

*Musconetcong Watershed Association*

**STRATEGIC PLAN 2015 – 2017**

*ADOPTED March 26, 2015*

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# **Musconetcong Watershed Association Strategic Plan 2015-2017**

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# ***Musconetcong Watershed Association***

## **STRATEGIC PLAN 2015-2017**

### **Mission Statement**

The Musconetcong Watershed Association (MWA) is an independent, non-profit organization dedicated to protecting and improving the quality of the Musconetcong River Watershed and surrounding environment, including the area's natural, scenic, historical and cultural resources, through:

- Public education and awareness programs
- River water quality monitoring
- Promotion of sustainable land management practices
- Community involvement

### **Musconetcong River Watershed**

The Musconetcong River drains a 158 square mile watershed area within the New Jersey Highlands Region. For its entire length the Musconetcong River forms the boundary between Morris and Sussex Counties, and between Hunterdon and Warren Counties. The Musconetcong River begins at Lake Hopatcong – New Jersey's largest lake -- and flows 42 miles to the Delaware River at Riegelsville. Major tributaries include Lubbers Run, Mine Brook, Hances Brook, West Portal Brook, and several smaller streams.

The Musconetcong watershed contains two distinct regions. The Upper Musconetcong watershed is primarily forested with significant residential development along the shores of many lakes. The Lower Musconetcong watershed is primarily agricultural land interspersed with several villages and with forested areas concentrated along the ridges. Hackettstown and Washington, Warren County, are major population centers located within the watershed.

### **History**

The Musconetcong Watershed Association (MWA) was incorporated as a nonprofit 501(c)(3) organization in 1992. MWA was formed by local residents who were concerned about preserving the watershed's unique natural and cultural resources and ensuring that these resources were properly managed by state and local governing bodies. The founders saw the need for a locally based organization composed of individuals of different backgrounds who held a common goal of promoting a watershed-based approach to land and river resource management.

MWA's earliest efforts included volunteer water quality monitoring; educational seminars for property owners, teachers and local officials; and annual river cleanups. MWA's founders were instrumental in making the Musconetcong River valley a high priority for the New Jersey Department of Environment Protection (NJDEP) Green Acres land acquisition program during the 1990's.

MWA created broad-based local support for a National Wild and Scenic River Study of the Musconetcong River. MWA was the lead organization in developing the "Musconetcong Wild and Scenic Eligibility and Classification Report" that identified the "outstandingly remarkable river-related resources" that qualified the river as being eligible for inclusion in

the National Wild and Scenic Rivers System. Federal designation of the river as 'Wild and Scenic' was achieved at the close of Congressional business in December 2006.

With a current membership base composed of families, businesses and organizations, MWA is active with public educational programs, river cleanups, municipal outreach and ordinance review, water quality monitoring and promotion of appropriate and scientifically sound state environmental legislation. More recently, MWA has begun an extensive campaign to remove obsolete dams that block the Musconetcong and form pools that negatively impact water quality and harm local ecosystems. This work is enabling the river to its natural state, thereby improving habitat as well as recreational opportunities.

In 2009, MWA completed construction on the River Resource Center on the river in Asbury. This building was donated by the Riddle family and was designed and renovated to meet U.S. Green Building Council LEED (Leadership in Energy Efficiency and Design) Platinum standards. The objective of the board in making the difficult decision to enroll in the LEED program was to demonstrate that small structures designed for environmental sustainability could be affordable, attractive, efficient and comfortable.

## **Current Analysis**

### **Surface water quality/quantity**

Water quality continues to be the principal concern for MWA. The health of the river directly reflects how well the landscape is managed and how MWA performs its role.

The Musconetcong River is presently considered to be a high quality stream when compared with many other rivers in New Jersey. However, water quality within the main stem river varies considerably depending upon where evaluation is made. Some reaches of the river, such as the Point Mountain section, maintain a high level of water quality that supports native trout populations. Other reaches - notably in the urbanized Hackettstown/Mansfield area - have been impacted to the point where trout reproduction is not sustained. Trout reproduction is universally acknowledged as an indicator of water quality.

Water quality data from NJDEP and other agencies show that within certain sections of the river, minimum water quality standards are not met for nitrate, phosphorous, fecal coliform, and temperature (a critical parameter for trout sustaining streams). Relatively few permitted point source discharges are found along the river and pollution problems caused by the few identified sources are being remedied.

The NJDEP has identified nonpoint source pollution from both urban and agricultural runoff as a primary water quality concern. Quarry operations above Saxton Falls were the source of sedimentation pollution problems in the river, but much of this activity recently ceased. Urban runoff in the upper watershed has impacted the river from Mount Olive Borough, Hackettstown and Mansfield Township downstream to Penwell where water quality begins to recover.

Agricultural runoff is the primary pollution source within the lower watershed, especially in those areas where there are inadequate stream buffers and runoff from croplands is not controlled. In recent years, many farmers in the region have worked to reduce erosion problems and their use of chemical inputs to croplands. However some areas of the watershed are in need of improved conservation and management practices to reduce polluted runoff. Stream bank erosion in the lower watershed is on the increase and that

impairment seems to be working its way upriver. Stream bank problems may be related to increased stormwater runoff from impervious surfaces within the upper watershed - roads, parking lots, and buildings.

Unacceptably high bacteria levels have been recorded in some sections of the river making swimming and other primary contact recreation a health risk. Sources for this problem include waterfowl, livestock and failing septic systems. However, at present there is insufficient data to indicate which source constitutes the most significant input.

Several headwater lakes are found in the glaciated upper watershed. Lake water quality is a concern for the most developed lakeside communities. New Jersey's largest lake, Lake Hopatcong, Lake Musconetcong, Lake Lackawanna, and Cranberry Lake are a few of the major impoundments that suffer in varying degrees from nonpoint source pollution. Urban runoff, waterfowl, septic systems, and powerboats all contribute to the eutrophic conditions that cause algae blooms and excessive amounts of aquatic vegetation. High bacteria levels are also a problem in some lakes. An important step that needs to be taken is completion of public sewers around Lake Hopatcong. Air deposition of mercury from coal burning power plants to the west has led to fish consumption advisories for lakes throughout the region including those within the Musconetcong watershed.

