# Identification and Description of Management Practices, Approaches and Strategies for Watershed Protection and Restoration & Implementation Strategy and Schedule

This planning matrix, known more formally as the *Identification and Description of Management Practices, Approaches and Strategies for Watershed Protection and Restoration & Implementation Strategy and Schedule*, represents the culmination of deep research into the current conditions of Oatka Creek, both in the lake itself and across its surrounding watershed. The matrix shows specific steps and strategies needed to complete an action, the groups responsible for completing the actions, and the timeline by which the tasks must be completed.

The matrix includes priority assignments, actions, objectives, steps, strategies, anticipated reductions and water quality improvements, benefits, related issues, lead organizations, potential funding sources, long- and short-term measures, approximate cost, and regulatory approvals in the following areas of concern for Oatka Creek:

- Coordination, collaboration, and partnership recommendations
- Agriculture
- Stormwater management and erosion control
- Forestry and silviculture management
- On-Site Wastewater Management Systems (OWTS)
- Wastewater Treatment Systems and Management
- Hazardous Waste Management
- Roads and Highways
- Wetlands, Riparian Zones, and Floodplains
- Reduce nutrient inputs and contaminants to surface waters
- Natural resource and habitat protection
- Regulatory management

The *Identification and Description of Management Practices, Approaches and Strategies for Watershed Protection and Restoration & Implementation Strategy and Schedule* was reviewed by the PAC on April 17, 2014 and subsequently revised prior to prioritization by the Oatka Creek Watershed Committee on May 19, 2014. The PAC then reviewed the final draft of the *Identification and Description of Management Practices, Approaches and Strategies for Watershed Protection and Restoration & Implementation Strategy and Schedule,* Watershed Management Plan introduction, and draft Intermunicipal Organization Memorandum of Understanding (IO MoU) at the July 16, 2014 meeting. The draft Watershed Management Plan was then reviewed and revised based on input from the second Public Meeting on August 28, 2014 and approved September 25, 2014.

Recommendations have been developed in order to address a number of areas of concern. The matrix in this section represents the culmination of years of deep research into the current conditions of Oatka Creek. The matrix includes recommendations that are presented in the *Regulatory and Programmatic Environment Report* section, and shows specific steps and strategies needed to complete an action, the groups responsible for completing the actions, and the timeline by which the tasks must be completed.

The matrix includes priority assignments, actions, objectives, steps, strategies, anticipated reductions and water quality improvements, benefits, related issues, lead organizations, potential funding sources, long- and short-term measures, approximate cost, and regulatory approvals in the following areas of concern for Oatka Creek:

**Coordination, Collaboration & Partnership Recommendations** – This set of recommendations addresses the need for improved collaboration amongst watershed municipalities, citizens and stakeholders; addresses the need for continuous water resource related monitoring activities; and

identifies specific educational opportunities that exist. The strongest recommendations are to present information on achievements in watershed planning to municipal boards and to develop an intermunicipal organization. Shared practice allows for better design, better maintenance, and economic incentives that can deliver higher performance and lower cost.

**Agriculture** – Farming can have a negative effect on water quality through erosion of crop land, sedimentation, and runoff contaminated with fertilizers or animal wastes. This section includes some of the highest prioritized actions of all the recommendations in the watershed, including the creation of riparian buffer zones around streams adjacent to agricultural land, the encouragement of farm participation in NYS Agricultural Environmental Management (AEM) program and the development of Comprehensive Nutrient Management Plans (CNMPs) tailored to all farms in the watershed.

**Stormwater Management & Erosion Control** – Stormwater runoff contains pollutants such as nutrients, pathogens, sediment, toxic contaminants, and oil and grease, resulting in water quality problems. This section's highest recommendation is to restore severely eroded streambank segments, focusing on restoring these critical processes that form, connect, and sustain habitats. Protecting these stream banks is vital to controlling sediment loading and maintaining the rock structures. Vegetation helps prevent erosion. Thus the other highest priority in this category is the revision of land use laws to require new developments to maintain the volume of runoff at predevelopment levels by using structural controls and pollution prevention strategies.

**Forestry and silviculture management** – Loss of large trees to the creek and poor maintenance of existing trees along the creek edge highlights one of the top overall recommendations in the watershed: the encouragement of private landowners to apply sound forest management practices based on the NYS Forestry Best Management Practices for Water Quality guide. Sustainable forestry balances preserving the integrity of our forests with economic development and maintaining our diverse wildlife population while minimizing damage to the agriculture and rural communities. An array of tools is available from the New York State Cooperative Forest Management Program.

**On-Site Wastewater Management Systems (OWTS)** – The number one source of nonpoint source pollution in New York State is on-site wastewater treatment systems. The highest recommendation in this category is to secure a funding stream to bring substandard septic systems into compliance, based on the classification of substandard OWTS. Substandard OWTS are defined as systems that are piped directly to surface waters, in close proximity to the surface or groundwater, or discharging directly to the surface.

**Wastewater Treatment Plant Systems (WWTPS)** – One of the highest overall recommendations for the Oatka Creek watershed is to upgrade some WWTPs to tertiary treatment or consider closing and transferring sanitary flows. Further specific recommendations pertaining to wastewater treatment systems and management can be found in the Identification and Description of Management Practices, Approaches and Strategies for Watershed Protection and Restoration & Implementation Strategy and Schedule section.

**Hazardous Waste Management** – Highly-ranked priorities in the Oatka Creek watershed are determining the location of inactive or unpermitted landfills; implementing a watershed-wide hazardous waste pick-up or drop-off; and preventing discharge of pharmaceuticals through community collection programs and by promoting best management practices and process changes at health care institutions, livestock and food industries, and other manufacturers. Educating the public and providing an opportunity to safely dispose of hazardous products keeps dangerous wastes out of landfills, lowering the environmental risks associated with improper disposal.

**Roads and Highways** – The highest-ranked priority in this section is educating municipal and county highway departments on ditch and culvert design and stream bank stabilization methods. Paved development has the highest coefficient of runoff, and thus highway departments have a very important role in preserving watershed quality.

**Wetlands, Riparian Zones, and Floodplains** – Floodplains act as a check valve for streams; they allow water to be slowed down, to dissipate energy after a rainstorm or snow melt. The original analysis of the 100-year base flood elevation developed for the *Oatka Creek Watershed Characterization Report* indicated that 4.4% of the total land areas within the Oatka Creek watershed are within this zone, known as a Special Flood Hazard Area (SFHA). FEMA's 2014 draft Discovery report indicates an average annualized loss of $5.7B concentrated around Oatka Creek, Black Creek, the Genesee River, and Spring Creek, making this a critical recommendation area both environmentally and economically. The highest recommendation under this heading is for all municipalities that do not presently deal sufficiently with flood plain development within local law to adopt ordinances prohibiting development in 100-year floodplain, and further restricting the location of barnyards and manure pits.

**Regulatory management** – The highest recommendation is for the enforcement of the aforementioned floodplain development controls. Two other highly prioritized regulatory recommendations pertain to the building blocks of local land use: zoning and comprehensive plans. The highest recommendation is to adopt stream buffer setbacks to reduce the amount of harmful runoff and sedimentation caused by land use activities, achieved through an environmental protection overlay district (EPOD) or setbacks from waterbodies within the zoning code. Another highly prioritized action is the drafting (or revision) of comprehensive plans in municipalities without one, emphasizing the protection of local water resources and recognizing the importance of watershed planning efforts within the Oatka Creek watershed and other neighboring watersheds within the municipality. A number of municipalities within the watershed are utilizing obsolete or incomplete comprehensive plans.

**Nutrient and contaminant inputs to surface waters** – Continuing the emphasis on nutrient loading and sediment reduction strategies, this section covers recommendations ranging from the highest prioritized action, the development of nutrient and sediment reduction strategies for Oatka Creek sub-watersheds, to community outreach about green chemistry, safe disposal of household hazardous waste, and the assessment of contaminants present in fish and wildlife populations.

