

Schoharie Basin Stream Management Program Action Plan 2015 - 2017



Batavia Kill at Conine Stream Restoration Project, Batavia Kill, Ashland, NY



Greene County Soil and
Water Conservation District
907 County Office Building, Cairo NY 12413
Jeff Flack, Executive Director
518.622.3620



NYCDEP Stream Management Program
71 Smith Ave, Kingston NY 12401
Dave Burns, Project Manager
845.340.7850



Schoharie Basin Stream Management Program Action Plan 2015-2017

Updated May 15, 2015

NYCDEP Stream Management Program
71 Smith Ave, Kingston NY 12401
David Burns, Project Manager
845.340.7850
dburns@dep.nyc.gov



Greene County Soil & Water
Conservation District
907 County Office Building, Cairo NY 12413
Jeff Flack, Executive Director
518.622.3620
jeff@gcswcd.com



TABLE OF CONTENTS

- I. Education on Watershed Protection
 - A. Organize a Schoharie Watershed Month
 - B. Schoharie Watershed Summit
 - C. Schoharie Watershed Tour
 - D. Riparian Buffer Workshop
 - E. Schoharie Watershed Stream Crossing Workshop
 - F. Town of Lexington Watershed Awareness Workshops
- II. Landowner Stream Assistance
 - A. Catskill Streams Buffer Initiative
 - B. Stream Restoration Projects & Modifications
- III. Creative Stormwater Practices and Critical Area Seeding
 - A. Kaaterskill United Methodist Church Stormwater Project
- IV. Highway and Infrastructure Improvements
 - A. Glen Avenue Culvert Upgrade
 - B. Cranberry Road Culvert Upgrade
 - C. Schoharie Watershed Stream Crossing/Culvert Design
 - D. Mitchell Hollow Rd (CR 21) Stormwater Sewer Upgrade
 - E. Street Sweeper with Vacuum
 - F. South Gilboa Road Stormwater Mitigation Project
- V. Planning and Assessment
 - A. Town of Hunter Land Use Regulation Review
 - B. Tributary Stream Inventory and Assessment
 - C. Fisheries Assessment & Improvements Strategy
 - D. Project Monitoring
- VI. Recreation and Stream Habitat Improvements
 - A. Schoharie Creek Park
 - B. Windham Path Phase 2
 - C. Conesville Town Park Walking Path
 - D. Lexington Riverfront Access Park
- VII. Flood Hazard Mitigation
 - A. Local Flood Analysis
 - B. Hazard Mitigation Grant Program Flood Buyout Program
- VIII. On-going Activities
 - A. Program Administration and Implementation
 - B. Local Technical Assistance
 - C. Inter-Agency Coordination
 - D. Catskill Streams Website
 - E. Community Outreach
 - F. Critical Area Seeding Program
 - G. Plant Materials Program
 - H. Annual Education & Outreach Plan
 - I. Operation and Maintenance

NYCDEP Stream Management Program
71 Smith Ave, Kingston NY 12401
David Burns, Project Coordinator
845.340.7850
dburns@dep.nyc.gov



Greene County Soil & Water
Conservation District
907 County Office Building, Cairo NY 12413
Jeff Flack, Executive Director
518.622.3620
jeff@gcswcd.com



Schoharie Basin Stream Management Program

Action Plan 2015 – 2017

Update May 15, 2015

The Schoharie Watershed Stream Management Program (SWSMP) was established in a partnership between the Greene County Soil & Water Conservation District (GCSWCD) and NYC Department of Environmental Protection (DEP) in 1997 as part of the Filtration Avoidance Determination (FAD) issued to DEP by the Environmental Protection Agency. Stream Management Plans have been completed for each major river corridor in the Schoharie Watershed and each plan includes a set of general recommendations, and project specific recommendations, which provide a “road map” for improved stream and floodplain management. The SWSMP seeks to advance state-of-the-art watershed management projects, policies and programs to improve and protect the Schoharie’s water resources. Initiatives include the Stream Management Implementation Program (SMIP), the Catskill Streams Buffer Initiative (CSBI), Stream and Floodplain Restoration Projects, Stream and Watershed Assessments, Flood Hazard Analysis and Mitigation and Education and Outreach programs.

