage of state monitoring networks. The Mohawk River Basin Program will implement the DEC's Wadeable Assessment by Volunteer Evaluators (WAVE) program. This program works with outside partners gathering additional data sources and develops pathways of data integration to DEC. The program provides strict quality assurance and quality control plans.

Mohawk Basin Monitoring System - Long-term scientific information is important to support good resource management decisions and adaptive management. Evaluate gaps in existing data collection programs funded or operated by DEC, Ag & Markets, USGS, and others that are necessary to understand changing conditions and trends. Expand the current network as needed. This may include additional river gages, sediment monitoring stations and expanding the Hudson River Environmental Conditions Observing System (HRECOS) into the Mohawk.

Sedimentation Monitoring - A network of sediment monitoring stations should be established to identify subwatersheds with the

greatest amount of erosion. Considerable resources are spent on an annual basis for dredging New York ports and the Mohawk River portion of the Erie Canal to maintain these water bodies for commercial and recreational navigation. The Mohawk River watershed is a significant source for these sediments. For some Mohawk Valley communities and the State's Canal system, these costs can be significant burdens on already restricted budgets. Reduction of erosion and sedimentation from source areas within the Mohawk River Sub-basin would be the most cost-effective long-term approach to lessen the existing reliance on dredging as an "end-of-pipe" solution and to improve water quality. Key tasks include the quantification of the source areas and assessment of relative sediment loads from each tributary. This would enable agencies to best target potential land-use management, remedial measures, best management practices and limited resources to address the greatest achievable and cost-effective improvements in water quality and reduction in sediments.

Establish Critical Total Maximum Daily Loads (TMDL) for the Mohawk River - The discharge of untreated and partially treated sewage has significantly altered water quality and impaired aquatic life in many areas of the Mohawk River. Sources of pollution include Sanitary Sewer Overflows (SSOs) and Combined Sewer Overflows (CSOs). Restoration of river water quality by controlling such pollution sources would greatly improve wetlands, wildlife, aquatic health, as well as the public's ability to use the river for recreation. Critical Total Maximum Daily Load (TMDL) for affected portions of the Mohawk River should be established. This effort would regulate the types and quantities of pollutants allowed to be discharged from current sources and should include consideration of the effects of warmer temperatures and increased severity of weather events. Significant improvements to the river water quality will be limited until such efforts are undertaken.

Best Management Practices - Develop and distribute a list of Best Management Practices for water quality management for municipalities, landowners, and industries as part of an educational effort in the watershed. Work with local partners such as Soil and Water Conservation Districts, NRCS, county and regional planning and local watershed organizations, to facilitate the adoption of best management practices by landowners and management agencies.

Legacy Contamination - Continue to identify remaining sources of legacy contaminants (e.g. PCBs) to the main-stem Mohawk River. Once identified, existing DEC programs which are developing and carrying out remediation and control projects for sources of contamination should be supported through additional funding. In doing so, fish consumption advisories should become less restrictive for the entire main-stem Mohawk, especially in the areas between Oriskany Creek and West Canada Creek and West Canada Creek, and Fivemile Dam. Work with the DEC Office of Environmental Justice to identify areas where fish consumption advisories should be printed in Spanish and other languages.

Trees-for-Tribs - Encourage and provide incentives to communities to inventory conditions of important stream segments, and develop programs and incentives to encourage communities and landowners to enhance green infrastructure. Included in these programs and incentives would be planting of riparian buffers through the DEC's Trees-for-Tribs program. This program provides low to no-cost riparian vegetation for stream bank restoration. Additionally, communities should investigate the use of urban and community forestry, rain gardens and other green infrastructure practices.

Longer Range Targets:

Ambient Water Quality Monitoring - Continue to support DEC's ambient water quality monitoring program and the assessment of waters throughout the Basin. Expand assessment methods to include algal sampling and the tracking of invasive aquatic species. Continue to coordinate assessment efforts with other organizations to increase the number of assessed waterbodies. In light of continued collaborative assessment efforts, DEC's water quality monitoring program should hire a data coordinator to oversee the use of data from other organizations and target their efforts.