**Natural Resource and Habitat Protection** – The highest ranked priority is the preparation and implementation of a comprehensive invasive species management plan as well as leadership and support for further research and monitoring to improve early detection and management of invasive species. The Finger Lakes PRISM (Partnership for Regional Invasive Species Management) is a cooperative partnership in central New York focused on reducing the introduction, spread, and impact of invasive species through coordinated education, detection, prevention and control measures.

| Priority | Action | Objective | Steps (e.g., feasibility, design, permitting, construction) | Strategy | Anticipated Reductions | WQ Improvements | Benefits | Related Issue(s) | Lead and Potential Responsible Organization(s) (including sponsor, partners) | Potential Funding Sources | Measures/Targets (e.g., short-, medium-, or long-term) | Approximate Cost | Regulatory Approvals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Coordination, Collaboration & Partnership Recommendations** | | | | | | | | | | | | | |
| **High** | Short presentation to municipal boards on watershed plan | coordination, collaboration, partnership | prepare presentation highlighting achievements thus far, future opportunities and areas for improvement | Get on the agenda to discuss in all Oatka Creek Watershed municipalities | N/A | potentially high | educating a broad range of people to help carry out best practices | water quality, education | G/FLRPC, WQCC, OCWC, SCMC, FLLOWPA, SWCD | Environmental Protection Fund | 100% within one year | $9,500 | N/A |
| **High** | Development of an Intermunicipal Organization (IO) | coordination, collaboration, partnership | final MOU, municipal presentations, municipal approval | Intermunicipal Organization (IO) Memorandum of Understanding (see Appendix) | N/A | potentially high | facilitate partnership across political boundaries to promote the ecological vitality of the Oatka Creek Watershed | water quality, education | OCWC, Monroe, Genesee, Livingston, and Wyoming Counties and municipal governments that geographically fall within the Oatka Creek Watershed | Local Government Efficiency Program | all municipalities signed on to MOU | $2,500 | all municipalities signed on to MOU |
| **Medium** | Provide opportunities for citizens to volunteer for specific projects | coordination, collaboration, partnership | coordination with OCWC, WQCC, SCMC | Get on the agenda to discuss at OCWC, WQCC, SCMC meetings | project-dependent | project-dependent | project-dependent | water quality | OCWC, FLLOWPA, SWCD, SCMC | N/A | Increase number of volunteers by 10% within a year | $2,500 | N/A |
| **Medium** | Increase participation in volunteer monitoring program such as NYSDEC's WAVE program | strengthen local capacity for successful management and protection of watersheds by empowering volunteers | Training to be held in Wayne and Wyoming Counties in May and June of 2014 | recruit participants with chemical, physical, and biological sciences background | N/A | potentially high | enable citizen scientists to collect biological data for assessment of water quality on wadeable streams | water quality | NYSDEC WAVE program, CCE, OCWC, WQCC, SWCD, SCMC | NYSDEC, CFA | Increase number of volunteers by 10% within 1 year | N/A | N/A |
| **Medium** | Identify stakeholders with respect to specific priority issues, such as local roads management, and facilitate funding applications to support joint projects | coordination, collaboration, partnership | coordination with OCWC, WQCC, SCMC | Develop benchmarks and criteria for measuring progress | project-dependent | project-dependent | project-dependent | water quality | G/FLRPC, OCWC, FLLOWPA, SCMC | Local Government Efficiency Program | Identify 3 significant joint projects and seek funding within one year | $1,500 | N/A |
| **Low** | Apply for funding to implement local 2009 New York State Open Space Conservation Plan Priority Projects (or 2014 plan, currently in draft form; this or any subsequent draft) | protect priority projects | Bergen Swamp, Genesee River Corridor, The Genesee Valley Greenway (GVG), Ecological Corridors, Exceptional Forest Communities, Grassland Preservation and Restoration (specifically in the Towns of Covington and Middlebury in Wyoming County) | a combination of state and local acquisition, land use regulation, smart development decisions, land owner incentives and other conservation tools used in various combinations, will be needed to succeed in conserving these open space resources for the long term | project-dependent | potentially high | project-dependent | open space, water quality, recreation | NYSDEC, G/FLRPC, OCWC, FLLOWPA, SCMC, Bergen Swamp Preservation Society | CFA, NYS Environmental Protection Fund Title 9 funding to local governments | one priority project per year | $20,000-$2M | possible |
| **Low** | Initiate a process to further engage the County WQCCs and the Stormwater Coalition, including brief presentation about the county water quality strategies and current projects of the committee; b) identification of common goals and efforts; and c) application for joint funding to conduct work across the watershed | coordination, collaboration, partnership | coordination with OCWC, WQCC, SCMC | Get on the agenda to discuss at OCWC, WQCC, SCMC meetings | N/A | advance county water quality strategies | advance county water quality strategies | water quality, education | WQCC, OCWC, SWCD, SCMC, FLLOWPA | Local Government Efficiency Program | 100% within one year | $2,500 | all municipalities signed on to MOU |
| **Agriculture** | | | | | | | | | | | | | |
| **Highest (*Top 5 overall)** | Create and maintain riparian buffer zones for streams adjacent to agricultural land starting with the critical areas | Town of Chili, Village of Scottsville, Town of Wheatland, Town of Bergen, Town of Bethany, Town of Byron, Town of LeRoy, Village of LeRoy, Town of Pavilion, Town of Stafford, Town of Caledonia, Village of Caledonia, Town of Covington, Town of Gainesville, Town of Orangeville, Town of Perry, Town of Middlebury, Town of Warsaw, Village of Warsaw, Village of Wyoming | reduce heavy use pastured/barnyard areas in the riparian buffer in the Pearl Creek (30.1%) and White Creek (30.4%) subwatersheds, the two most impaired tributaries to Oatka Creek. | implement agricultural best management practices | potentially high | potentially high | water erosion control, wind erosion control, improved soil tilth, improved water quality and stream health | agriculture, stormwater, drinking water, water quality, sediment | USDA, NRCS, SWCD, CCE, landowners | cost-sharing for this program may be available through the Conservation Reserve Program | x% of defined critical areas within 10 years | $1,000,000 | municipalities |
| **High** | Encourage all farms throughout the watershed to participate in AEM and implement BMPs | implement agricultural best management practices | Tier 1, 2, 3 and 3A , 4, 5 AEM plans | complete farm planning on all AEM farms | based on plan adoption | potentially high | improve profitability and competitiveness of farms while protecting the environment | agriculture, development, sustainability | SWCD, CCE, USDA, NRCS, landowners, academic institutions | NYSDAM, NRCS, SWCD | % of farms in AEM program tiers 3-5 | determined by tier | determined by tier |

| Priority | Action | Objective | Steps (e.g., feasibility, design, permitting, construction) | Strategy | Anticipated Reductions | WQ Improvements | Benefits | Related Issue(s) | Lead and Potential Responsible Organization(s) (including sponsor, partners) | Potential Funding Sources | Measures/Targets (e.g., short-, medium-, or long-term) | Approximate Cost | Regulatory Approvals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **High** | Encourage all farms in the Oatka Creek watershed to develop a Comprehensive Nutrient Management Plan (CNMP) that meets the provisions of NRCS/New York State Standard 590 | A Comprehensive Nutrient Management Plan includes specific recommendations tailored to individual producers and the conditions of soil type, drainage, cropping practices, and livestock density. | Encourage farms that need the plan to do it - look for funding to do this | Practices are selected based on site-specific conditions of soil type, topography, drainage, cropping practices, and livestock density. | based on plan adoption | potentially high | balance nutrients entering and leaving farms | agriculture, stormwater, drinking water, water quality, nutrient loading, pathogens, education, sustainability | SWCD, CCE, USDA, NRCS, landowners, certified planners, private consultants, Cornell Nutrient Management Spear Program | NYS Agricultural Nonpoint Source Abatement & Control Grant Program | % of farms in AEM program tier 2 | $20/acre without soil testing | N/A |
| **Medium** | Preserve high quality and unique agricultural areas by guiding non-agricultural development into other areas of the watershed | Town of Chili, Town of Riga, Village of Scottsville, Town of Wheatland, Town of Bergen, Town of Bethany, Town of Byron, Town of LeRoy, Village of LeRoy, Town of Pavilion, Town of Stafford, Town of Caledonia, Village of Caledonia, Town of Covington, Town of Gainesville, Town of Orangeville, Town of Perry, Town of Middlebury, Town of Warsaw, Village of Warsaw, Village of Wyoming | actively identify and protect prime soils, encourage cluster development and transfer/purchase of development rights (TDR/PDR), update subdivision standards | Create land use policies and zoning regulations that support the economic viability of agriculture | potentially high | potentially high | NYSDAM PDR program will not only protect water quality but also protect farmland | agriculture, development, sustainability | WQCC, SWCD, County Farmland Protection Boards, municipalities, G/FLRPC, City of Rochester | NYSDAM, NRCS, SWCD | acres of farmland recovered | N/A | municipalities, NYSDAM |
| **Medium** | Implement vegetated filter strips (edge of field solutions) where appropriate | define and protect critical areas | help farms enter AEM program to take advantage of this technology | slow runoff from fields, trapping and filtering sediment, nutrients, pesticides and other potential pollutants before they reach surface waters | based on plan adoption | project-dependent | lower nutrient loadings | agriculture, stormwater, drinking water, water quality, sediment | USDA, NRCS, SWCD, CCE, landowners | cost-sharing for this program may be available through the Conservation Reserve Program | x% of defined critical areas within 10 years | $1,000,000 | N/A |
| **Medium** | Identify or develop and distribute public information materials that discuss agricultural issues of concern to the entire watershed community | Develop educational materials for agricultural producers and the community at large | research available materials and customize to suit Oatka Creek | illustrate the factors affecting farm size, regulatory and voluntary measures to control agricultural pollution, and the relationships between agriculture and other amenities such as open space | N/A | potentially high | educating a broad range of people to help carry out best practices | agriculture, tourism, comprehensive planning, education | OCWC, agricultural boards, SWCD, counties, American Farmland Trust | NYSDAM, NRCS, SWCD | 3 articles submitted to various media per year | $2,000 | N/A |
| **Medium** | Document and disseminate successful strategies for nutrient management, manure handling, and erosion control | develop educational materials for agricultural producers and the community at large | research available materials and customize to suit Oatka Creek | Consider publishing reports in trade journals for the dairy industry. | N/A | potentially high | educating a broad range of people to help carry out best practices | agriculture, stormwater, drinking water, water quality, nutrient loading, pathogens, sediment, education, sustainability | SWCD, CCE, USDA, NRCS, landowners, academic institutions, Nutrient Management Spear Program | NYSDAM, NRCS, SWCD | Distribute information to farms participating in AEM type programs within 2 years | $1,500 | N/A |
| **Low** | Promote nutritional management as a tool to optimize feed efficiency and ultimately reduce nutrient content of animal waste | implement agricultural best management practices | reduction of P in dairy rations to levels recommended by the National Research Council, fitting P ratio into management plan | proactive agricultural and environmental management | The 2002 statewide P balance decreased from +7.2 to +4.3 lb/acre when improvements in dairy nutrition were taken into account | potentially high | balance nutrients entering and leaving farms | agriculture, stormwater, drinking water, water quality, nutrient loading, pathogens, education, sustainability | SWCD, CCE, USDA, NRCS, landowners, Cornell Nutrient Management Spear Program | Nutrient management (590) cost sharing may be available through USDA NRCS Environmental Quality Incentives Program (EQIP) or Ag Nonpoint Source programs | 100% of livestock operations by 2016 | $35,000 | N/A |
| **Low** | Ensure appropriate point source permits for nutrients are implemented and enforced for CAFOs within watershed | implement agricultural best management practices | research current point source permits for nutrients | decrease nutrient loadings | potentially high | project-dependent | lower nutrient loadings | agriculture, stormwater, drinking water, water quality, sediment | NYSDEC, SWCD | Environmental Protection Fund | CAFO farms kept up to date with annual DEC and EPA CAFO compliance reporting requirements | unknown | N/A |
| **Low** | Consider the feasibility of technologies that reduce the mass of animal waste material to be handled, particularly collaborative anaerobic digesters | capture livestock waste and convert to energy for heat and/or electricity; on-farm digestion would be preferred and the nutrients should stay in the same watershed they are generated in as much as possible | feasibility studies | Utilize NYSERDA PON 2828 $2 million in New York State Renewable Portfolio Standard (RPS) funding available through 2015 to support the installation and operation of Anaerobic Digester Gas (ADG)-to-Electricity Systems | project-dependent | project-dependent | potentially high | agriculture, stormwater, drinking water, tourism, water quality, nutrient loading, pathogens, sustainability | NYSERDA, NYSDAM, SWCD, WQCC, CCE, Cornell Manure Management, landowners | NYSERDA PON 2828 $2 million in New York State Renewable Portfolio Standard (RPS) funding is available through 2015 to support the installation and operation of Anaerobic Digester Gas (ADG)- to-Electricity Systems | number of farms using waste for power by 2020 | engineering and project development $300,000 | N/A |