The following Action Plan summarizes the programs and projects that GCSWCD will be leading within the Schoharie Basin between May 2015 and May 2017, and includes action plan item updates through May 1, 2015. The GCSWCD will lead the efforts for each action item, and work cooperatively with watershed partners including, but not limited to, the Schoharie Watershed Advisory Committee (SWAC), NYCDEP, NYSDEC, CWC and watershed municipalities. This is a dynamic document that is updated annually in May. Funding sources are presented with the following acronyms: Stream Management Implementation Grant Program (SMIP), Catskill Streams Buffer Initiative (CSBI), Watershed Assistance Program (WAP), Water Resources Development Act (WRDA), Catskill Watershed Corporation (CWC), DEP/GCSWCD Schoharie Watershed Stream Management Program (Contract), Federal Emergency Management Agency (FEMA), and Natural Resource Conservation Service Emergency Watershed Protection (EWP).

I. Education on Watershed Protection:

The GCSWCD works with a wide network of partners to enhance its education and outreach efforts related to stream and floodplain management, sediment and erosion control, and other topics critical to sound watershed management. A priority goal of this action plan is to increase education and outreach activities. Many of the following E/O initiatives were developed by the SWAC E/O Subcommittee. Education and Outreach action items include, but are not limited to:

A. Organize a Schoharie Watershed Month: Community involvement and awareness is important for promoting the protection of streams and their watersheds. Hosting a watershed-wide educational and recreational event (Schoharie Watershed Month) provides an opportunity for watershed residents, students, community groups, tourists, officials, etc. to get to know their stream and the resources available to help provide watershed protection.

| | |
|----------------------------|--|
| GCSWCD Staff: | Yost |
| Project Partners: | Local schools and colleges, community organizations, Trout Unlimited Chapters, CWC, CCD, WAC, GCCCE, DEC, NYCDEP, SWAC Education and Outreach Subcommittee |
| Project Funding: | NYCDEP/GCSWCD Schoharie SMP Contract, CWC, GCSWCD-WAP, local sponsors, chambers of commerce |
| Project Schedule: | Organize annually from January through May; event held annually in May. |
| SMP Recommendation: | Schoharie/East Kill – Education and Outreach 6.4.8; Manor Kill- Education and Outreach 5.4.8 |
| Date Added to Action Plan: | 2009 |

Progress: Schoharie Watershed Month continues to engage watershed communities and organizations in learning about the watershed, its resources and taking part in hands-on activities. Various activities, workshops and family events are organized each May by host communities and organizations that promote awareness and protection of streams and their watersheds. Activity/event sponsors in 2014 included the three watershed school districts, Catskill Watershed Corporation, the NYC Department of Environmental Protection, Cornell Cooperative Extension of Columbia-Greene Counties, Catskill Center for Conservation and Development, Mrs. Puddle Duck’s Day Care, Arm-of-the-Sea Theater, Prattsville Community Church, Prattsville Fire Department, NYS Department of Environmental Conservation, Catskill Streams Buffer Initiative, Catskill Mountain Foundation, Community of Windham Foundation, Hunter Foundation, Windham Area Recreation Foundation, Gilboa Museum and the Gilboa Historical

Society, First Student Bus Rentals, Catskill Outback Adventures, Bob Janiszewski, and Gerry Stoner. Collectively, the partners created nine events (executed eight) that celebrated the region's beauty and natural resources, while raising awareness of the NYC Watershed and its protection. A list of activities can be found at <http://www.gcswcd.com/swp/eo/swm>. This event will continue annually.

B. Schoharie Watershed Summit: The annual conference, which began in 2007, is organized for local municipal officials, county and non-profit agencies, highway departments, regulatory and engineering firms active in the Schoharie basin, and offers training in relevant water resources management, regulations, land use, and stormwater management. Credits for planning board members are provided.

GCSWCD Staff: Yost
Project Partners: NYCDEP, GCSWCD, SWAC
Project Funding: NYCDEP SMP Contract, GCSWCD
Project Schedule: Organize from September through January; event held annually in January.
SMP Recommendation: Schoharie -- Education and Outreach 6.4
Date Added to Action Plan: 2009

Progress: The annual Watershed Summit held in January continues to provide timely and important information to local officials, landowners, non-profit organizations, and consulting and engineering firms on watershed topics, initiatives and resources. The 2015 Summit, *Investment and Innovation for the Future*, highlighted communities, locally, nationally and internationally, that have demonstrated resilience and proactivity in flood mitigation and economic recovery. Various mitigation projects, relocation precedents, and collaborative success stories of communities and natural systems were covered along with training programs for local and elected officials, consultants and watershed managers. Workshops included New Flood Mitigation Programs and Resources in the NYC West-of-Hudson Watershed presented by Catskill Watershed Corporation and NYCDEP; Roles of the Municipal Planning Board; Understanding How the DEP Stormwater Regulations are Applied in Different Situations; and Reducing Flood Risks Using Hydraulic Modeling in the WOH Watershed & Beyond (interactive panel). This event will continue annually.