### **Groundwater quality/quantity**

Groundwater quality is generally thought to be good within the watershed, however there is relatively little data on groundwater for the Musconetcong and the entire northwest region of the state. Potential groundwater concerns are nitrates, bacteria, pesticides and volatile organic compounds. The well-drained soils of the lower Musconetcong valley favor excellent groundwater recharge, but these areas are also more susceptible to contamination from land application of pesticides, fertilizers, and other pollution.

While groundwater resources within the limestone portions of the Musconetcong watershed are generally abundant, other areas in the watershed have experienced groundwater deficits. Groundwater withdrawals and de-watering activities associated with sand and gravel quarrying in the watershed are suspected to be depleting groundwater supplies. Residents across the river from inactive former quarries in Allamuchy Township have experienced well failures in recent years. Mount Arlington, Mount Olive, and Hopatcong Boroughs have also experienced water supply problems. The water bearing characteristics of the crystalline ridges that border the Musconetcong valley are limited at best, and areas like the aforementioned urbanized communities are susceptible to groundwater depletion. A portion of Mansfield Township that is underlain by shale is also prone to water supply problems.

To summarize groundwater quality in the watershed: it is thought that water quality is good, but there is currently little scientific evidence that this is true. There is ample reason to be concerned given the porous limestone geology and predominant land uses in the Musconetcong valley.

### **Habitat quality**

Habitat quality along much of the Musconetcong River ranges from excellent to poor. More intensive land uses exist where the adjacent river corridor property is relatively level. Along the Morris and Hunterdon river border, rocky, steep, forested slopes bound long stretches of the river corridor. These areas receive fewer negative impacts from roads, croplands or intense residential development. The highest quality habitat is found within portions of Stephens State Park, just below Beattystown, Point Mountain Preserve, and the Musconetcong Gorge area. Dams along the upper Musconetcong and tributaries like

Lubbers Run have altered the natural riverine habitat. In particular, the dams at Waterloo and Saxton Falls have created wide and shallow dam pools. These shallow water impoundments create extensive wetlands and habitat for waterfowl, but they also negatively impact water quality downstream of the dams. These areas tend to be choked with aquatic and semi-aquatic vegetation including invasive plants such as Water Chestnut, Eurasian Milfoil and Purple Loosestrife.

#### **Where is the river most vulnerable?**

The river is most vulnerable within the Hackettstown and Mansfield section of the river corridor. Relatively flat agricultural lands bound stretches of the river within these municipalities with minimal vegetative buffers along the river. Development pressure in the region has been intense in recent years and certain areas are increasingly vulnerable to conversion from agricultural and natural landscapes to residential and commercial land uses. The trend to develop land adjacent to the river is most conspicuous in the northern end of Mansfield Township that borders the Musconetcong. Another area of concern is the intersection of the river and I-78 near Bloomsbury, which contains two truck stops and weigh stations.

#### **Where is the river most protected?**

The river receives a high level of protection between Byram and Hackettstown in Allamuchy and Stevens State Parks. However sand and gravel quarries in Mount Olive Township have created pollution and water supply problems between Waterloo and Saxton Falls. Below Hackettstown the river receives protection within the Point Mountain Reserve and across from the preserve where 350 acres are preserved. Smaller parcels of land managed by NJ Division of Fish and Wildlife exist along the river from Hackettstown to the Delaware River. Below Asbury there are substantial areas of both state-owned lands and preserved farms. Virtually the entire river corridor within Bethlehem Township is protected as permanent agricultural land. Below Bloomsbury, the Musconetcong Gorge and adjacent state-owned land are the most secluded reaches of the Musconetcong River valley. In addition, the river from Saxon Falls to the confluence with the Delaware is protected by the 2008 reclassification to Category I status (under NJ Stormwater regulations). Furthermore, significant portions of the river are contained in the Highlands Preservation area.

#### **Cultural resources**

The Musconetcong River was deemed eligible for inclusion in the National Wild and Scenic Rivers System based on the regional and state significance of its outstanding recreational, scenic and historic resources. It is a regionally famous trout-fishing stream and is an increasingly popular destination for canoeing and kayaking. There are numerous structures and places within the Musconetcong watershed that are listed on both the New Jersey and National Registers of Historic Places, and many other buildings that are listed as potentially eligible. The outstanding scenic, historic and recreational qualities of the river are amenities, which are enjoyed, by local residents and tourists alike. They are important to the local tourism economy.

Historic resources are an important component of the scenic qualities found within the Musconetcong River watershed. The most threatened of these resources are several bridges that have significant historic value. County bridge replacement programs have removed some historically significant bridges. New and larger bridges are proposed for Point Mountain Road Bridge and other downstream bridges.



### **New Jersey Stormwater Regulations - Category I Status**

In 2004 the New Jersey Department of Environmental Protection Municipal Stormwater Regulation Program (N.J.A.C. 7:14) and the Stormwater Management Rules (N.J.A.C. 7:8) were put into effect. These regulations are based on sound watershed management principles: reduction of non-point source pollution, enhancement of groundwater infiltration, expanded educational programs, and more comprehensive planning by municipal and regional watershed communities.

Of particular importance to the Musconetcong watershed is protection of stream corridors, and the requirement that stormwater be recharged into the aquifers that supply nearly all of the drinking water needs within the Musconetcong watershed. The rules require that stormwater temperature “be addressed to ensure no impact on receiving waterways.” This requirement is absolutely necessary to protect sensitive coldwater fisheries and ecosystems found in the Musconetcong watershed. In June 2008, the majority of the river and its tributaries received this protection.

### **The Highlands Act**

In 2004 the Highlands Water Protection and Planning Act, S-1/A-2635 was made law to protect the water resources and ecological integrity of the New Jersey Highlands. The Highlands Regional Master Plan (RMP) was officially adopted in August 2008 and establishes the strategies necessary to maintain and enhance the ecological resources of the region. The Highlands Act designates more than half of New Jersey’s highlands as “Preservation Area” where Plan Conformance is mandatory and municipalities are required to revise local land use regulations to conform to the Highlands RMP. The remaining land is identified as “Planning Area” where Plan Conformance is voluntary. This legislation makes a clear link between land use and water quality and shows long-term thinking in addressing water quality issues.

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## **GOALS OVERVIEW**

### **MWA Program Goals. These are MWA's principal objectives:**

- Goal 1: Maintain and, where possible, improve water quality within the watershed area. Promote restoration of a free-flowing river.
- Goal 2: Provide environmental education and increase awareness and greater understanding of individual and community roles in maintaining and improving water quality.
- Goal 3: Promote watershed management policies and practices that will improve the way the river is protected and managed at all levels.
- Goal 4: Encourage recreational uses that respect private property rights and are compatible with natural resource conservation and preservation goals according to the River Management Plan.