| Priority | Action | Objective | Steps (e.g., feasibility, design, permitting, construction) | Strategy | Anticipated Reductions | WQ Improvements | Benefits | Related Issue(s) | Lead and Potential Responsible Organization(s) (including sponsor, partners) | Potential Funding Sources | Measures/Targets (e.g., short-, medium-, or long-term) | Approximate Cost | Regulatory Approvals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Low** | Expand agricultural and soil health initiatives that provide technical assistance and incentives to implement practices such as cover cropping, nutrient management, conservation tillage, conservation cropping systems | improve profitability and competitiveness of farms while protecting the environment | research existing institutional offerings and body of research | utilize research done by Monroe, Genesee, Livingston, and Wyoming County SWCDs, Cornell nutrient management, soil science, etc. | potentially high | potentially high | Improve soil health to increase infiltration/water retention capacity; reduce stormwater runoff | agriculture, stormwater, drinking water, tourism, water quality, nutrient loading, pathogens, sustainability | NRCS, SWCDs, NYSDAM, CCE, Cornell Nutrient Management Spear Program | cost-sharing for this program may be available through the Conservation Reserve Program, GLRI | one priority project per year | $50,000 | N/A |
| **Low** | Install exclusion fencing to keep livestock from critical areas, including streams and other water bodies | implement agricultural best management practices | identify critical areas | AEM program | based on plan adoption | potentially high | improved water quality and stream health | agriculture, stormwater, drinking water, water quality, sediment | NRCS, SWCD, landowners | cost-sharing for this program may be available through the Conservation Reserve Program, GLRI | 100% of critical areas protected by 2020 | 3-5 strand HT is the minimum allowed by NRCS standards for critical area fencing for all livestock other than dairy cows; rates run $1.80-$2.50 for foot depending on post spacing | N/A |
| **Low** | Plant cover crops in regions with high leaching potential where nutrients need to be controlled. | implement agricultural best management practices | select cover crop types and varieties adapted to the region | Cover crops recycle nutrients that might otherwise be lost to leaching during the winter and spring. | Past research has shown that fields with winter cover plowed under in the spring have 55 percent less water runoff and 50 percent less soil loss annually than do fields with no winter cover | potentially high | water erosion control, wind erosion control, improved soil tilth, improved crop yield | agriculture, stormwater, drinking water, water quality, nutrient loading, pathogens, education, sustainability | SWCD, CCE, USDA, NRCS, landowners | Nutrient management (590) cost sharing may be available through USDA NRCS Environmental Quality Incentives Program (EQIP) or Ag Nonpoint Source programs | Identify 3 significant joint projects and seek funding within one year | $40-$70-per-acre range | N/A |

## Stormwater Management & Erosion Control

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Highest (*Top 5 overall)** | Restore very severe streambank segments using ecologically-based stream restoration | focus on restoring processes that form, connect, and sustain habitats | debris removal, develop inventory and assessment protocol, prioritize remediation efforts, identify potential solutions including stream corridor/watershed management techniques and/or in-stream restoration techniques, train volunteer assessors | by highest Erosion Potential Index Number | reduced erosion, sedimentation | potentially very high | Ecologically-based stream restoration uses a mosaic of in-stream, riparian and watershed management and restoration techniques to reduce or eliminate stress on streams and improve ecosystem functions. | agriculture, stormwater, drinking water, water quality, sediment | SWCD, CCE, Great Lakes Commission, landowners, municipalities | GLRI | 3 miles/year for 10 years | $50-$100/foot | N/A |
| **High** | Require new developments to maintain the volume of runoff at predevelopment levels by using structural controls and pollution prevention strategies | Town of Chili, Town of Riga, Village of Scottsville, Town of Wheatland, Town of Bergen, Town of Bethany, Town of Byron, Town of LeRoy, Village of LeRoy, Town of Pavilion, Town of Stafford, Town of Caledonia, Village of Caledonia, Town of Covington, Town of Gainesville, Town of Orangeville, Town of Perry, Town of Middlebury, Town of Warsaw, Village of Warsaw, Village of Wyoming | Provide municipalities with draft language. | Integrate into all zoning, subdivision, and/or site plan review controls | reduction of the total water quality volume by application of green infrastructure techniques and stormwater best management practices | reduction of sedimentation and runoff | Minimizing erosion to protect habitat and reduce stress on natural water systems by preserving steep slopes in a natural, vegetated state. | development, stormwater, drinking water, water quality, comprehensive planning | GFLRPC, county planning, municipalities | stormwater management fees calculated using a formula based on the square footage of impervious surface per lot | 20% in 5 years of ones that presently do not have controls | combine with other tasks that revise local codes for efficiency. In combination with other local codes. $15,000 | municipal |
| **Medium** | adoption of a Stormwater Management & Erosion Control Local Law and the enforcement of performance standards | Integrate into all zoning, subdivision, and/or site plan review controls: Town of Bergen, Town of Byron, Town of LeRoy, Village of LeRoy, Town of Covington, Town of Gainesville, Town of Orangeville, Town of Perry, Town of Middlebury, Town of Warsaw, Village of Warsaw, Village of Wyoming | Provide municipalities with draft language for zoning laws. | Sample Local Law for Stormwater Management and Erosion & Sediment Control | reduction of the total water quality volume by application of green infrastructure techniques and stormwater best management practices | reduction of erosion and sedimentation | reduction of large, impermeable parking lots and buildings to contribute more since they generate a disproportionate amount of runoff | development, stormwater, drinking water, water quality, comprehensive planning | GFLRPC, county planning, municipalities | GLRI | 20% in 5 years of municipalities that presently do not have controls | $50,000 | municipal |
| **Medium** | Update and apply for funding (e.g. Great Lake funding) for *Identification and Analysis of the Riparian Corridor in the Black & Oatka Creek Watersheds* | Maintain consistent and regular testing for comparison and monitoring | coordination with OCWC, WQCC, SCMC | Review and update existing streambank erosion assessments. Monitor and remediate (streambank stabilization) existing prioritized sites | N/A | necessary data | data to evaluate the health of the watersheds | coordination, collaboration, partnership | counties, municipalities, G/FLRPC, SWCD, BCWC, OCWC, , SCMC, WQCC, CCE, academic institutions | LWRP, Cleaner Greener Phase II | secure funding by 2016 | $20,000 | N/A |