C. Schoharie Watershed Tour: The annual Watershed tours are organized to provide public officials, watershed managers and landowners an opportunity to view project sites to see the range and diversity of potential watershed projects. The Watershed tours offer training in relevant water resource issues and management. For more information: <http://www.gcswcd.com/swp/eo/sw-tour>.

GCSWCD Staff: Yost
Project Partners: NYCDEP, GCSWCD, SWAC
Project Funding: NYCDEP SMP Contract, GCSWCD
Project Schedule: Organize from February through June; event held annually in June.
SMP Recommendation: Schoharie -- Education and Outreach 6.4
Date Added to Action Plan: 2009
Progress: The next tour will be scheduled for summer of 2016.

D. Riparian Buffer Workshop: Conduct workshop for streamside landowners that highlights the importance of riparian buffers and demonstrates management practices to maintain healthy stream buffers.

GCSWCD Staff: Weyeneth
Project Partners: CSBI
Project Funding: CSBI, NYCDEP/GCSWCD Schoharie SMP Contract
Project Schedule: 2015
SMP Recommendation: Schoharie -- Education and Outreach 6.4.8
Date Added to Action Plan: 2011

Progress:
riparian planting.

On May 9, 2015 there will be a habitat workshop along the Schoharie Creek in the Town of Hunter that will also include a

E. Schoharie Watershed Stream Crossing Workshop: Develop, design and implement a culvert workshop for local highway departments that highlights the importance of proper design & installation of culverts for sediment transport, fish passage and incorporates principals using natural channel design for long term stability, protection of water quality and health of streams.

GCSWCD Staff: Weyeneth
Project Partners: Local highway departments, Greene County Highway Dept., NYCDEP, NYSDOT
Project Funding: SMIP Round 3
Project Schedule: 2016 organize one day workshop.
SMP Recommendation: Schoharie -- Education and Outreach 6.4
Date Added to Action Plan: 2011
Progress: Awarded SWAC SMIP funding in October 2010. A fall 2011 workshop was being planned, however, flood recovery efforts, following Tropical Storms Irene and Lee took precedence. The workshop will proceed in 2016.

F. Town of Lexington Watershed Awareness Workshops: A series of four educational workshops for children in the Town of Lexington. The proposed workshops will teach local children, using hands-on experiences, about the insects and animals that play important roles in the watershed, and the role that streams play in the environment.

GCSWCD Staff: Education Coordinator
Project Partners: Town of Lexington, Educators (Lynn Byrne, Bonnie Blader, Beverly Dezan)
Project Funding: NYCDEP/GCSWCD Schoharie SMP Contract, Greene County Youth Bureau
Project Schedule: Summer 2015
SMP Recommendation: Schoharie -- Education and Outreach 6.4
Date Added to Action Plan: 2015
Progress: Awarded SWAC SMIP funding in April 2015. The workshops are planned for summer 2015.

II. Landowner Stream Assistance

The GCSWCD and NYCDEP recognize the importance of providing assistance to local landowners, as many of the identified problem areas in the management plans are on private property. The NYCDEP, GCSWCD and SCSWCD have provided the necessary training for project staff to be able to provide state-of-the-art technical assistance throughout the watershed. Technical assistance from staff members will guide the restoration of stream system stability and help to maintain ecological integrity. Technical assistance can range from a landowner consultation to activities that will help to meet the priorities of protecting water quality and establishing riparian buffers. Protection and enhancement of water quality can benefit both the City of New York's water supply and the residents of the Schoharie basin. Landowner Stream Assistance action items include, but are not limited to:

A. Catskill Streams Buffer Initiative: An effective riparian buffer program can assist landowners with their efforts to protect and maintain healthy riparian buffers, address invasive species, and improve the condition of unstable or degraded riparian areas. In 2009, the Catskill Streams Buffer Initiative was developed to educate and assist streamside landowners in order to provide for improved stewardship of riparian areas. The GCSWCD and NYCDEP will work with landowners to protect, enhance, manage and restore riparian buffers within the WOH watershed. GCSWCD staff will conduct site visits to determine eligibility for funding through the CSBI. In addition to site visits, recruitment may also include outreach mechanisms such as press releases, targeted mailings, presentations to organizations, and Riparian Corridor Management Plan development.