### **Association Building / Organizational Growth Goals**

- Goal 1: Ensure that the MWA organizational structure supports program goals.
- Goal 2: Ensure that the organization is financially able to achieve program goals.
- Goal 3: Cultivate and increase membership base while keeping current members engaged in Association goals and activities.
- Goal 4: Provide, maintain and expand the buildings and grounds as the site for the Association headquarters / environmental education center.
- Goal 5: Provide the general public with timely information about MWA's purpose, upcoming activities and accomplishments.

### **Asbury Mill Restoration Goals**

In the spring of 2000, MWA assumed ownership of the Asbury Grist Mill and associated buildings. MWA produced a feasibility study funded by the Historic Preservation Trust that recommended restoration of this outstanding historic structure for future use by MWA and the surrounding community.

- Goal 1: Improve Mill Building to support expanded River Resource Center activities and programs.
- Goal 2: Obtain funding to achieve desired use of mill property and building.
- Goal 3: Elicit support for protecting and using these structures from the surrounding community including local residents and municipal, county and state officials.

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## MWA Program Goals

**Goal 1: Maintain and, where possible, improve water quality within the watershed area. Promote restoration of a free-flowing river.**

**Strategy 1:** Improve and protect existing surface water quality and quantity of river and tributaries

**Action Steps:**

1. Assist governing bodies with adopting ordinances to enforce Category 1 regulations.
2. Work with governmental agencies to develop a detailed stormwater management plan for the Musconetcong Watershed
3. Maintain and restore riparian buffers and encourage planting to prevent erosion.
4. Identify invasive plant problem areas for control and removal.
5. Monitor transportation planning for roads and bridges.
6. Develop and maintain active partnerships with local and regional entities active in the Musconetcong watershed, including lake management boards, land trusts, governmental entities, and recreation groups.

**Resources:** Executive Director, Musconetcong River Management Council (RMC), Trout Unlimited, North Jersey RC&D, Rutgers Extension Service, NJDEP, NJ Fish & Wildlife, US Fish & Wildlife, US Geological Survey (USGS), County Soil Conservation Districts, USDA/National Resource Conservation Services, lake planning boards and associations, municipal and county governments, Highlands Council

**Owner:** Executive Director

**Strategy 2:** Monitor groundwater quality

**Action Steps:**

1. Compile data on groundwater quality for subsequent analysis
2. Sponsor groundwater-testing program for homeowners

**Resources:** Executive Director, USGS, NJDEP Division of Watershed Management

**Owner:** Executive Director

**Strategy 3:** Monitor surface water quality to address point and nonpoint source pollution

**Action Steps:**

1. Identify point and nonpoint sources of pollution.
2. Monitor point source dischargers and wastewater plans.
3. Continue volunteer monitoring program for nonpoint source pollution in accordance with NJDEP standards
4. Continue chemical, visual and volunteer biological monitoring program in accordance with NJDEP standards
5. Continue and expand River Watcher program
6. Participate in activities of the Lake Hopatcong Citizens Advisory Committee

**Resources:** Executive Director, Musconetcong River Management Council, NJDEP Division of Watershed Management, municipal and county authorities, lake planning boards and associations, Staff, Volunteers

**Owner:** Executive Director, Water Quality Monitoring Coordinator

**Strategy 4:** Sponsor and consider expanding river clean-ups

**Action Steps:**

1. Spring cleanup
2. Fall cleanup (as requested)
3. In-stream cleanups (canoe)

**Resources:** Staff, Trustees, Hunterdon County Dept of Solid Waste, Warren County Road Dept, private waste haulers, volunteers (individuals, corporations and civic groups), Scout Troops, Trout Unlimited

**Owner:** Administrative Assistant

**Strategy 5:** Identify environmentally significant properties in the river corridor and watershed for preservation and to protect water quality

**Action Steps:**

1. Identify landowners
2. Provide landowners information regarding land preservation and funding sources
3. Support state, county, local and private preservation and stewardship efforts

**Resources:** Executive Director, Trustees, Land Trusts, Heritage Conservancy, NJ Green Acres, Warren County, Hunterdon County, municipal open space committees

**Owner:** Executive Director

**Strategy 6:** Advocate and facilitate dam removal, where appropriate

**Action Steps:**

1. Educate landowners
2. Support dam removal efforts
3. Where dam removal is not feasible, support development of fish ladders

**Resources:** NRCS, NJRC&D, USDA, Army Corps of Engineers, American Rivers, municipalities, water authorities, Trout Unlimited

**Owner:** Executive Director

**Goal 2: Provide environmental education and increase awareness and greater understanding of individual and community roles in maintaining and improving water quality**

**Strategy 1:** Work to ensure that programs provide education about watershed resources and issues specific to the Musconetcong watershed and surrounding region.

**Action Steps:**

1. Present in-school watershed education programs
2. Present teacher in-service workshops on educational programs provided by MWA
3. Develop educational programs and materials as needed.
4. Contact schools and teachers regarding availability of MWA educational programs
5. Collaborate with groups such as neighboring watershed associations, scouts, conservation organizations and school districts to provide water quality education programs
6. Develop summer camp educational programs at RRC

**Resources:** Staff, Trustees, Volunteers

**Owner:** Executive Director, Education and Outreach Coordinator

**Strategy 2:** Provide workshops / seminars

**Action Steps:**

1. Presentations to municipal officials – watershed protection ordinances, planning, building and zoning
2. Presentations to builders developers – Smart Growth issues
3. Presentations to public at RRC or off-site (energy efficient buildings, dam removals, water quality issues, etc.)
4. River Talks

**Resources:** Staff, Trustees, Rutgers Extension Service, NJDEP

**Owner:** Executive Director

**Strategy 3:** Employ a variety of communication techniques to educate the public on watershed issues

**Action Steps:**

1. Develop handouts and other materials to support outreach activities
2. Write editorials, letters to the editor
3. Distribute press releases and public service announcements
4. Develop and maintain up-to-date contact list
5. Aggressively seek “live” coverage where appropriate
6. Become a “go to” source of information for the media on water protection topics

**Resources:** Staff, Trustees, Volunteers

**Owner:** Executive Director

**Strategy 4:** Inform private landowners about land management options that protect and enhance wildlife habitat and water quality