| Priority | Action | Objective | Steps (e.g., feasibility, design, permitting, construction) | Strategy | Anticipated Reductions | WQ Improvements | Benefits | Related Issue(s) | Lead and Potential Responsible Organization(s) (including sponsor, partners) | Potential Funding Sources | Measures/Targets (e.g., short-, medium-, or long-term) | Approximate Cost | Regulatory Approvals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Medium** | Provide education and training of local officials on erosion controls and stormwater management | strengthen local capacity for successful management and protection of watersheds by empowering decisionmakers | coordination with OCWC, WQCC, SCMC | begin with towns with most severely degraded streambank segments | N/A | high | reduced erosion, sedimentation | stormwater, drinking water, water quality, education | NYSDOS, NYSDEC, counties, municipalities, G/FLRPC, SWCD, , SCMC, WQCC, CCE, academic institutions | LWRP, Cleaner Greener Phase II | number of trainings held annually | $2,500 | N/A |
| **Low** | Revise land use laws to limit development on slopes greater than 10% | limiting disturbance to consolidated areas of disturbance on the areas of least slope and to minimize changes in grade, cleared area, and volume of cut or fill on the site | Provide municipalities with draft language for zoning laws | Apply to existing natural or constructed slopes. Portions of project sites with slopes up to 20 feet in elevation, measured from toe (a distinct break between a 40% slope and lesser slopes) to top, that are more than 30 feet in any direction from another slope greater than 15% exempt from the requirements, although more restrictive local regulations may apply | reduced runoff | Improved water quality | better site planning, better design standards, conservation of natural areas and sensitive lands, buffering water resources | development, site planning, design standards | GFLRPC, county planning, municipalities | LWRP, Cleaner Greener Phase II | On-going - Long Term | combine with other tasks that revise local codes for efficiency. In combination with other local codes. $15,000 | Each municipality to adopt amendments to zoning law. |
| **Low** | Conduct additional research into identification of effective IC within the urbanized areas | Villages of Warsaw, LeRoy, Caledonia and Scottsville | Identify the specific locations where impervious surfaces are contiguous and directly tied to adjacent waterbodies | These particular areas could be targeted for stormwater retrofit and mitigation projects in order to eliminate or reduce the negative impacts that they have on local aquatic health. | reduce impervious cover | Improved water quality | better site planning, better design standards, conservation of natural areas and sensitive lands, buffering water resources | development, comprehensive planning, site planning, design standards | GFLRPC, county planning, municipalities | LWRP, Cleaner Greener Phase II | Identify 3 significant joint projects and seek funding within one year | $10,000 | N/A |
| **Low** | Create green infrastructure standards and integrate into site plan review criteria | Assist Town of Chili, Town of Riga, Village of Scottsville, Town of Wheatland, Town of Bergen, Town of Bethany, Town of Byron, Town of LeRoy, Village of LeRoy, Town of Pavilion, Town of Stafford, Town of Caledonia, Village of Caledonia, Town of Covington, Town of Gainesville, Town of Orangeville, Town of Perry, Town of Middlebury, Town of Warsaw, Village of Warsaw, Village of Wyoming | adoption of a Stormwater Management & Erosion Control Local Law and the enforcement of performance standards | Low Impact Development, such as Bioswales (roadside ditches) and bioretention areas (sunken gardens), French drains (retention trenches) and brick and cobblestone streets (pervious pavers); identify existing ponds/basins and retrofit them to enhance their performance and bring them to current standards | reduce impervious cover | potentially high | better site planning, better design standards, conservation of natural areas and sensitive lands, buffering water resources | development, comprehensive planning, site planning, design standards | counties, municipalities, G/FLRPC, SWCD, , SCMC, WQCC, CCE, academic institutions | USEPA, NYSDEC | % pervious surfaces | combine with other tasks that revise local codes for efficiency. In combination with other local codes. $25,000 | municipal |

## Forestry & Silviculture Management

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Highest (*Top 5 overall)** | Encourage private landowners to apply sound forest management practices to woodlands: NYS Forestry Best Management Practices for Water Quality | preserving the integrity of our forests balanced with economic development and maintaining our diverse wildlife population while minimizing damage to the agriculture and rural communities | apply forestry best management practices | sustainable forestry management, plan for conservation easements, protecting water quality and the forest and soil resources | project-dependent | project-dependent | Protecting water quality, forest and soil resources are among the most important aspects of a successful and environmentally sustainable timber harvest | stormwater, drinking water, water quality, sediment, education, sustainability | NYSDEC, CCE, Cornell Agroforestry Research Center, GFLRPC, municipalities, landowners | federal Stewardship Incentives, Forestry Incentives, Tree Assistance and Conservation Reserve Programs | Ongoing as appropriate for the program | N/A | N/A |
| **Low** | Coordinate with the New York State Cooperative Forest Management Program administered by the NYSDEC | preserving the integrity of our forests balanced with economic development and maintaining our diverse wildlife population while minimizing damage to the agriculture and rural communities | plantation establishment and care, the marking of timber, marketing assistance and silvicultural treatment of immature stands | sustainable forestry management, plan for conservation easements, protecting water quality and the forest and soil resources | project-dependent | project-dependent | increasing contact between landowners and professional foresters promotes wise stewardship of forest land | stormwater, drinking water, water quality, sediment, education, sustainability | NYSDEC, CCE, Cornell Agroforestry Research Center, GFLRPC, municipalities, landowners | federal Stewardship Incentives, Forestry Incentives, Tree Assistance and Conservation Reserve Programs | Ongoing as appropriate for the program | $3,000 | N/A |

## On-Site Wastewater Management Systems (OWTS)

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **High** | Secure a funding stream to bring substandard septic systems into compliance | Identification and assessment of on-site waste water systems | research funding opportunities | Classify substandard OWTS. Substandard OWTS are defined as systems that are piped directly to surface waters, in close proximity to the surface or groundwater, or discharging directly to the surface | 10% of phosphorus in Oatka Creek | potentially high | Reduce nutrient and pathogen runoff into groundwater and surface waters | OWTS, water quality, drinking water, education, pathogens | NYSDOH, SWCD, WQCC, county health department, county planning department | Clean Water State Revolving Fund (CWSRF) | x number of systems improved by 2016 | unknown | N/A |
| **Medium** | Revise land use laws to require infiltration rates (perc. tests) for new development in areas without public sewer service | elevate quality of future OWTS, consider in relation to agricultural practices, land uses, and development | Require identification of Karst ideas in SEQR and site plan review process using already available bedrock geology maps | consider that there are soils with not enough perc, soils that have too much perc | potentially high | water quality restoration | Carefully directing development in soils with high runoff potential | site planning, design standards, open space | NYSDOH, SWCD, WQCC, county health department, county planning department | LWRP, Cleaner Greener Phase II | Medium Term | $25,000 | Each municipality to adopt amendments to zoning law |
| **Medium** | Implement and promote programs to encourage homeowners to adopt best practices for septic system maintenance | educating a broad range of people to help carry out best practices | identify experts in OWTS and organize sessions | Contractors and others associated with septic system design and construction, municipal officials (elected, planning, zoning), homeowners | N/A | high | Reduce nutrient and pathogen runoff into groundwater and surface waters | OWTS, water quality, drinking water, nutrient loading, pathogens, education | NYSDOH, SWCD, WQCC, county health department, county planning department | unknown | 50 homeowners and 30 professionals trained within 4 years | $5,000 | N/A |

| Priority | Action | Objective | Steps (e.g., feasibility, design, permitting, construction) | Strategy | Anticipated Reductions | WQ Improvements | Benefits | Related Issue(s) | Lead and Potential Responsible Organization(s) (including sponsor, partners) | Potential Funding Sources | Measures/Targets (e.g., short-, medium-, or long-term) | Approximate Cost | Regulatory Approvals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Low** | Hold educational/ training sessions targeted towards OWTS installers, owners, and municipal officials | elevate quality of future OWTS | identify experts in OWTS and organize sessions | Contractors and others associated with septic system design and construction, municipal officials (elected, planning, zoning), homeowners | N/A | potentially high | Onsite systems are effective when properly designed, installed and maintained. | OWTS, water quality, drinking water, nutrient loading, pathogens, education | G/FLRPC, CCE, SWCD, WQCC, counties, municipalities, | unknown | 50 homeowners and 30 professionals trained within 4 years | $7,500 | N/A |
| **Low** | Adopt uniform sanitary law throughout the Oatka Creek Watershed based on the Ontario County model or the model Local Law for On-Site Individual Wastewater Treatment | Assist Town of Chili, Town of Riga, Village of Scottsville, Town of Wheatland, Town of Bergen, Town of Bethany, Town of Byron, Town of LeRoy, Village of LeRoy, Town of Pavilion, Town of Stafford, Town of Caledonia, Village of Caledonia, Town of Covington, Town of Gainesville, Town of Orangeville, Town of Perry, Town of Middlebury, Town of Warsaw, Village of Warsaw, Village of Wyoming | Residences within 200 feet of streams should be considered in a critical environmental zone and subject to more frequent inspection. Substandard systems in this zone should be required to install holding tanks until systems can be brought into compliance. | Examine pros and cons of existing uniform sanitary laws in the region and in other collaborative septic programs | potentially very high | potentially very high | Reduce effluent disposal | OWTS, water quality, drinking water, education, pathogens | NYSDOH, SWCD, WQCC, county health department, county planning department | LWRP, Cleaner Greener Phase II | all towns signed onto uniform agreement by 2020 | $15,000 | municipalities |
| **Low** | Host technology transfer workshops for those responsible for evaluating alternative and innovative OWTS technologies | elevate quality of future OWTS | coordination with PAC, OCWC, WQCC, SCMC | Target audience is local code enforcement officers, design professionals, and representatives of State and County Health Departments | Reduce nutrient and pathogen runoff into groundwater and surface waters | potentially very high | Onsite systems are effective when properly designed, installed and maintained. | OWTS, water quality, drinking water, education, pathogens | NYSDOH, SWCD, WQCC, county health department, county planning department, CCE | OTN | Workshop offered watershed-wide annually through 2016 | $12,000 | N/A |