Legacy Contamination - Expand legacy target contaminants to include studies of mercury. Continue to identify and correct sources of both mercury and PCB contamination with a goal of eventually eliminating restrictive health advisories for fisheries.

Polluted Precipitation - Implement a monitoring network of sampling locations throughout the headwaters of the Mohawk River Basin to fully document the levels and extent of acidification and mercury contamination. Study the effects of these contaminants on the pristine headwaters of the Mohawk and their wildlife populations. Support federal and state actions to affect controls on non-state sources of emissions that contribute to mercury and acid precipitation.

Stormwater Runoff - Study stormwater inputs and associated contaminant loads to the Mohawk River and its tributaries. Develop and implement methods to decrease and slow stormwater runoff from urban and suburban areas to surface waters in the watershed, including installation of green infrastructure.

Goal 3: Flood Hazard Risk Reduction

Promote flood hazard risk reduction and enhanced flood resiliency by providing the tools to ensure that communities are prepared for climate change and important cultural, recreational, economic and environmental assets protected.

Challenge:

Floods are a natural occurrence in every river system and can damage valuable infrastructure and buildings located in flood zones. In spite of the risks, humans have inhabited floodplains to capitalize on ease of travel, commerce and access to food sources since the beginning of human history. In modern times, flood events have been physically and financially devastating to communities that are adjacent to flood-prone rivers. Many communities were established long ago in close proximity to the water, so relocation is not usually possible and can be financially challenging. To some people, the benefits of living in close proximity to rivers are more important than the occasional flood. As a result, people and structures will continue to be located in areas susceptible to flood damage. Floods are the most costly natural disaster in terms of our lives and property – and the most frequent.

In the Mohawk River Basin, many water level control structures, such as dams, currently cross the river. However, the natural structure of the river in some areas makes them particularly prone to flooding. As the region experienced in 2011 with Hurricane Irene and Tropical Storm Lee, floods can have catastrophic consequences. It is important to develop strategies that will help reduce the consequences of these types of events on human populations and communities, as well as our critical infrastructure and cultural assets of the Basin. We must recognize that properly functioning floodplains allow rivers to overflow their banks during flood events, slowing the flood waters, reducing peak discharges, and cutting down on the amount of erosion and sedimentation as a result of flooding.

In the Mohawk River basin there are four main types of flood events for which management strategies are required:

1. **Spring breakup, Snowmelt and Winter Rains -** The annual breakup and thaw produces regular flooding associated with rising temperatures and thaw of stored waters from winter-accumulated snow. While March has been the most typical time for this flooding, the current window is January through April. This is the one of the leading causes of flooding in the watershed. Ice jamming during these events provides a unique component to this hazard. Historically, some of the most significant floods in the basin have been winter rain on snow events (such as January 1996 which is the second highest recorded peak flow on the Schoharie Creek at Burtonsville - records dating back to 1939). As climate change brings warmer spring temperatures, snow melt is predicted to occur earlier and more rapidly. Further, more late-winter precipitation is likely to fall as rain, rather than snow. Both phenomena will increase the risk of flooding.

2. **Cyclonic disturbances -** Precipitation from large-scale atmospheric systems such as hurricanes, remnants of hurricanes, and stalled frontal systems can produce enormous quantities of rain in the watershed. Damages to public infrastructure from the June-July 2006 floods, which resulted in Presidential Disaster Declaration DR-1650, approached $400,000,000. FEMA estimates public infrastructure damages from Hurricane Irene and Tropical Storm Lee in 2011 (Presidential Disaster

Declarations DR-4020 and DR-4031, respectively) will surpass $1.7 billion. Climate change is projected to increase the frequency of severe cyclonic events and may permit more northward tracking of hurricanes.