**Action Steps:**

1. Newsletter special inserts and other educational materials
2. Increase personal contacts with landowners
3. Organize field demonstrations and provide seminars
4. River Talk presentations

**Resources:** Executive Director, Natural Resource Conservation Service (NRCS), Rutgers Extension Service, County Soil Conservation Districts, NJDEP, ANJEC, and Heritage Conservancy

**Owner:** Executive Director

**Strategy 5:** Support Smart Growth and Sustainable NJ tools and appropriate, river-friendly land use practices

**Action Steps:**

1. Work with real estate planners, developers, municipal open space committees and planning boards to support and promote Smart Growth and Sustainable NJ strategies
2. Provide seminars
3. Speak at municipal and county meetings and events to advocate for appropriate land uses and to raise concerns about inappropriate land use projects

**Resources:** Executive Director, Trustees, Heritage Conservancy, NJ Green Acres, Warren County, Hunterdon County, municipal open space committees, Musconetcong River Management Council

**Owner:** Executive Director

**Strategy 6:** Respond to requests for water protection guidance from individuals and organizations

**Action Steps:**

1. Serve as mentor to fledgling organizations and initiatives
2. Participate in and/or speak at conferences and meetings upon request

**Resources:** Staff, Trustees, Volunteers

**Owner:** Executive Director

**Goal 3: Promote watershed management policies and practices that will improve the way the river is protected and managed at all levels**

**Strategy 1:** Support implementation of the National Wild and Scenic Rivers River Management Plan

**Action Steps:**

1. Provide leadership for the Musconetcong River Management Council to ensure implementation of River Management Plan elements
2. Encourage congressional support for funding the river
3. Advocate for inclusion of additional river segments into W&S
4. Disseminate information via the Musconetcong River Management Council

**Resources:** Staff and Trustees, Musconetcong River Management Council, National Park Service, Heritage Conservancy



**Owner:** Executive Director

**Strategy 2:** Support the goals, policies and protections offered by the Highlands Planning and Protection Act, and advocate for protection of environmentally sensitive areas in the Planning Area of the watershed.

**Action Steps:**

1. Ensure protections are enforced in the Conservation and Protection Zone overlays in Planning Area
2. Interact with municipal officials to ensure protections are adopted via municipal master plans.
3. Monitor progress and developments as the Highlands Regional Master Plan is implemented and enforced.
4. Assist municipalities in the conformance process to adopt ordinances that will provide strict protection for the river and its headwaters

**Resources:** Staff, Trustees, NJ Green Acres, SADC, Highlands Council, Highlands Coalition, municipal open space committees

**Owner:** Executive Director

**Strategy 3:** Work with municipalities to adopt watershed-planning principles and practices in their master plans and ordinances

**Action Steps:**

1. Review municipal ordinances for key municipalities in watershed to ensure watershed resources are protected
2. Make recommendations to strengthen local protection of river
3. Ensure implementation of recommendations made by the Musconetcong River Management Plan
4. Develop and maintain up-to-date contact list of municipal officials

**Resources:** Executive Director, Heritage Conservancy, Musconetcong River Management Council, municipal boards and commissions

**Owner:** Executive Director

**Strategy 4:** Contribute to regional efforts to protect the entire Delaware River Watershed

**Action Steps:**

1. Serve as member of the steering committee of the Delaware River Watershed Council
2. Cultivate and maintain effective working relationships with key federal, state and regional partners
3. Meet with newly elected officials to inform them of MWA's mission, goals and activities
4. Collaborate on other initiatives, activities and projects as they arise

**Resources:** Trustees, Staff, Volunteers

**Owner:** Executive Director

**Goal 4: Encourage recreational uses that respect private property rights and are compatible with natural resource conservation and preservation goals according to the River Management Plan.**

**Strategy 1:** Provide suitable and appropriate public access to the river corridor for recreational use

**Action Steps:**

1. Evaluate river access and public lands adjacent to the river
2. Make recommendations to NJ Fish and Wildlife to support acquisition of properties for recreational use
3. Design and install signage to identify publicly accessible river access points

**Resources:** Executive Director, Heritage Conservancy, NJDEP Fish & Wildlife, Warren County Board of Land Preservation, Hunterdon Land Trust, The Land Conservancy

**Owner:** Executive Director

**Strategy 2:** Promote water and land-based recreational uses that raise awareness for watershed resources, and that do not impair the quality of resources

**Action Steps:**

1. Develop a variety of hikes and activities for varying skill levels
2. Develop general recreational guide for hikes and activities
3. Sponsor/promote canoe trips, hikes, wildflower walks, bird watching, etc.
4. Develop information to support self-directed visitor activities

**Resources:** Staff, Volunteers, canoe and kayak clubs, watercraft vendors, County Park administrations, hiking clubs

**Owner:** Executive Director

## Association Building / Organizational Growth Goals

### Goal 1: Ensure that the MWA organizational structure supports program goals

**Strategy 1:** Maintain a diverse and well-balanced Board of Trustees

**Action Steps:**

1. Appoint a nominating committee to identify needs and seek new board members
2. Encourage all board members to identify potential candidates
3. Promote trustee retention by informing them of their future responsibilities prior to their election and keeping them engaged once they join
4. Develop an information packet for new trustees
5. Identify training needs and support continuing education for Board members

**Resources:** Executive Committee, Staff

**Owner:** President

**Strategy 2:** Assess and maintain organizational operation and carefully consider opportunities for organizational growth

**Action Steps:**

1. Develop annual budget and related plans and goals
2. Review by-laws and update as needed
3. Review strategic plan at least every three years and assess accomplishments towards goals
4. Publish an annual report of activities and accomplishments and review the report at annual meetings
5. Develop and update standard operating procedures and policies as needed
6. Evaluate the strategic benefits and operational efficiencies of establishing formal partnerships with mission-compatible organizations

**Resources:** Trustees, Staff

**Owner:** President, Executive Director

**Strategy 3:** Establish standing and ad-hoc committees where needed

**Action Steps:**

1. Ensure that committees report regularly to the Board and/or Executive Committee
2. Ensure that standing committees have a regular meeting schedule
3. Ensure that major decisions and expenditures made by committees are approved by Board of Trustees

**Resources:** Executive Committee

**Owner:** President

**Strategy 4:** Build consensus among MWA trustees and members on policies and issues that affect watershed resources

**Action Steps:**

1. Establish policies on environmental issues at the board or committee level
2. Publicize positions to members and media through e-mail, letters to the editor, web postings, etc.