## Waste Water Treatment Plant Systems (WWTPS)

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Highest (*Top 5 overall)** | Upgrade WWTP to tertiary treatment or consider closing and transferring sanitary flows | Village of LeRoy, Village of Warsaw, Town of Pavilion | evaluate existing wastewater infrastructure issues | Five-Year Capital Improvement Plan (CIP) | potentially high | potentially high | Reduce nutrient and pathogen runoff into groundwater and surface waters | water quality, comprehensive planning | G/FLRPC, WQCC, OCWC, SCMC, FLLOWPA, SWCD | Clean Water State Revolving Fund (CWSRF) | upgrades complete by 2020 | $60,000 | NYSDEC, municipalities, counties |
| **Medium** | locate and identify combined sewer overflows (CSOs) | CSOs are a major or contributing cause to precluded, impaired, stressed or threatened best usage in many receiving waters | identify regional experts in CSOs, such as Onondaga County's Save the Rain program | comprehensive stormwater management plan | high | CSOs may contribute significantly to receiving water degradation | project-dependent | water quality, drinking water, nutrient loading, pathogens, education, sustainability, infrastructure | G/FLRPC, WQCC, , OCWC, SCMC, FLLOWPA, SWCD | Clean Water State Revolving Fund (CWSRF) | upgrades complete by 2020 | unknown | NYSDEC, municipalities, counties |
| **Medium** | Educate the general public on the role, process, accomplishments, needs, and future strategy of sewer districts and wastewater treatment facilities. | educating a broad range of people to help carry out best practices | identify experts in WWTPs, such as Ithaca WWTP operator Dan Ramer | stakeholder discussions to consider the potential for the effects of increased population growth and associated increased point source loading | N/A | N/A | educating a broad range of people to help carry out best practices | OWTS, water quality, drinking water, nutrient loading, pathogens, education, sustainability, infrastructure | NYSDEC, , CCE, SWCD, WQCC, educational institutions, wastewater treatment facilities, , county health departments, county planning departments, municipalities | LWRP, Cleaner Greener Phase II | Target high priority communities beginning in year 1. Offer assistance and materials as appropriate. | $10,000 | N/A |
| **Medium** | Complete a characterization of WWTP effluent to assess levels of contaminants that are discharged | Assessment/Research | Quantify contaminant levels discharged from WWTPs | stakeholder discussions to consider the potential for the effects of increased population growth and associated increased point source loading | N/A | N/A | project-dependent | water quality, drinking water, nutrient loading, pathogens, education, sustainability, infrastructure | NYSDOH, NYSDEC | Clean Water State Revolving Fund (CWSRF) | complete characterization | $50,000 | N/A |

## Hazardous Waste Management

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Medium** | Conduct a study to determine the location of inactive or unpermitted landfills, dumps and hazardous material storage, as well as mined lands and petroleum bulk storage facilities | Determine dates of operation, the type of materials disposed at each and the vulnerability of water resources | develop inventory and assessment protocol, prioritize remediation efforts, identify potential solutions | Expand on list of Oatka Creek DEC Hazardous Waste Sites in Characterization Table 4.26 | unknown | project-dependent | project-dependent | drinking water, water quality, pathogens, fertilizers, pesticides, organic compounds | USEPA, USGS, NYSDEC, SWCD, WQCC, GLOW Region Solid Waste Management Committee | NYSDEC | 100% of counties and municipalities surveyed | $40,000 | N/A |
| **Medium** | Implement watershed-wide pickup of hazardous wastes and obsolete/canceled use pesticides using the "Clean Sweep" model | reduce hazardous wastes in watershed | schedule pickups and publicize | coordination with OCWC, WQCC, SCMC | potentially high | potentially high | By providing the public with an opportunity to safely dispose of such hazardous products, we keep these products out of landfills and lower the environmental risks associated with such improper disposal. | agriculture, stormwater, drinking water, water quality, fertilizers, pesticides, organic compounds | NYSDEC, SWCD, CCE, landowners | NYSDEC administers state assistance programs for household hazardous waste (HHW) programs. Funding is provided on a 50% reimbursement rate for eligible costs. | regular program for hazardous waste disposal | $120,000 | N/A |
| **Medium** | Prevent discharge of pharmaceuticals through community collection programs and by promoting best management practices and process changes at health care institutions, livestock and food industries, and other manufacturers | Education/Outreach | work with community partners to identify pharmaceutical drop off programs and locations | Promote new drop-off at Monroe County EcoPark Special Collections | discharges of pharmaceutical chemicals and by-products are reduced | lower toxic chemical burden in organisms in watershed | less potential harmful impacts from chemicals | drinking water, fish, wildlife, human health | NYSDEC, NYSDOH, communities, OCWC, WQCC | unknown | reduced chemical discharges into air, water, soil | unknown | N/A |