3. **Localized summer outburst events** - Thunderstorms and other summer disturbances that result in intense local precipitation may cause severe flooding in small tributaries. The July 2008 event caused intense scour, sediment transport, and over $3 million in damage to infrastructure in Schenectady County. Climate change is projected to lead to an increase in the potential for formation of conditions conducive to summer outbursts and flash flooding.

4. **Catastrophic release of impoundments** - The failure of upstream impoundments (i.e., reservoirs) could cause devastating floods in the watershed. A catastrophic event of this type has not occurred yet, but dam-break analyses have shown how problematic such an event would be.

With all of the types of potential flooding, the creation, movement and deposition of debris presents an additional challenge to managing and reducing the consequences of flooding. Woody debris can have beneficial impacts to waterways by providing habitat and reductions in flow velocity. However, debris can also construct the flow capacity of a waterway and, thereby, cause additional flooding in areas of floodplain constrictions such as road crossings. Reducing flood risks in certain areas may involve management of debris. However, debris management must be done without sacrificing the integrity of critical riverine habitats and the wildlife they support. Debris management should be done in consultation with experts in the field and through development of proper site plans.

As the region experienced with Hurricane Irene and Tropical Storm Lee in 2011, floods can have catastrophic consequences. Given that flooding will continue, and may in fact increase in probability with climate change, flood hazard risk reduction is the most prudent response for the Mohawk River Basin. The focus for collective action should be to develop strategies that will increase our resiliency by reducing the consequences of flood events on human populations and communities, as was as our critical infrastructure and cultural assets. We must recognize that landscape changes and human development have contributed to the flooding impacts. As the NYS2100 Report has suggested, following Super-storm Sandy, the use of green and natural infrastructure is an effective approach that emphasizes the use of solutions that maintain and support service provided by natural systems. For example, the restoration of properly functioning floodplains, to the degree feasible, would allow rivers and streams to overflow their banks during flood events, slow the flood waters, reduce the peak discharges and cut down on the amount of erosion and sedimentation caused by the flooding. Underappreciated is the ecological value of floods to sustain many natural habitats and biological communities that have evolved to withstand and thrive with such conditions.

To address flood hazard risk reduction in an informed and cost-effective manner, a better understanding of the hydrology of the watershed is needed, including the spatial and temporal distribution of precipitation that falls in the watershed, the amount of water stored in the watershed (snow/ice, and groundwater), and how the water moves through the system. To better adapt to flood hazards, all three components must be carefully monitored so that specific events can be evaluated and predictive models can be developed and refined. As such, a primary outcome should be the development of an accurate and modern real time stream gage network to aid in

mitigation. In addition, reliable, up–to-date, and accurate maps of the floodplains, and flood-inundation maps and response tools for flood-prone communities should be a priority. Mitigation strategies should include ways of increasing floodplain efficiency by restoring wetlands and reducing obstructions, and protecting cultural resources that are prone to damage. A study done by Day (1970) shows that as little as 4-hours warning of a flood can reduce the cost of damages by 10-percent.

Hydrologic analyses and flood mitigation strategies for the Mohawk must integrate the expected effects on the region from climate change. To effectively implement successful flood-mitigation measures, plans and designs must not be based solely on historical or observed data. Rather, development of sound and cost-effective strategies must consider the environmental variables that are expected to change in the future.

2016 Targets:

Public Education and Awareness - Greater public understanding is needed of the contributing factors, causes of flooding, and potential climate change impacts. A coordinated basin-wide flood summit would be valuable to bring together scientists and engineering professionals, along with government officials and stakeholders to discuss recent flood events and present the range of options being explored to increase community resilience, mitigate flooding and adapt to flooding.