Catskill Streams Buffer Initiative Projects:

Site 1. Manor Kill Colangelo Riparian Planting:

SCSWCD/GCSWCD Staff: Nichols, Weyeneth
Project Partners: NYCDEP, GCSWCD, SCSWCD, Community Volunteers
Project Funding: NYCDEP CSBI
Project Schedule: Project started in 2011; additional willow clump plantings in 2015
SMP Recommendation: Manor Kill – Riparian Zone Management 5.7.1, 5.7.2, 5.7.4, 5.7.7
Date Added to Action Plan: 2009

Progress: Landowner has signed landowner agreement and applied for Floodplain Easement Program (NRCS). SCSWCD wrote a Riparian Corridor Management Plan for this property. In November 2009, 354 trees were planted and 150 willow stakes and 500 sedge plugs were installed along 546 feet of stream. In 2010, 340 additional trees and 200 stakes were installed. In 2012, potted stock was planted along 900 feet on the left streambank. An additional 319 ft. of willow clump planting at the first meander bend was planned; willow clumps will be installed in 2015.

Site 2. Tompkins Riparian Project: Replant a large section of Batavia Kill adjacent to Tompkins Quarry.

GCSWCD Staff: Weyeneth
Project Partners: GCSWCD, NYCDEP, Landowner
Project Funding: NYCDEP CSBI, GCSWCD, Landowner
Project Schedule: Scheduled to construct in 2015
SMP Recommendation: Batavia Kill – Riparian Buffer-03 (Very High, 3.46), 07 (Very High, 3.08), 11 (High, 2.69)
Date Added to Action Plan: 2009

Progress: Project on hold due to a change in ownership from Tompkins Quarry to the Town of Ashland. A planting plan has been developed and GCSWCD will obtain landowner agreement with Town of Ashland to proceed with planting.

Site 3. Benjamin Property Planting: Catskill Streams Buffer Initiative - Restore approximately 300 linear feet of streamside vegetation along the East Kill.

GCSWCD Staff: Weyeneth
Project Partners: GCSWCD, NYCDEP, Landowner
Project Funding: NYCDEP CSBI, GCSWCD
Project Schedule: Constructed in 2012, Planting 2015
SMP Recommendation: East Kill Stream Management Plan 6.7.1, 6.7.4, 6.7.8 Riparian Zone Management
Date Added to Action Plan 2012

Progress: GCSWCD has a 5 year landowner agreement for this property. Stream channel was restored by county highway department. GCSWCD installed willow stakes along 300 ft. of streambank to reestablish vegetation that washed out in Irene flooding. Additional trees and shrubs will be planted on the site. Project site will be evaluated to determine vegetation needs in 2015.

Site 4. Windham Country Club Riparian Planting: Catskill Streams Buffer Initiative - Restore approximately 1,000 linear feet of streamside vegetation along the Batavia Kill in Windham.

GCSWCD Staff: Weyeneth
Project Partners: GCSWCD, NYCDEP, Landowner
Project Funding: NYCDEP CSBI, GCSWCD, Landowner
Project Schedule: Determination of Status in 2015
SMP Recommendation: Batavia Kill – Riparian Buffer-03 (Very High, 3.46), 07 (Very High, 3.08), 11 (High, 2.69)
Date Added to Action Plan: 2013

Progress: GCSWCD will write a Riparian Corridor Management Plan for this property, develop the project design, and obtain a 5 year landowner agreement for this property. Installation of approximately 500 trees and shrubs was planned, however, the property was sold and riparian restoration plans were put on hold. The new landowner, Windham Mountain, has not responded with any interest in proceeding with installing native trees or shrubs along the streamside areas.

Site 5. Windham Path Riparian Project: Catskill Streams Buffer Initiative – riparian plantings totaling approximately 2,400 feet in length, with buffer widths varying from 45 feet to 100 feet, covering an area of 4.49 acres, at multiple locations along tributaries of the Batavia Kill in Windham. This planting project will enhance the riparian zone in six locations along the Windham Path.

GCSWCD Staff: Weyeneth
Project Partners: GCSWCD, NYCDEP, Town of Windham
Project Funding: NYCDEP CSBI, GCSWCD
Project Schedule: Berm removal and riparian planting in 2015.
SMP Recommendation: Batavia Kill – Riparian Buffer-03 (Very High, 3.46), 07 (Very High, 3.08), 11 (High, 2.69)
Date Added to Action Plan: 2013

Progress: GCSWCD has completed a Riparian Corridor Management Plan for this property and has obtained a landowner agreement for this property. GCSWCD hosted a volunteer planting in the spring of 2013 and installed 1,028 native trees and shrubs along 1,375 feet of stream. 2.41 acres were restored at three planting locations. Phase 1 is complete. Phase two will include removal of a berm and a riparian planting in 2015.