**Resources:** Trustees, Staff

**Owner:** Executive Committee

**Strategy 5:** Attract and retain the best talented individuals on staff

**Action Steps:**

1. Conduct an annual review of staff based upon established performance standards and goals
2. Identify training needs and support continuing education for staff
3. Develop and review job descriptions
4. Annual evaluation of staff compensation, benefits and work environment

**Resources:** Executive Committee

**Owner:** President, Executive Director

**Goal 2: Ensure that the organization is financially able to achieve program goals**

**Strategy 1:** Maintain sound fiscal management principles

**Action Steps:**

1. Prepare a needs assessment consisting of an itemized list of the annual funding requirements for general operations and specific programs based upon past performance and future goals
2. Maintain an operating reserve fund of at least 6 months in order to preserve cash flow
3. Maintain a capital reserve fund for emergency purposes
4. Diversify funding sources
5. Establish and maintain an endowment fund to support long-term maintenance and operations

**Resources:** Trustees, Staff

**Owner:** Executive Committee, Executive Director

**Strategy 2:** Promote MWA as a fundable organization

**Action Steps:**

1. Document MWA's track record of achievements and sound financial performance to highlight success and associated high level of credibility
2. Prepare a case for support for both operational and programming funding based upon needs assessment
3. Develop and implement a fundraising plan

4. Develop supporting materials for targeted audiences
5. Maintain an MWA presence at community events

**Resources:** Trustees, Staff

**Owner:** President, Executive Director

**Strategy 2:** Implement the fundraising recommendations of the Capacity Management and Development Plan

**Action Steps:**

1. Identify and match individual, foundation and government sources of income to finance specific programs and operating expenses
2. Develop a fundraising packet containing project descriptions and other pertinent materials to support funding requests
3. Develop and submit requests for funding appropriate to the interest areas of public and private funders
4. Establish and implement a procedure for publicly recognizing donations received

**Resources:** Trustees, staff

**Owner:** Executive Committee, Executive Director, Development Committee Chair

**Strategy 3:** Organize special fund-raising events

**Action Steps:**

1. Native Plant Sale
2. Run for the River
3. Wine Tasting
4. Canoe/Kayak Raffle
5. Golf Outing
6. Charge fees for speaking engagements as an additional fundraising opportunity
7. Develop other fund-raising events

**Resources:** Trustees, Staff, Volunteers

**Owner:** Development Committee Chair, Executive Director

**Goal 3: Cultivate and increase membership base while keeping current members engaged in the association goals and activities**

**Strategy 1:** Maintain a yearly increase in total membership

**Action Steps:**

1. Increase visibility of MWA activities in watershed communities through public speaking, radio interviews, press releases, and outreach at community events
2. Direct recruitment of potential members
3. Newsletter
4. Promote recreational activities

**Resources:** Staff, Trustees

**Owner:** Executive Director

**Strategy 2:** Recruit and develop a volunteer base

**Action Steps:**

1. Develop volunteer projects and programs
2. Advertise for volunteers in newsletter and press articles
3. Provide volunteer awards and recognition for volunteer service (Ex. Volunteer spotlight in the newsletter)
4. Create new staff position responsible for supervising volunteers

**Resources:** Staff, Trustees

**Owner:** Executive Director

**Strategy 3:** Expand membership to upper part of watershed (Hackettstown and North)

**Action Steps:**

1. Expand MWA activities and programs in the upper watershed to attract new members
2. Seek trustees and volunteers from the upper watershed

**Resources:** Staff, Trustees

**Owner:** Executive Director, Trustees

**Goal 4: Provide, maintain and expand (where possible) the buildings and grounds as the site for the Association headquarters / environmental education center**

**Strategy 1:** Maintain and operate River Resource Center building and grounds

**Action Steps:**

1. Develop and follow a System Operations and Maintenance Manual for building
2. Develop and follow a Building Function and Grounds Maintenance plan
3. Develop a building and grounds operating budget
4. Ensure that building and grounds maintain LEED certification standards

**Resources:** Trustees, Staff, Facilities Committee

**Owner:** President

**Strategy 2:** Provide parking area for visitors to River Resource Center

**Action Steps:**

1. Pursue means to provide increased parking

**Resources:** Trustees, Staff

**Owner:** President

**Strategy 3:** Develop and implement a plan for removing the Island Building

**Action Steps:**

1. Identify the logistics involved in removing the building (including the demolition process, permitting, costs, etc.) and restoring island
2. Evaluate long-term ownership options for the island (including maintenance issues)
3. Implement building removal and island ownership plan

**Resources:** Trustees, Staff, Government Agencies

**Owner:** President

**Goal 5: Provide the public with timely information about MWA's purpose, upcoming activities and accomplishments**

**Strategy 1:** Produce informative newsletter on a quarterly basis

**Action Steps:**

1. Report MWA activities, news and articles on important issues
2. Distribute via mail to members, selected land-owners, corporations, municipalities, partners, stakeholders, potential members and contributors
3. Distribute via drop-off at public places

**Resources:** Staff, Trustees

**Owner:** Executive Director

**Strategy 2:** Publicize events and activities

**Action Steps:**

1. Newspaper press releases
2. Flyers
3. Radio Announcements
4. Cultivate trusted relationships with local reporters and news contacts
5. Emails
6. Trail guide

**Resources:** Staff, Trustees

**Owner:** Executive Director

**Strategy 3:** Provide MWA information on website

**Action Steps:**

1. Update general information at least quarterly
2. Update calendar monthly
3. Put newsletter on website

**Resources:** Staff, Volunteers

**Owner:** Executive Director

**Strategy 4:** Explore using new technology and social media to communicate with key audiences

**Action Steps:**

1. Keep up-to-date on new communication technologies (i.e., facebook, twitter, cloud, etc.)
2. Evaluate suitability (effectiveness, cost, et al) of new technologies in communicating to members, partners and other target audiences
3. Obtain funding and implement new communication techniques as appropriate
4. Establish a media link to facilitate communication between the Staff and Board