Floodplain Mapping - Work closely with the Federal Emergency Management Agency (FEMA) to update and improve flood maps of the Mohawk River Basin, including developing more detailed digital topographic layers based on Light Detection and Ranging (LiDAR) technology, a remote sensing system used to collect very high-resolution topographic data. LiDAR results in topographic data that are accurate to less than a foot. Older elevation models are only accurate to 2.5-10 feet. The result of using LiDAR and updated flood studies is more accurate flood maps, providing information that would allow building and infrastructure construction to avoid areas of high flood risk. The USGS is working with State and local agencies to continue to expand the availability and coverage of LiDAR in New York. Much of the area adjacent to the Mohawk River has advanced floodplain mapping in place, or is in progress. However, this mapping is not complete for many of the tributaries, sub-basins or areas upstream of Utica.

Flood Inundation Maps and tools - Work with the USGS, National Weather Service (NWS), and U.S. Army Corps of Engineers (ACE) to develop flood inundation maps and forecast tools in flood-prone communities using LiDAR, real-time stream gages, and NWS flood forecasts. These tools provide the capability of showing how deep the water may get, what areas will and will not be flooded, what roads will become impassable, providing emergency managers important tools to help save lives and property.

Flood Hazard Restudies - Continue to work with FEMA to perform restudies of the most outdated or flood-prone segments of the Mohawk and its tributaries. In the Mohawk Basin, FEMA is completing a detailed flood restudy (update of flood hazard maps) of the main stem of the Mohawk River from the Albany - Schenectady county line to the western boundary of the City of Utica, also included in this restudy are West Canada Creek (2.4 miles upstream from the confluence with the Mohawk) and East Canada Creek (9.1 miles upstream from the confluence with the Mohawk). Note, however, that current FEMA flood insurance study methodologies are based on historical data and do not include climate change projections. Development of such

methodologies and the data to support them are areas of active research. Pending completion of flood-hazard studies that include climate change projections, communities should be encouraged to include addition of "measures of safety" in zoning and building code decisions.

Flood Alert System - Work with the NYS Canal Corporation, office of State Emergency Management and appropriate federal partners including USGS, ACE, and FEMA to establish a real-time flood inundation alert system. To do so a network of real-time stream gages in the basin will need to be expanded and maintained. There are already a number of key real-time stream gages in the basin, but some are threatened by budget cuts, and more are needed in key reaches. The implementation of a basin-wide real-time stream gage network would provide considerable benefits to emergency managers, communities, and the public as well as providing the information the National Weather Service needs to improve flood forecasts in the basin. Stream gages can serve multiple functions and are an indispensible part of flood mapping, infrastructure design, navigation operations, and drought analysis.

Climate Change and Flood Hazard Risk Reduction of Key "At Risk" Community Assets - Increased risk of severe storms and flooding presents the most direct and immediate climate hazard. A 2011-2012 FEMA-funded study developed an inventory of key "at risk" local assets, including infrastructure.

As a follow-up, conduct public education and outreach activities to foster better understanding of the potential impacts of climate change on the region and to encourage the development of local climate adaptation strategies that emphasize natural protective features.

Facilitate educational workshop(s) for municipalities on local options and available resources to:

- Evaluate vulnerabilities to extreme weather events, including shoreline erosion and flooding; and
- Illustrate local adaptive strategies that can help enhance resilience for economic assets and natural resources.

Sedimentation and Flooding - Evaluate the relationship of sediment/gravel build-up to flooding and the subsequent impacts of that flooding on increased scour, erosion and sediment loading in the basin.

Longer Range Targets:

Floodplain Mapping - Continue to modernize floodplain maps of the basin using LIDAR data to provide updates to maps on a ten year cycle. Increase the effectiveness of FEMA investments by looking into incremental funding so that hydraulic modeling used in studies is adequate for flood and water quality goals (scouring and stream bank erosion).

Flood Hazard Restudies - Identify and prioritize remaining river segments in the basin which are in need of restudies or initial flood hazard investigations.

Public Education and Awareness - Specifically target for educational programming low-income populations and other constituencies in floodplains who may need additional education and/or economic assistance with flood-hazard risk reduction and mitigation.