| Priority | Action | Objective | Steps (e.g., feasibility, design, permitting, construction) | Strategy | Anticipated Reductions | WQ Improvements | Benefits | Related Issue(s) | Lead and Potential Responsible Organization(s) (including sponsor, partners) | Potential Funding Sources | Measures/Targets (e.g., short-, medium-, or long-term) | Approximate Cost | Regulatory Approvals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Low** | Distribute hazardous spills information throughout the watershed to various community groups, fire departments, chamber of commerce, citizens, municipalities with names and numbers of the agencies and staff in charge and who has appropriate jurisdiction in emergency situations | strengthen local capacity for successful management and protection of watersheds by empowering decisionmakers | identify experts in hazardous waste management and organize sessions | organize sessions | N/A | N/A | strengthen local capacity for successful management and protection of watersheds by empowering decisionmakers | drinking water, water quality, organic compounds, education | NYSDEC, county planning department, county health department, SWCD, WQCC, emergency management organizations (EMOs) | unknown | number of trainings held annually | $2,500 | N/A |
| **Low** | Identify or develop public educational materials to describe landfill issues, such as the difference between old and new types of landfills, threats to public health and water quality, and the need to ensure that sites are closed properly | educating a broad range of people to help carry out best practices | research available materials and customize to suit Oatka Creek | utilize and distribute research, organize training sessions | N/A | N/A | strengthen local capacity for successful management and protection of watersheds by empowering decisionmakers | drinking water, water quality, pathogens, fertilizers, pesticides, organic compounds, education | USEPA, USGS, NYSDEC, counties | unknown | Identify resources and share locations on web site and with collaborating agencies (6 months). | $3,000 | N/A |
| **Low** | All wells to be tested with any transfer of property regardless of mortgage/sale requirements | Reduce number of contaminated wells | provide draft language (Schuyler County model) and have counties provide support/funding for this testing | reduction in contaminants | see reductions | Improved water quality | Reduce potential for groundwater contamination | drinking water, water quality, organic compounds, education | WQCC, SWCD | County funded | Medium Term | TBD | County Legislation |
| **Roads and Highways** | | | | | | | | | | | | | |
| **Medium** | Educate municipal and county highway departments on ditch and culvert design and stream bank stabilization methods. | Education of DOT's, Highway superintendents | Provide education to those working on ditch, culverts and streams | reduced runoff, sedimentation | project-dependent | Improved water quality | reduced erosion, sedimentation | design standards | SWCD, NYSDOT, County DOT, Highway Superintendents | 604(b), WQIP | Medium Term | $5,000/year | N/A |
| **Medium** | Require special vegetative measures such as hydroseeding and mulching of roadside swales based on purchasing and sharing of hydroseeder and training and education of municipal, county, and state highway departments | repair cut, bare, and collapsing banks, exposed roots, and blow-out holes in ditch bottoms and gully erosion | assessment of most severe sites | Initial hydroseeding should occur on the very severe sites, based on a roadbank inventory | estimated soil erosion rates of 100 to 200 tons per bankside mile | potentially high | reduced erosion, sedimentation | development, stormwater, drinking water, water quality, sediment, comprehensive planning | NYSDOT, counties, municipalities | 604(b), WQIP | 20% of very severe ditches/year | $150,000 | N/A |
| **Medium** | Increase training for highway officials in erosion control, hydroseeding, and road deicing | Education of DOT's, Highway superintendents, and Soil and Water conservation | Provide education to those working on ditch, culverts and streams | reduced runoff, sedimentation | project-dependent | project-dependent | reduced erosion, sedimentation | education | G/FLRPC, NYSDOT, counties, municipalities | 604(b), WQIP | Medium Term | $5,000/year | N/A |
| **Medium** | Install recreational access to stream at bridge crossings with new construction or repair | increase pedestrian connectivity to recreational areas | coordinate with NYSDOT to determine construction schedule and advocate for recreational access | Increase the connectivity of parks, trails, and natural areas to form a well-established network of interconnected green space | N/A | unknown | recreation, connectivity, green matrix, network | development, comprehensive planning, site planning, design standards | NYSDOT, counties, municipalities, tourism boards, PAC, NYS Parks and Trails | LWRP, Cleaner Greener Phase II, NYSDOT Scenic Byways | N/A | unknown | NYSDOT, municipalities |
| **Low** | Conduct a follow-up salt survey study to determine the location of salt storage and application practices in the Oatka Creek Watershed | reduce the threat to the chemical and physical characteristics of the creek and reduce pollution of groundwater | develop (or assess previous) survey, identify municipal and private salt storage facilities, gather responses | reduce impact of salt application, mixing, or storing on Oatka Creek | potentially high | potentially high | reduction of threat to the chemical and physical characteristics of the creek and reduce pollution of groundwater | water quality | G/FLRPC, NYSDOT, counties, municipalities | LWRP, Cleaner Greener Phase II | long-term reduction of salt-only road de-icing, shift to more holistic approach | $15,000 | N/A |
| **Low** | Use sensible de-icing material application procedure (e.g. intersections, posting of signs, driver education) | Develop guidelines and implement sensible deicing procedures | educate on best management practices for winter maintenance, including a salt management plan, development of an anti-icing strategy, and precision application techniques | Focus on hydrologically-connected roads – roads that are designed to contribute surface flow directly to a drainage channel – which have the greatest potential to deliver road-derived contaminants to streams | potentially high | potentially high | balancing cost with temperature at application | stormwater, drinking water, water quality, education | NYSDOT, counties, municipalities, highway departments | 604(b), WQIP | long-term reduction of salt-only road de-icing, shift to more holistic approach | depends on materials used | highway departments |
| **Wetlands, Riparian Zones, and Floodplains** | | | | | | | | | | | | | |
| **High** | All municipalities that do not presently deal sufficiently with flood plain development within local law should adopt ordinances prohibiting development in 100-year floodplain and restrict location of barnyards and manure pits | Assist Town of Chili, Town of Riga, Village of Scottsville, Town of Wheatland, Town of Bergen, Town of Bethany, Town of Byron, Town of LeRoy, Village of LeRoy, Town of Pavilion, Town of Stafford, Town of Caledonia, Village of Caledonia, Town of Covington, Town of Gainesville, Town of Orangeville, Town of Perry, Town of Middlebury, Town of Warsaw, Village of Warsaw, Village of Wyoming | draft language, request review by NYSDAM if there is concern about conflict with existing Right to Farm law | reduce loss caused by floods and prevent animal waste from entering water bodies | potentially high | Improved water quality and diminished losses | Improved water quality and diminished losses | agriculture, development, stormwater, drinking water, water quality, organic compounds, fertilizers, pesticides, heavy metals, nutrient loading, pathogens, sediment, comprehensive planning | municipalities, landowners | EPA, 604(b), WQIP | 20% within 5 years | combine with other tasks that revise local codes for efficiency. In combination with other local codes. $15,000 | Adoption and enforcement of strategy by each municipality and/or each county. |

| Priority | Action | Objective | Steps (e.g., feasibility, design, permitting, construction) | Strategy | Anticipated Reductions | WQ Improvements | Benefits | Related Issue(s) | Lead and Potential Responsible Organization(s) (including sponsor, partners) | Potential Funding Sources | Measures/Targets (e.g., short-, medium-, or long-term) | Approximate Cost | Regulatory Approvals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Medium** | Inventory all wetlands in watershed to establish priorities. Restore degraded wetlands (based on watershed-wide analysis of potential benefit to water quality, habitat, and hydrology) | Inventory all wetlands in watershed to establish priorities | prioritize wetlands for restoration | develop inventory and assessment protocol, prioritize remediation efforts, train volunteer assessors | absorb the forces of flood and tidal erosion to prevent loss of upland soil | potentially high | Protection of the areas surrounding wetlands improves the functions of the wetland | agriculture, development, stormwater, drinking water, water quality, organic compounds, fertilizers, pesticides, heavy metals, nutrient loading, pathogens, sediment, comprehensive planning | NYSDEC, USEPA, SWCD, NRCS | Environmental Protection Fund | 20 acres/year at $5,000/acre | $50,000 | N/A |

## Regulatory Management

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Highest (*Top 5 overall)** | Enforce floodplain development regulations | Reduce loss caused by floods. | Flood/Hazard mitigation strategy and code enforcement | Reduction of loss due to flood as well as erosion and sedimentation due to flooding | see reductions | Improved water quality and diminished losses | Improved water quality and diminished losses | agriculture, development, stormwater, drinking water, water quality, organic compounds, fertilizers, pesticides, heavy metals, nutrient loading, pathogens, sediment, comprehensive planning | County Emergency Management Councils, County Planning | EPA, 604(b), WQIP | Medium Term | TBD | Adoption and enforcement of strategy by each municipality and/or each county. |
| **High** | Adopt stream buffer / riparian setback regulations. | Town of Chili, Town of Riga, Village of Scottsville, Town of Wheatland, Town of Bergen, Town of Bethany, Town of Byron, Town of LeRoy, Village of LeRoy, Town of Pavilion, Town of Stafford, Town of Caledonia, Village of Caledonia, Town of Covington, Town of Gainesville, Town of Orangeville, Town of Perry, Town of Middlebury, Town of Warsaw, Village of Warsaw, Village of Wyoming | Provide municipalities with draft language for zoning laws. | Reduce the amount of harmful runoff and sedimentation caused by land use activities. | potentially high | Improved water quality | reduced erosion, sedimentation | Site Planning, design standards and Ag planning | G/FLRPC, County planning offices, municipal planning boards, Agricultural Protection Boards | LWRP, 604(b), WQIP, GLRI | Medium Term | combine with other tasks that revise local codes for efficiency. In combination with other local codes. $15,000 | Each municipality to adopt amendments to zoning law. |
| **Medium** | Draft (or revise) a comprehensive plan emphasizing the protection of local water resources and recognizing the importance of watershed planning efforts within the Oatka Creek watershed and other neighboring watersheds within the municipality | Assist Town of Bergen, Village of LeRoy, Town of LeRoy, Town of Pavilion, Town of Caledonia, Village of Caledonia, Town of Covington, Town of Gainesville, Town of Perry, Town of Middlebury, Town of Warsaw, Village of Warsaw, Village of Wyoming | charrettes, gather widespread public input, draft initial comprehensive plan as strategic document that sets out the broad goals and vision of the community | adoption of a comprehensive plan | N/A | potentially high | public engagement with plan development process and solidification of watershed management and related topics such as water quality, stormwater management, and erosion and sediment control as municipal priorities | water quality, comprehensive planning | G/FLRPC, counties, municipalities | NYSERDA Cleaner Greener Communities program | updated comprehensive plans and zoning | $5,000-$100,000 | municipalities |
| **Medium** | Counties and municipalities should consider agricultural protection and preservation while addressing associated land conservation and water quality concerns though various county, state and federal programs | review existing regional programs, collaboratives, and case studies for guidance | PAC should help to develop methods to assist in implementation of plans | conservation easements, viewshed analysis, scenic preservation, rural design guidelines, tax districts | potentially high | potentially high | strengthen local capacity for successful management and protection of watersheds by empowering decisionmakers | agriculture, development, tourism, comprehensive planning, sustainability, economic development | counties, municipalities | NYSDAM | Updated farmland and agricultural protection plans | $25,000 | N/A |
| **Low** | All municipalities that have land use control ordinances should require review of disturbances within 100 ft of all natural wetlands and all municipalities should prohibit discharge of stormwater to wetlands without prior treatment | Assist Town of Chili, Town of Riga, Village of Scottsville, Town of Wheatland, Town of Bergen, Town of Bethany, Town of Byron, Town of LeRoy, Village of LeRoy, Town of Pavilion, Town of Stafford, Town of Caledonia, Village of Caledonia, Town of Covington, Town of Gainesville, Town of Orangeville, Town of Perry, Town of Middlebury, Town of Warsaw, Village of Warsaw, Village of Wyoming | preservation of wetlands as natural habitat for many species of plants and animals and for critical flood and stormwater control functions | evaluate through GIS and EAF Mapper by parcel, integrate into all zoning, subdivision, and/or site plan review controls | absorb the forces of flood and tidal erosion to prevent loss of upland soil | potentially high | Protection of the areas surrounding wetlands improves the functions of the wetland | agriculture, development, stormwater, drinking water, water quality, organic compounds, fertilizers, pesticides | municipalities, landowners | N/A | all municipalities with wetlands adjacent to riparian corridors | N/A | municipalities |
| **Low** | Each municipality and county agency should educate themselves about specifics of federal and state regulations and programs, and funding as they relate to nonpoint source pollution and water quality. | strengthen local capacity for successful management and protection of watersheds by empowering decisionmakers | coordination with PAC, OCWC, WQCC, SCMC | Representative of each municipality attend 2-3 workshops per year | potentially high depending on funding acquired | project-dependent | strengthen local capacity for successful management and protection of watersheds by empowering decisionmakers | agriculture, development, stormwater, drinking water, water quality, OWTS, wastewater treatment, water quality standards, education | , OCWC, FLLOWPA, county, municipalities | unknown | Representative of each municipality attend 2-3 workshops per year | $300 per municipality per year | N/A |