**Resources:** Trustees, Staff

**Owner:** Executive Director



## **Asbury Mill Restoration Goals**

### **Goal 1: Improve Mill Building to support expanded River Resource Center activities and programs**

#### **Strategy 1: Phase 1 – Mill Stabilization**

##### **Action Steps:**

1. Remove non-historic components of building exterior
2. Construct new retaining wall
3. Rebuild tailrace island and channel
4. Construct parking area
5. Obtain all municipal, county, state and federal regulatory approvals and permits

**Resources:** Trustees, Staff, Volunteers

**Owner:** President

#### **Strategy 2: Phase 2**

##### **Action Steps:**

1. Repair exterior masonry and stucco
2. Install new windows and doors
3. Obtain all municipal, county, state and federal regulatory approvals and permits

**Resources:** Trustees, Staff, Volunteers

**Owner:** President

#### **Strategy 3: Future Phases**

##### **Action Steps:**

1. Develop and implement plan for adaptive reuse of building interior to provide museum and public meeting space on lower levels and office space on upper levels
2. Determine short-term costs for construction and long-term costs for operations and maintenance prior to plan implementation
3. Obtain all municipal, county, state and federal regulatory approvals and permits

**Resources:** Trustees, Staff, Volunteers

**Owner:** President

### **Goal 2: Obtain funding to achieve desired use of mill property and building**

#### **Strategy 1: Pursue funding from a variety of sources**

##### **Action Steps:**

1. Research and keep up-to-date on potential funding opportunities

2. Solicit funding from individuals, businesses, private foundations, and municipal, county, state and federal agencies
3. Leverage funding from multiple sources to the greatest extent possible

**Resources:** Trustees, Staff, Volunteers

**Owner:** President, Executive Director

**Goal 3: Elicit support from the surrounding community including local residents and municipal, county and state officials**

**Strategy 1:** Promote public use of the building for meetings, educational programs and recreational activities

**Action Steps:**

1. Advertise the availability of the site for public use
2. Sponsor special events for the public at the mill

**Resources:** Trustees, Staff, Volunteers

**Owner:** Executive Director

## Appendices

### Appendix 1: MWA Programs

#### **Musconetcong Wild and Scenic River Designation**

**On December 22, 2006, President George W. Bush** signed into law bill S. 1096, the "Musconetcong Wild and Scenic Rivers Act," which designated portions of the Musconetcong River as a component of the National Wild and Scenic Rivers System. The bill passed the Senate in December of 2005 and passed the House in July of 2006.

The final step, passage of the Senate bill by the House to ensure that identical legislation is recorded in both houses, occurred at 2:00 a.m. on Saturday December 9, just hours before the end of the 109th Congress. Congressman Garrett sponsored the bill in the House with co-sponsors Congressmen Rodney Frelinghuysen and Mike Ferguson. The Senate bill was introduced by then-Senator Jon S. Corzine and co-sponsored by Senator Frank Lautenberg. The signing of S 1096 made two separate segments of the Musconetcong River, a total of 24.2 miles, a part of the National Wild and Scenic River System.

In addition to those listed above, the designation effort, while led by the Musconetcong Watershed Association, could not have occurred without the hard work of citizens, municipal representatives, representatives from Warren, Sussex, Hunterdon and Morris counties, Heritage Conservancy, the National Park Service, the New Jersey Department of Environmental Protection Division of Watershed Management, Division of Fish and Wildlife, Division of Parks and Forestry and other non-governmental organizations that aided the fifteen year-long process.

#### **Musconetcong River Management Council**

With the passage of the Musconetcong Wild and Scenic Rivers Act, the Musconetcong Advisory Committee, which guided the designation process, was replaced by the Musconetcong River Management Council (MRMC), which began meeting in February of 2008. The purpose of the Musconetcong River Management Council is to promote the long-term protection of the Musconetcong River by: (1) bringing municipalities and others involved in river issues together on a regular and ongoing basis, (2) stimulating cooperation and coordination among those organizations and individuals, (3) providing a forum for all river interests to discuss and resolve issues, and (4) coordinating implementation of the River Management Plan (RMP).

The RMP sets forth five major goals and recommends actions to maintain and improve the Musconetcong River corridor, its tributaries and watershed, and surrounding natural, cultural and recreational resources. The development of the RMP was a requirement of the National Wild and Scenic Rivers study and the result of cooperative effort of the Musconetcong Advisory Committee, Musconetcong Watershed Association, Heritage Conservancy, the National Park Service, and a variety of local, county and state representatives. The RMP can be viewed at [www.musconetcong.org /projects/river\\_management\\_plan.pdf](http://www.musconetcong.org/projects/river_management_plan.pdf).

#### **River Watcher Water Monitoring Program**

The Musconetcong Watershed Association began training volunteers in 2007 to monitor water quality in the Musconetcong River. Volunteer River Watchers monitor water quality quarterly at four locations on the Musconetcong River. MWA plans to use the data to assure that water quality remains at a level suitable for recreational uses (i.e. fishing and swimming)

and for the advocacy of stream protection when proposed projects threaten water quality. Data will be used to observe the impact over time of the implementation of restoration projects such as stream stabilization, riparian restoration and dam removals. The MWA also hopes to measure the impact of preservation of land, improved development controls, and pollution prevention programs. Project data will help the MWA determine if changing land use is affecting water quality.

### **Musconetcong Watershed Restoration and Protection Plan**

Musconetcong Watershed Association has been working with North Jersey RC&D and Rutgers University to develop a Musconetcong Watershed Restoration and Protection Plan. Extensive water quality monitoring data was collected in 2007. By evaluating the results, two subwatersheds were identified as major contributors of bacterial contamination. Additional water quality monitoring is underway to further identify the sources within these subwatersheds. In addition, all original and new sampling locations were analyzed using Microbial Source Tracking techniques. This sampling will help determine if the fecal coliform impairment is from human, bovine or other sources.

### **Musconetcong River Restoration Project – Gruendyke Dam Removal**

Work on restoring the natural hydrology, vegetation, fish and wildlife of the Musconetcong River began in early March, 2008 when a small notch was cut in the Gruendyke Mill Dam just up river from the Route 46 bridge on the Hackettstown – Mount Olive border near the Pump House. The purpose of the project was to allow fish passage, eliminating a pool of standing water behind the dam that impaired water quality, restoring the riparian corridor along the river, and facilitating the enjoyment of recreational watercraft.