Flood Inundation maps and tools - Continue to develop inundation tools for at risk communities and expand the coverage as additional real-time gages come online, or as LiDAR coverage is expanded or new Flood forecast points are developed.

Dams and Reservoirs - Understand and evaluate the effects of dams and reservoirs on flooding and flood mitigation, including considerations of climate change. There are three primary reservoirs within the Mohawk watershed and several immovable dam structures on the lower main-stem Mohawk River. A key question is whether dams and reservoirs can be used to mitigate flooding and in some cases do they exacerbate flooding? Independent evaluation of these types of structures and their effects are an important component of long-term planning for flood risk reduction. Basin Program partners should work to conduct a complete hydraulic and hydrologic analysis of all hard structures on the main-stem Mohawk River including its reservoirs.

Flood Mitigation Structures - Evaluate the effects of dry detention/retention structures, sediment basins, ice control structures, and debris structure on flooding and flood hazard mitigation. A key issue is whether strategically placed structures on tributaries and in sub-basins can be used to mitigate or lessen the impact of flooding within the Basin. Work with partners to investigate the potential and cost-effectiveness of using flow control structures for small-scale power generation.

Hydrodynamic model - Develop a real-time hydrodynamic model of the Mohawk watershed. This would serve as both a forecast tool and an operational tool for decision making during flood events. This tool may be able to provide a more reliable method for providing flood forecasting in order to issue time sensitive projections for what areas would be flooded within the Mohawk watershed. This program would have substantial benefits for operational decision making, emergency management, and the public. Forecast points could be created at flood prone locations and/or population centers to increase the knowledge and communication of how the Mohawk watershed reacts to wet weather inputs.

Ice Jam Hazards - Understand and predict the hazards associated with ice jams. During spring freshets, ice jams are severe and chronic on several key reaches of the Mohawk River. This includes ice jams in Schenectady as well as ice jams along Fulmer, Moyer and Steele creeks in Herkimer County. Real-time monitors may provide critical information for forecasting and understanding ice dynamics, and will provide key data for emergency personnel. An ice-based stream gage system would improve the coordination related to ice jam movement along the Mohawk River in Montgomery and Schenectady counties.

Goal 4: Community Planning and Revitalization

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

Challenge:

The Mohawk River Basin is endowed with an abundance of historic, scenic, cultural, natural and recreational resources that serve as valuable economic assets for the region. This grand American historic setting encompasses the homeland of the Mohawk and birthplace of the Iroquois Confederacy, early European settlements significant during the American Revolution, and the opening of the continent with the construction of the Erie Canal. The Region's assets have been recognized by the U.S. Congress through establishment of the Erie Canalway National Heritage Corridor and by the New York State Legislature through establishment of the Mohawk Valley Heritage Corridor, the Mohawk Towpath Scenic Byway, as well as other heritage areas throughout the basin.

While the region has drawn upon some of these historical and cultural assets, through State programs such as the Local Waterfront Revitalization Program, to a large degree these resources remain under-utilized and under-valued. In addition, broad economic trends over many decades have caused some communities to suffer declines in key economic sectors, disinvestment and population loss.

Nevertheless, converging recent factors such as fiscal austerity, higher energy costs, State smart-growth policies and climate change could stimulate more focus on local planning that discourages suburban sprawl and investments in the compact settlements that already exist in the watershed, especially along the Mohawk River and Erie Canal. This renewed focus on local planning and reinvestment in existing centers would have the benefit of capitalizing on existing infrastructure systems, maintaining existing open space, supporting local business development, and expanding opportunities for non-auto dependent mobility. These practices, in turn, will better protect the valuable natural resources within the Basin and can have positive fiscal implications for local governments.