| Priority | Action | Objective | Steps (e.g., feasibility, design, permitting, construction) | Strategy | Anticipated Reductions | WQ Improvements | Benefits | Related Issue(s) | Lead and Potential Responsible Organization(s) (including sponsor, partners) | Potential Funding Sources | Measures/Targets (e.g., short-, medium-, or long-term) | Approximate Cost | Regulatory Approvals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Low** | All municipal elected officials, enforcement officers, highway superintendents, boards, and related professional staff should attend training on Stormwater Phase II state and federal regulations | strengthen local capacity for successful management and protection of watersheds by empowering decisionmakers | coordination with PAC, OCWC, WQCC, SCMC | Representative of each municipality attend 4 workshops per year | N/A | project-dependent | strengthen local capacity for successful management and protection of watersheds by empowering decisionmakers | agriculture, development, stormwater, runoff, drinking water, water quality, sediment, erosion | county, municipalities | unknown | Four workshops a year | $6,000 | N/A |
| **Low** | Municipalities consider adoption of aquifer protection laws. | Protect the drinking water from harmful contaminants. | Provide municipalities with draft language for land use law. | Protected water | Less water quality issues | Improved water quality | Improved water quality | water quality, comprehensive planning | G/FLRPC, County planning offices, municipal planning boards | LWRP, Cleaner Greener Phase II | Medium Term | Combine with other recommended land use law updates | Each municipality to adopt an aquifer protection law. |
| **Low** | Municipalities should encourage alternative agricultural uses of land within comprehensive planning and zoning structure | Update comprehensive plans and zoning to reflect this | review existing regional programs, collaboratives, and case studies for guidance | cluster subdivisions, LEED-ND | N/A | potentially high | public engagement with plan development process and solidification of watershed management and related topics such as water quality, stormwater management, and erosion and sediment control as municipal priorities | agriculture, development, tourism, comprehensive planning, sustainability, economic development | counties, municipalities | NYSERDA Cleaner Greener Communities program | updated comprehensive plans and zoning | $5,000-$100,000 | municipalities, counties, NYSDAM |
| **Low** | open space conservation | site planning, design standards | site plan standards, decrease minimum lot sizes, increase density, cluster subdivisions, buffing water courses | Develop site plan standards including minimum lot size, increased density, cluster subdivision, and water course setback standards and options | Stormwater runoff, sediment, nutrients, reduce habitat fragmentation and degradation | potentially high | conservation of open space and farmland, water quality restoration | development, open space, local laws, design standards | County planning, regional planning, municipalities, PAC, Genesee Land Trust | LWRP | Developed land, farmland, residential density, infrastructure, water quality | $200,000 | local law updates |
| **Nutrient and contaminant inputs to surface waters** | | | | | | | | | | | | | |
| **High** | Develop nutrient and sediment reduction strategies for sub-watersheds | Monitoring/Planning | coordination with PAC, OCWC, WQCC, SCMC | regular monitoring of phosphorus and suspended solids | Stormwater runoff, sediment, nutrients | potentially high | Reduced nutrient and sediment loadings | water quality, sediment | NYSDEC, SWCD, PAC, OCWC, WQCC, SCMC | GLRI | % reduction | $75,000 | N/A |
| **Medium** | Identify areas of contaminated sediments and groundwater, and quantify discharge to Oatka Creek | Monitoring/Planning | Remediation of contaminated areas | Develop benchmarks and criteria for measuring progress | Stormwater runoff, sediment, nutrients | advance county water quality strategies | Reduced nutrient and sediment loadings | water quality, sediment | NYSDEC, research institutions | unknown | development of database | $150,000 | N/A |
| **Medium** | Ensure safe disposal of e-waste and household hazardous waste through community education and collection programs, and the promotion of product stewardship initiatives | educating a broad range of people to help carry out best practices | Promote proper waste disposal | organize annual (or more frequent) events | reduction of pollutants entering Oatka Creek | advance county water quality strategies | improved water quality and stream health | water quality, collaboration, education | NYSDEC, OCWC, WQCC, SWCD, FLLOWPA, G/FLRPC, SCMC, academic institutions, Monroe County Environmental Services, GLOW | Environmental Protection Fund | # of participants | N/A | unknown |
| **Low** | Assess concentrations and significance of contaminants such as pesticides, trace metals, and persistent organic pollutants in fish, wildlife, and vulnerable fish-consuming populations | Monitoring/Planning | Better understanding of legacy and emerging contaminant exposure levels, and the sub-watershed and temporal trends of contaminants | recruit participants with chemical, physical, and biological sciences background | N/A | potentially high | improved water quality and stream health | water quality, collaboration | NYSDEC, NYSDOH, NYSERDA, academic institutions | Environmental Protection Fund | development of database | unknown | N/A |
| **Low** | Ensure information about no P fertilizers is distributed and known | educating a broad range of people to help carry out best practices | research available materials and customize to suit Oatka Creek | distribute widely through Oatka Creek watershed | N/A | potentially high | strengthen local capacity for successful management and protection of watersheds by empowering decisionmakers | water quality, nutrient loading, education | CCE, Planning, SWCDs | Environmental Protection Fund | web hits, events attended, # participants | $2,500 | N/A |
| **Low** | Provide outreach and education to community, schools, and other institutions on green chemistry, green engineering, and other pollution prevention practices | Education/Outreach | Pollution prevention practices are implemented by target groups | distribute widely through Oatka Creek watershed | N/A | potentially high | strengthen local capacity for successful management and protection of watersheds by empowering decisionmakers | water quality, collaboration, education | NYSDEC, NYSPPI, SWCD, WQCC | Environmental Protection Fund | web hits, events attended, # participants | $2,500 | N/A |
| **Natural Resource and Habitat Protection** | | | | | | | | | | | | | |
| **Medium** | Prepare and implement a comprehensive invasive species management plan | Early detection of species may prevent full invasion | Target highly probable areas | join the New York State Invasive Species Task Force, OCWC leadership receive training on Invasive Species Identification and Reporting for http://www.nyimapinvasives.org/ | N/A | potentially high | Prevent ecosystem function disruption - e.g., disruption of native species | water quality, sustainability | Invasive Species Taskforce NYSDEC, Partnerships for Regional Invasive Species Management (PRISM), OCWC, WQCC, SWCD, FLLOWPA, G/FLRPC, Invasive Species Research Institute (ISRI) | EPA, 604(b), WQIP | reduction in new invasives per year | $50,000 | N/A |

| Priority | Action | Objective | Steps (e.g., feasibility, design, permitting, construction) | Strategy | Anticipated Reductions | WQ Improvements | Benefits | Related Issue(s) | Lead and Potential Responsible Organization(s) (including sponsor, partners) | Potential Funding Sources | Measures/Targets (e.g., short-, medium-, or long-term) | Approximate Cost | Regulatory Approvals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Low** | Establish a permanent leadership structure to coordinate invasive species efforts | Early detection of species may prevent full invasion | Target highly probable areas | join the New York State Invasive Species Task Force, OCWC leadership receive training on Invasive Species Identification and Reporting for http://www.nyimapinvasives.org/ | N/A | N/A | Prevent ecosystem function disruption - e.g., disruption of native species | water quality, sustainability | Invasive Species Taskforce NYSDEC, Partnerships for Regional Invasive Species Management (PRISM), OCWC, WQCC, SWCD, FLLOWPA, G/FLRPC, Invasive Species Research Institute (ISRI) | EPA, 604(b), WQIP | reduction in new invasives per year | $5,000 | N/A |

# Appendix
# OATKA CREEK WATERSHED MANAGEMENT PLAN
# MEMORANDUM OF UNDERSTANDING
# FOR OATKA CREEK WATERSHED MUNICIPALITIES

This Memorandum of Understanding is among the four counties (Genesee, Livingston, Monroe and Wyoming) and municipal governments with jurisdictions that geographically fall within the Oatka Creek Watershed in the Finger Lakes Region of New York.