Project partners and principal funders include owners Rodger and Eileen Cornell, Princeton Hydro LLC, USDA Natural Resource Conservation Service, Warren County Charitable and Municipal Trust Fund, the Morris County Freeholders, North Jersey Resource Conservation and Development Council, the U.S Fish & Wildlife Service, Corporate Wetlands Restoration Partnership, Trout Unlimited and NJ Federation of Sportsman’s Clubs. Construction work was ably performed by Harrington Construction of Long Valley.

Work commenced in 2008 and continued throughout that summer. After the pond behind the dam was allowed to de-water, Trout Unlimited volunteers, MWA members and others conducted an enormous trash clean up to remove tons of tires and other debris that had accumulated for decades behind the dam.

The demolition and riverbank stabilization portions of the job were completed in the fall of 2008 followed by planting to restore the riparian corridor along the river.

The North Jersey Resource Conservation and Development Council, the FWS and Corporate Wetlands Restoration Partnership funded the riparian restoration effort. About 600 native trees and shrubs such as American sycamore, river birch, silver maple, shrub dogwoods, buttonwood and many other locally sourced plants have been planted by volunteers in the fall 2008. Invasive, exotic plants such as purple loosestrife and phragmites will continue to be removed.

### **Seber Grove Dam Removal**

Early in 2009 after years of engineering and permitting, work was initiated on removing the next dam up river from Gruendyke. Seber Grove Dam was built in the 1940’s by the Town of Hackettstown for the purpose of creating a swimming and recreational site for residents. The dam was badly broken and was severely impacting the riverbank in the area.

MWA secured permission and extensive cooperation from the dam owner, the Town of Hackettstown, and contracted with Princeton Hydro of Ringoes, NJ for engineering services. The removal was fully funded by USDA Natural Resource Conservation Service. Subsequent riparian restoration and tree and shrub planting were funded by a grant from the Corporate Wetlands Restoration Partnership.

The structure was removed in four days of effort by Harrington Construction of Long Valley. The dam removal and riverbank stabilization was completed in March 2009. An extensive effort to re-plant the riverbank that was exposed due to pond removal was led by volunteers from MWA and Trout Unlimited.

Like the Gruendyke Mill Dam removal, this effort was undertaken to permit improved fish passage, to improve water quality by eliminating a pool of standing water behind the dam, to restore the riparian corridor along the river, and to enhance the enjoyment of recreational watercraft.

### **Annual River Cleanups**

During annual spring and fall cleanups over 300 volunteers help remove tons of litter along the riverbanks, roadsides and parks. The cleanups are conducted in partnership with Hunterdon County Department of Solid Waste, Central Jersey Trout Unlimited, and Warren County Department of Roads and Bridges. Warren County and Raritan Valley Disposal provide trash pickup.

The New Jersey Clean Communities Program has been the primary funding source for MWA's annual cleanups.

Funding Source(s): New Jersey Clean Communities Program, Hunterdon County Department of Solid Waste and Recycling, Townships of Bethlehem, Washington (Morris), Town of Hackettstown.

### **Education**

The Watershed Education Program focuses on teaching watershed residents and local school students about the importance of watershed resources.

MWA staff and volunteers present weeklong comprehensive watershed education program for elementary schools in Franklin, Bloomsbury, Mansfield, and Washington Township. Programs have been presented to middle school students in North Warren Middle School and Holland Township School. Students are presented with specific information about their local watersheds including the Pohatcong Creek and Musconetcong River. The curriculum includes 3 days of classroom lessons and a field trip to the Musconetcong River or other nearby stream. Students are shown how to monitor water quality by measuring chemical, biological and physical characteristics of fresh water streams.

Funding Source(s): MWA (general fund and in-kind volunteer), The Watershed Institute New Jersey Department of Environmental Protection and MWA Special Events

### **Outreach**

Quarterly issues of the Musconetcong River News are published and distributed to MWA members, municipal officials, and the general public. A Special Homeowner Edition of the River News was distributed to MWA members and hundreds of property owners within the lower Musconetcong. This edition described basic water pollution problems impacting the Musconetcong watershed, and presented river-friendly landscaping techniques for property owners. Special Editions of the newsletter have also been dedicated to the designation of

the Musconetcong River as a part of the Wild and Scenic Rivers System and to Dam Removals on the Musconetcong River.

**Waterway Trail Guide**

The New Jersey State Trails Plan identifies the Musconetcong as being one of seven rivers in the state deemed eligible for designation as a “Waterway Trail.” MWA received a grant from the NJDEP Office of Natural Lands Management to develop a Waterway Trail Guide for the Musconetcong. The guide, which was developed by MWA staff with assistance from Mohawk Canoe Club volunteers, is the first of its kind for New Jersey rivers.

The Musconetcong Waterway Trail Guide identifies river access points from Byram to Bloomsbury, and emphasizes the importance of boater safety and respect for private property. It is revised on an as-needed basis.

Funding Source: NJDEP Division of Parks and Forestry - Office of Natural Lands Management, Mohawk Canoe Club (in-kind volunteer)

## **Appendix 2: Geology In Relation to Water Quality/Quantity**

### **Musconetcong River Watershed Geology**

The bedrock geology of the Musconetcong watershed is typical of the New Jersey Highlands. The ridges paralleling the river valley consist primarily of Pre-Cambrian metamorphic rocks including crystalline gneiss and granites, schist, quartzite, and occasional igneous intrusions.

Sedimentary carbonate and shale rocks of Cambrian and Ordovician age underlay the river valley floor from the vicinity of Hackettstown down to Riegelsville. Land formed over limestone bedrock formations is known as “karst” topography. Limestone bedrock is highly soluble compared to other types of bedrock. The dissolving or solution of limestone bedrock causes sinkholes, depressions, caves, solution channels, and irregular bedrock surfaces. Sinkholes are of particular concern, especially when formed in densely populated areas.

Fractures and solution channels in karst areas provide a direct connection between land surfaces and groundwater, greatly increasing the potential for groundwater contamination. There is also a dynamic interchange between surface water and groundwater. Some small streams that begin on the ridge tops flow down into the valley and disappear into underground cavern networks that convey water at high velocities. In other areas groundwater flows into the river through springs found in the riverbed.

The gently rolling hills that run through the center of the lower Musconetcong River valley are underlain by Martinsburg Shale (shale, sandstone and siltstone). These rocks are more resistant to erosion than the surrounding, more level limestone formations.

The terminal moraine of the Wisconsin Glacier (which began its retreat northward 20,000 years ago) is a significant feature that crosses the Musconetcong watershed below Netcong and Stanhope. The geological features of the upper river valley include extensive areas of glacial till, moraine and stratified drift deposits. Extensive sand and gravel mining takes place in a complex of quarries along the river in Mt. Olive Township.