Specific challenges to broad-based community planning and revitalization within the Basin include:

a) Focusing and coordinating the many diverse public and private organizations and community planning initiatives to strengthen the focus on conservation and productive use of the natural, historic and cultural resources of the watershed;
b) Fostering new development consistent with Smart Growth and other sustainable growth and development principles and
c) Availability of non-regulatory technical assistance for conservation and economic development to help communities and private organizations.

One of the challenges for community planning and development in the Basin is the overlap of multiple management plans and involvement of many individuals and agencies at the local, county, regional, state, and federal levels. Each agency and organization has developed individual plans with a specific purpose in mind – whether that purpose is for local land use management, national heritage, development of a Canalway trail, wildlife management, or general economic development. While these plans may not be in conflict with one another, there is a need to improve regional coordination among the entities that have developed them.

2016 Targets:

Regional Coordination - Initiate an annual roundtable to meet, discuss respective programs, develop opportunities for collaboration, share ideas, create a unified approach, and coordinate implementation of efforts wherever possible. For example, there are numerous museums, historic organizations and other heritage entities throughout the region that offer programming that may stimulate visitation and economic activity to the Mohawk River Basin. Increasing visitation to, and within, the region may not only increase economic activity derived from heritage and cultural tourism, but may also educate the general public about the environmental and natural resources within the Basin. Local businesses and agri-tourism might also benefit from such collaboration.

Local Capacity - Improve local capacity to undertake sustainable, environmentally responsible planning and community revitalization. Technical capacity is an essential ingredient that will allow many rural areas and older industrial cities and villages to address economic distress and embrace change. Assistance is needed to provide the on-going capacity that is necessary to enable local governments, private organizations, and individuals, to shape the future of the Mohawk River Basin. Efforts should include planning and technical assistance to communities to help them, singly and together, protect the environment and strengthen a sustainable economy through local action. This capacity should assist communities to enhance existing city, village and hamlet centers in a manner that: a) takes advantage of existing infrastructure, land and buildings; b) is consistent with smart growth principles; and c) fosters the use of green infrastructure in revitalization efforts.

Analyze data such as population changes, population projections, and GIS-based inventories of vacant and under-utilized structures in cities and villages within the watershed. Use this data to anticipate future development pressures to support sustainable development and to meet special demographic needs anticipated over time.

Substantial effort should be made to initiate smart growth plans individually and collectively for towns, cities and villages within the watershed. A unified approach will further revitalize communities and promote the resources of the watershed as a whole.

Expand upon the number of communities advancing local waterfront revitalization programs in the region in Mohawk Valley communities.

Climate Smart Building Code Toolkit – As climate change begins to effect the human interaction with the landscape we must begin to develop land-use, transportation and building code toolkits. Working through the Climate Smart Communities program these toolkits will provide guidelines for dealing with climate change in planning programs.

Arts and Culture - Promote recognition of the natural, cultural, and historic resources of the Mohawk River Basin through the arts. Work with partners to develop programs, festivals, and art installations that increase public visibility of these resources in Mohawk Basin communities. For example, events such as lake festivals, River Days, Canal Fests, will help residents connect with the natural, cultural and historic, resources of the region.

Marketing Resources - Market the resources of the Mohawk Basin through facilitating links between partners and respective websites. Regional marketing can be accomplished through organizations and websites such as the Erie Canalway National Heritage Corridor, RiverSpark and I Love NY.

Work with communities and partners to develop plans and activities that promote resources related to agri-tourism. Enhance linkages between local agriculture and tourism amenities such as new and/or enlarged farmers' markets and scenic bike trail expansion.

Recreational opportunities - Work with partners to increase recreational opportunities associated with the Mohawk River such as developing additional boat access points, expanding and linking trail networks, and developing recreational, educational and interpretive facilities.

Mobility - Work with partners to develop a more coordinated transit and mobility plan for the watershed. Identify and emphasize the need for direct linkages between population centers in the basin. Identify the mobility needs of target audiences within the Basin such as seniors or low-income families.