**I. INTRODUCTION & BACKGROUND:**
The Oatka Creek Watershed Management Plan was funded by a Local Waterfront Revitalization Grant (LWRP) through New York State Department of State. The work of the Oatka Creek Watershed Management Plan was overseen by a Project Advisory Committee and coordinated with the Oatka Creek Watershed Committee. With the culmination of the Oatka Creek Watershed Management Plan, it is in the best interest of the water quality of Oatka Creek to form an intermunicipal organization of the four counties and municipal governments within the Oatka Creek Watershed to implement the recommendations of the Oatka Creek Watershed Management Plan.
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**II. RECITALS:**
1. Each of the parties of this MOU is a local government or County having jurisdiction over a portion of the watershed of Oatka Creek.
2. The geographic boundaries of the Intermunicipal Organization shall be the entire Oatka Creek Watershed.
3. The parties desire to recognize that an intermunicipal organization can best facilitate partnership across political boundaries to promote the ecological vitality of the Oatka Creek Watershed.
4. It is to the parties' mutual advantage and benefit to develop and implement cooperative restoration and protection efforts throughout the watershed, and to promote a regional alliance among local governments and county programs.
5. The parties hereto plan to continue exploring joint local, state, federal and other funding opportunities; and to obtain public support for programs that implement the mission and goals of the Oatka Creek Watershed Management Plan.
6. The parties hereto recognize the value of using common resources effectively.
7. The parties hereto desire to be proactive in addressing watershed-based issues which affect areas beyond traditional political boundaries.
8. The parties hereto wish to communicate and coordinate on local, state and federal policies and programs that affect water quality in Oatka Creek.
9. The parties agree to share information and coordinate efforts to comply with regulatory requirements.
10. The parties hereto find that promoting stewardship of the Oatka Creek Watershed resources is in the public interest and for the common benefit of all within the Oatka Creek Watershed. The parties hereto desire to educate the communities in the Oatka Creek Watershed about the importance of watershed stewardship.

**III. GENERAL PROVISIONS:**
1. Definitions. As used in this MOU, the following words and phrases shall have the meanings set forth below unless the context clearly indicates otherwise.
   a) "MOU" shall mean this memorandum of understanding.
   b) "Member" or "members" shall mean the representatives from the local governments and four counties encompassed in the Oatka Creek Watershed.
   c) Watershed" shall mean the entire Oatka Creek Watershed. A map depicting the boundaries of the watershed is appended hereto.
2. Purpose. This MOU is to affirm each member's commitment to the mission, goals and objectives of the Oatka Creek Watershed Management Plan.
3. Establishment of the Intermunicipal Organization. There is hereby established the Oatka Creek Intermunicipal Organization. The geographic boundaries of the organization will be the Oatka Creek Watershed.

4. Vision. Watershed stakeholders, municipalities and government agencies will work together through implementation of the Oatka Creek Watershed Management Plan to maintain the common goal of clean water and sustainable watershed management for the future of the Oatka Creek Watershed. Sustainable watershed management must include local involvement in planning and the management of natural resources and be the shared responsibility of all stakeholders and watershed residents.
5. Organization Membership.
   a) Each of the four counties and municipal governments shall appoint one member to participate in regular meetings and report actions to their local government.
   b) One representative from the regional planning board (Genesee/Finger Lakes Regional Planning Council), one representative from each county Soil and Water Conservation District and one representative from the Oatka Creek Watershed Committee may be ex officio members of the organization.
   c) Membership: The total membership of the organization shall be constituted by the members appointed by the parties to this agreement. If a party to this agreement fails to appoint a member, then the count of total membership shall not include such member.
6. Voting: Each party to this MOU shall have one member and one vote.
7. Quorum. A majority of the members of the organization shall constitute a quorum for the purposes of transacting business.
8. Officers:
   a) On an annual basis, the organization shall elect by popular vote a chairperson, vice chairperson, and Treasurer, and Secretary.
   b) The Chairperson shall call and preside over meetings.
   c) The Vice Chairperson shall serve in the absence of the Chairperson
   d) The Treasurer shall maintain books tracking all organization funds, if any, and make reports on organization finances at each meeting.
   e) The Secretary shall take and distribute minutes of meetings and be responsible for the organization's correspondence.
9. Meeting Organization: All meetings shall be conducted according to Robert's Rules of Order, most current edition.
10. An annual plan of work, based on projects and initiatives in accordance with the Oatka Creek Watershed Management Plan, shall be approved by a quorum vote of organization members.

**IV. AGREEMENT:**

Intermunicipal Organization members agree to:

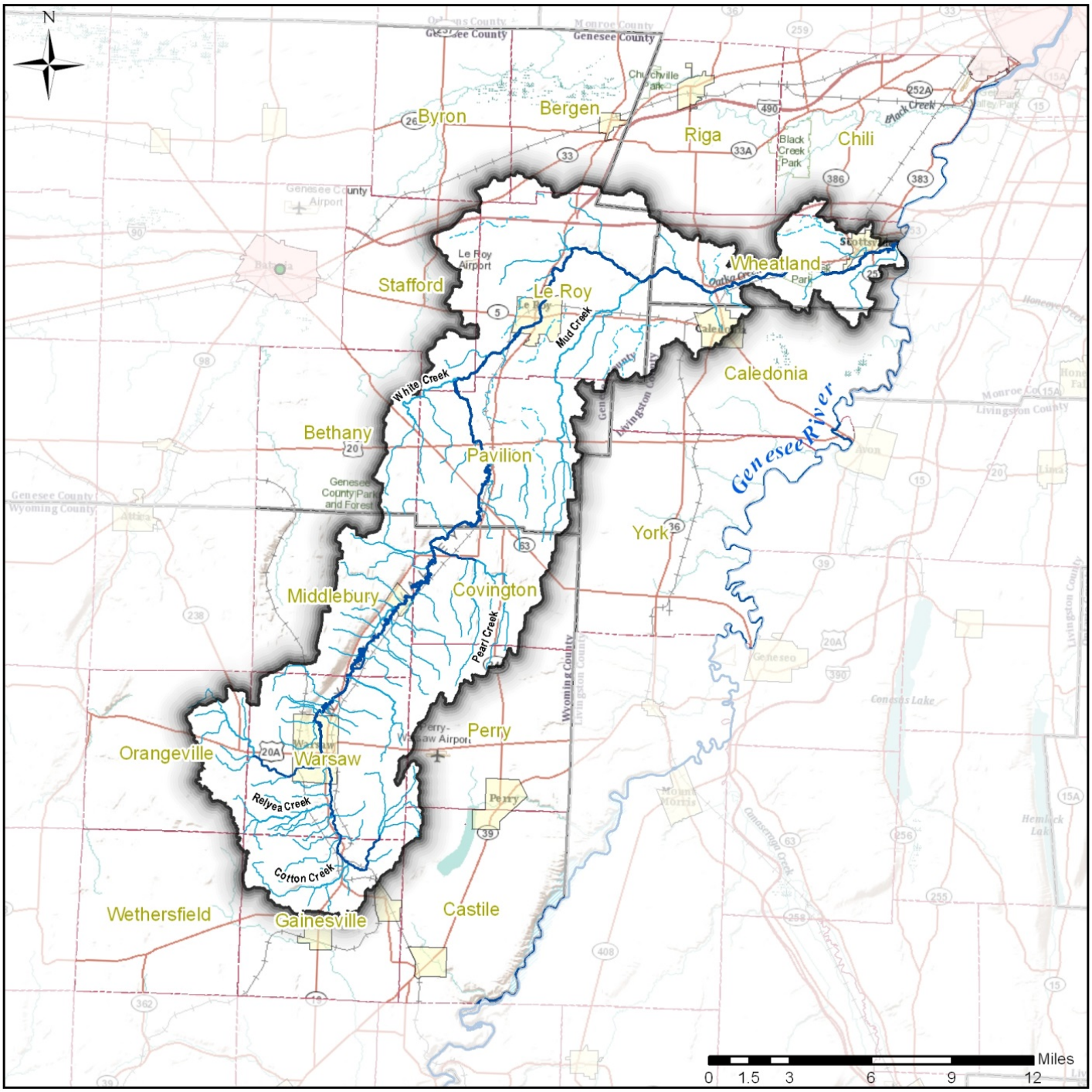
1. Work together to protect the water quality of Oatka Creek, which in turn protects the quality of life for residents and the economic viability of the region.
2. Participate in regular Intermunicipal Organization meetings.
3. Work to implement recommendations of the Oatka Creek Watershed Management Plan's goals and objectives.
4. Participate in and provide watershed stakeholders with meaningful training opportunities.
5. Seek funding opportunities to meet the goals and objectives of the Oatka Creek Watershed Management Plan.
6. Strive to update the Oatka Creek Watershed Management Plan at least every 10 years.

**V. EFFECTIVE DATE:**

This MOU shall become effective on the date of signature below. This MOU is ongoing unless it is terminated by a member upon written notice to the remaining membership of this Intermunicipal Organization. This MOU may be amended at any time by mutual accord.

Signed:
Dates
Witness:

Adapted from the Seneca Lake Watershed MoU




**Municipalities of the Oatka Creek Watershed**

(See Section 2.2, Municipalities in *Oatka Creek Watershed Management Plan: Characterization Report.* 2012. http://gflrpc.org/Publications/BlackOatka/Characterization/OatkaCreekWatershed/FinalOatkaCharacterization.pdf)