South of the terminal moraine, glacial deposits from earlier ice-sheets exist in scattered deposits. Also, gravel outwash from the Wisconsin terminal moraine is found in narrow, intermittent belts the length of the Musconetcong River valley down to the Delaware River confluence.

### **Surface Water Quality and Quantity – Geological Factors**

The geology of a given watershed determines the inherent qualities of its waters. For most of its length the Musconetcong flows through a fertile limestone valley underlain by a productive sole-source aquifer. Limestone rivers like the Musconetcong are considered by regulatory agencies to be the highest quality waters. They feature colder water temperatures, higher dissolved oxygen levels, diverse populations of pollution sensitive benthic organisms (aquatic insects), and trout. The Musconetcong is classified as a trout maintenance stream and many of its tributaries are classified trout production, the highest water quality classification. Since limestone streams and the organisms that live in them are particularly vulnerable to pollution (especially thermal pollution and sedimentation) federal and state water quality standards and wetlands regulations are set at a higher level compared with warm water, non-trout maintenance or production streams.

Thermal pollution and sedimentation problems have been on the increase with the rapid increase of commercial and residential development in the area. Some dammed areas of

the river create thermal pollution, particularly where the dam pool is large and shallow (the areas above Saxton Falls and Waterloo Village are prime examples).

NJDEP's biological monitoring data shows most sections of the river are either unimpaired or moderately impaired. The river has been impacted by a variety of human activities, some going back hundreds of years (Morris Canal, dams).

More research is needed to pinpoint nonpoint pollution "hotspots" via water quality monitoring and visual surveys. Two important activities that can reduce and or prevent nonpoint pollution are planting of stream buffers, and using adequate design and stormwater controls where new development occurs, and retrofitting existing stormwater facilities. Removal or breaching of some dams will reduce thermal impacts and improve water quality.

### **Groundwater – Geological Factors**

The State Geological Survey identifies the glacial outwash deposits found throughout the valley (found primarily in the upper valley) as being an important medium for storing and recharging water to the underlying bedrock aquifers. The glacial outwash deposits consist of coarse sand and gravel that have been sorted and deposited by glacial meltwater.

Other important groundwater recharge areas are the alluvial fan deposits and crystalline colluvium. Alluvial deposits are found along streams and are important groundwater recharge areas. Streams draining across these highly permeable, sandy deposits often lose water to the groundwater system. An example of this phenomenon is found in Point Mountain Park, where crystalline colluvium sand can be seen in the bed of a Musconetcong tributary that is often dry at the point where it meets the river. Further up the slope the stream is flowing, as are the contributing springs that flow into it. Even as a "losing stream" this seemingly insignificant tributary is important to the groundwater recharge system, and helps maintain the river's base-flow.

The lower Musconetcong valley is underlain by a prolific sole source aquifer associated with the limestone rock formations found throughout the valley and surrounding region. Sole-source aquifers are those aquifers that contribute more than 50% of the drinking water to a specific area and the water would be impossible to replace if the aquifer were contaminated.

According to the New Jersey Geological Survey there is an "intimate hydraulic interaction between the river and its important carbonate bedrock aquifers." This essentially means that the river is fed by groundwater (springs in or near the riverbed), and that in some areas the river feeds the aquifer. The soluble nature of the underlying limestone formations and pervious nature of the limestone-based soils present significant hazards for groundwater and surface water contamination. These characteristics create a high potential for groundwater contamination.

The shale ridges and crystalline rock mountains found within the Musconetcong watershed generally do not store or yield reliable groundwater supplies. As a result groundwater deficits have occurred in areas that have experienced more development pressure. Parts of Mansfield Township have experienced well failure. Groundwater withdrawals and de-watering activities associated with sand and gravel quarrying in Mt. Olive Township are suspected to be the cause of the depletion groundwater supplies. Residents across the river from the quarries in Allamuchy Township have experienced well failures in recent years.



### Appendix 3: Municipalities in the Musconetcong Watershed

The Musconetcong River watershed is the 157.6 square mile area of land that drains to the Musconetcong River. The 44-mile long Musconetcong River begins at Lake Hopatcong and joins the Delaware River in Riegelsville.

Listed below are the 26 municipalities that fall either partially or entirely within the natural boundaries of the Musconetcong River watershed.

Note: An asterisk (\*) designates those communities that are adjacent to the Musconetcong River.

#### Hunterdon County

Alexandria Township  
Bethlehem Township \*  
Bloomsbury Borough \*  
Hampton Borough \*  
Holland Township \*  
Lebanon Township \*

#### Morris County

Jefferson Township  
Mount Arlington Borough  
Mount Olive Borough \*  
Netcong Borough \*  
Roxbury Township  
Washington Township \*

#### Sussex County

Byram Township \*  
Green Township  
Hopatcong Borough  
Sparta Township  
Stanhope Borough \*

#### Warren County

Allamuchy Township \*  
Franklin Township \*  
Greenwich Township \*  
Hackettstown Township \*  
Independence Township  
Mansfield Township \*  
Pohatcong Township \*  
Washington Borough  
Washington Township \*

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## **Appendix 4: Project Partners**

American Rivers  
Delaware Riverkeeper Network  
Heritage Conservancy  
Hunterdon County Department of Solid Waste and Recycling  
Hunterdon County Freeholders  
Hunterdon County Parks Commission  
Lake Musconetcong Regional Planning Board  
Morris County Soil Conservation District  
Morris County Freeholders  
Musconetcong River Management Council  
National Oceanic Atmospheric Administration  
National Park Service  
New Jersey Highlands Coalition  
New Jersey Resource Conservation & Development  
New Jersey Trout Unlimited  
NJDEP Division of Fish and Wildlife  
NJDEP Division of Watershed Management  
NJDEP Green Acres Program  
NJDEP Office of Natural Lands Management  
Princeton Hydro LLC, Inc.  
Rutgers Cooperative Extension Service  
USDA Natural Resource Conservation Services  
U.S. Fish and Wildlife Service  
Warren County Board of Chosen Freeholders  
Warren County Board of Recreation  
Warren County Department of Land Preservation  
Warren County Planning Department  
Warren County Soil Conservation District  
Watershed Institute  
Wild and Scenic Memorandum of Understanding- Signatories