Longer Range Targets:

Basin Commission - Foster the Creation of a Hudson-Mohawk Basin Commission such as that introduced in H.R. 5927. Such a commission would significantly enhance and preserve the economic, environmental, historic and cultural values of one of the most demographically and politically important regions in the nation.

Goal 5: Working Landscapes, Land Use and Open Space

Maintain and encourage those 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 resources.

Challenge:

For centuries, the Mohawk River Basin has been renowned for its open space, agricultural, and forested landscapes. From the rolling hills of pasturelands and fertile valleys of row crops to the pristine forested regions of the southwestern Adirondack Mountains, agricultural and forested areas continue to dominate the landscape and are important to the economy of the region. Both agriculture and forestry have been important parts of the historical, cultural and recreational foundation of the Basin. Although agriculture is now inter-mixed with suburban development, and forest habitats have become fragmented, the region remains an important part of the state's agricultural and forest products industries. There is, however, increased pressure from urban sprawl, conversion to other land uses, burdensome local regulations and economic stress that may threaten these resources.

Many do not recognize the economic and social value that open space, agriculture, and forested lands bring to their communities, such as safeguarding local food supplies, providing scenic views, and helping to keep property taxes low by requiring far fewer local government services than residential land uses. There is a need for a sustained 3-tiered strategy to ensure that working lands remain active and productive through: (1) local government planning that acknowledges agriculture and forestry as important land uses and economic activities; (2) environmentally-sound stewardship of land and water resources that is sustainable and economically viable, and (3) long-term protection of open space, agricultural, and forest lands from conversion to other land uses. To help ensure that working landscapes remain, local governments should be encouraged to adopt local laws that are supportive of this strategy and do not unnecessarily or unreasonably burden such land uses and associated operations.

Well managed open space, farms, and forests help protect water quality when sustainable management practices are implemented, while providing habitat to fish and wildlife. Existing agricultural practices and programs such as the Agriculture Environmental Management (AEM) program have been assisting farms to protect and enhance the natural resources of the Mohawk River Basin. Encouraging viable, environmentally-sound farming in the Mohawk River Basin is critical to reducing water quality impairments to the River and its tributaries and is important to ensuring a sustainable future for the Basin.

Key to maintaining the ecological integrity of the Mohawk River Basin is the necessity to have sufficient lands to allow ecological processes to continue to function. Land acquisition methods of protection such as conservation easements, purchase of development rights, and local land use regulation may be needed to link units of land together, thereby protecting lands that have ecological, cultural, historic or scenic value, and provide for the access to and use of these resources. Many of these same goals are outlined in New York's Open Space Conservation Plan, which is updated every three years (2013 update in process). The Open Space Conservation Plan describes state and local recommendations for open space management, including specific recommendations for the working landscapes of the Mohawk River Basin.

Lastly, productive and viable agricultural and forest lands serve as the essential resource on which farm and forestry operations depend. To help ensure their long-term sustainability as working lands, these land uses and business operations must be protected from conversion to other land uses. Offering landowners the financial alternative to sell their development rights associated with such lands through the use of conservation easements has been an effective means to provide long-term, even perpetual, protection from conversion to other less desirable land uses.

2016 Targets:

Working Land Preservation - Work with partners to develop and support land trusts, in order to implement land protection options such as conservation easements, purchase of development rights and other stewardship agreements to protect key farm and forestland within the Mohawk River Basin.

Community Plans and Land Use Regulations - Coordinate assistance and encourage communities to develop and/or revise Comprehensive Plans and local land use regulations to incorporate policies and support land uses that sustain the economy within the Basin while protecting valuable resources. Better inform and educate community leaders regarding Ecosystem-Based Management, Smart Growth and other sustainable development practices.

Working Landscapes - Work with partners to maintain viable traditional agricultural and forested landscapes while increasing owner and public awareness of environmental and economic benefits of agriculture and forestry through the efforts of local, regional, state and federal resources. Support and improve the viability of agriculture with regional, state and federal agriculture programs. Work to preserve prime soils or soils of statewide importance in the Mohawk River by promoting Conservation Easement Programs.

Marketing Working Landscape Resources - Promote and create opportunities for the public to support local farms and forests by increasing the availability of local products. Encourage recreational opportunities and agri-tourism opportunities as a means to connect farm and forest owners with their communities. Create news articles or media spots which promote stewardship and new opportunities to purchase local products within the community.

Encourage farms and other agricultural or forestry businesses to develop business plans that enhance their long-term economic viability, thereby enhancing the local and regional economy, and supporting their ability to engage in environmental stewardship.

Best Management Practices - Identify and promote various Best Management Practices (BMPs) that encourage sound stewardship by agricultural and forestry operations. Encourage agricultural operators to reduce the amount of sediment and nutrients entering tributaries by actively participating in the AEM process, following up-to-date conservation plans and meeting all regulatory compliance requirements.

Encourage owners of private forests to develop management plans that enhance the health, diversity and long-term viability of woodland and support environmental stewardship.

Explore opportunities to bring Federal farm Bill programs, such as CREP, CRP, and EQIP to the Mohawk Basin to implement projects to enhance riparian buffers on agricultural lands.

Forestland Stewardship - Encourage forestland owners to practice sustainable forest management through the development of forest management plans, implementation of Best

Management Practices, and participation in State and federal programs. Encourage enrollment in the Forest Tax Law (480a).

2009 New York State Open Space Plan Conservation Plan - Foster the plan's objectives for the Mohawk River Basin by using available tools and programs to respond to climate change, implement buffers in the Mohawk River Valley Corridor, protect the prime farmland of the Schoharie Valley Corridor, as well as, the karst soil formations and their aquifers, and promote grassland habitat in the Central Leatherstocking Area. DEC will be revising the Open Space Conservation Plan in 2013, giving communities and the public a chance to provide input on specific objectives for the Mohawk River Basin.

Public Education and Awareness - Utilize communication tools such as social media, agency websites and the Conservationist to highlight working lands in the Mohawk River Basin; particularly those that support agri-tourism and public access for recreational uses.

Longer Range Targets:

Forestland - Reinvigorate Regional Forest Practice Boards in the nine designated regions across New York, as well as the State Forest Practice Board. Under New York State Environmental Conservation Law, Article 9, Title 7 – Cooperative Forest Management Program, the DEC is charged with establishing Regional Forest Practice Boards that review and approve forest practice standards and make assistance available for these approved practices.

Bolster the availability of technical resources for small tract forestland owners that will help improve or maintain the health of their forests through regional planning for forestry and incentive-based programs.

Agriculture - Develop a long-range plan for agriculture in the Mohawk River Basin that will include a strategy for long-term viability, increased market opportunities, and agriculture as a perpetual land use.

Work with local communities to endorse agriculture as a preferred land use by adopting farmer-friendly laws, and documenting agriculture as a preferred land use in their Comprehensive Management Plan.

Table 1. Partners Currently Represented on the Mohawk River Basin Program Steering Committee

Audubon
Capital District Regional Planning Commission
City of Utica Engineering Department
Congressman Paul Tonko
Empire State Development
Environmental Clearinghouse of Schenectady
Herkimer-Oneida Counties Comprehensive Planning Program
Mohawk Towpath Scenic Byway Coalition
Montgomery County Department of Economic Development and Planning
National Park Service, Erie Canalway National Heritage Area
NOAA National Weather Service
NYS Canal Corporation
NYS Department of Agriculture and Markets
NYS Department of Environmental Conservation
NYS Department of Homeland Security and Emergency Services
NYS Department of State, Coastal Resources
NYS Energy Research and Development Authority
Soil and Water, Mohawk River Watershed Coalition of Conservation Districts
US Army Corps of Engineers
US Fish and Wildlife Service
US Geological Survey
Union College

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