Site 6. Prattsville Ball Field: Catskill Streams Buffer Initiative - Restore approximately 300 linear feet of streamside vegetation along the Batavia Kill just upstream of the confluence with the Schoharie Creek in Prattsville at the Everett Conine Memorial Field. Plant an additional 550 linear feet of streamside vegetation along the Schoharie Creek at the same property.

GCSWCD Staff: Weyeneth
Project Partners: GCSWCD, NYCDEP, Town of Prattsville
Project Funding: NYCDEP CSBI, GCSWCD

Project Schedule: Construct in 2015
SMP Recommendation: Schoharie/East Kill – RZM-6.7.1, RZM-6.7.2, RZM-6.7.3, RZM-6.7.4, RZM-6.7.6, RZM-6.7.7, RZM 6.7.8, RZM-6.7.9, RZM-6.7.10, RZM-6.7.11, RZM-6.7.12, RZM-6.7.13, GSMA-6.8.2
Date Added to Action Plan: 2014
Progress: GCSWCD will write a Riparian Corridor Management Plan for this property and obtain a landowner agreement with the town prior to project installation. Project is on hold due to park and trail construction.

Site 7. Former Kastanis Property Planting Phase 2: Catskill Streams Buffer Initiative – Reestablish a forested riparian buffer 100 feet wide along 1,200 feet of the Batavia Kill was planted in 2009 as a Streamside Assistance Program Pilot Project to restore approximately 7.1 acres of streamside vegetation along the Batavia Kill.

GCSWCD Staff: Weyeneth
Project Partners: NYCDEP, GCSWCD, Landowner
Project Funding: NYCDEP, GCSWCD
Project Schedule: Build in 2015
SMP Recommendation: Batavia Kill – RB-03 (Very High, 3.46), RB-07 (Very High, 3.08), RB-11 (High, 2.69)
Date Added to Action Plan: 2014
Progress (2009): GCSWCD received a land use permit with NYCDEP to plant approximately 5.25 acres in 2014. GCSWCD has obtained a Land Use and herbicide permit to reestablish a forested riparian buffer along the Batavia Kill and treat the Japanese knotweed, respectively.

Site 8. Chase Property Planting: Catskill Streams Buffer Initiative - Restore approximately 200 linear feet of streamside vegetation along a Batavia Kill tributary in Hensonville.

GCSWCD Staff: Weyeneth
Project Partners: GCSWCD, NYCDEP, Landowner
Project Funding: NYCDEP CSBI, GCSWCD
Project Schedule: Construct in 2015
SMP Recommendation: Batavia Kill – Riparian Buffer-03 (Very High, 3.46), 07 (Very High, 3.08), 11 (High, 2.69)
Date Added to Action Plan: 2014
Progress: GCSWCD will write a Riparian Corridor Management Plan for this property and obtain a landowner agreement prior to project installation.

Site 9. Grossman Property Planting: Catskill Streams Buffer Initiative - Restore approximately 300 linear feet of streamside vegetation along a Schoharie Creek tributary in Hunter.

GCSWCD Staff: Weyeneth, Langworthy
Project Partners: GCSWCD, NYCDEP, Landowner
Project Funding: NYCDEP CSBI, GCSWCD
Project Schedule: Assess and Construct in 2015
SMP Recommendation: Schoharie/East Kill – RZM-6.7, GSMA-6.8.2
Date Added to Action Plan: 2014
Progress: GCSWCD has conducted an initial survey to complete a bioengineering design. GCSWCD will resurvey and design bank treatments prior to planting 180 native trees and shrubs in 2015.

Site 10. Saenger Property Planting: Catskill Streams Buffer Initiative - Restore approximately 4,500 square feet of streamside vegetation along a Schoharie Creek tributary in Hunter.

GCSWCD Staff: Weyeneth
Project Partners: GCSWCD, NYCDEP, Landowner
Project Funding: NYCDEP CSBI, GCSWCD
Project Schedule: Assess and install in 2015
SMP Recommendation: Schoharie/East Kill – RZM-6.7, GSMA-6.8.2
Date Added to Action Plan: 2015
Progress: GCSWCD has conducted an initial site visit to develop planting recommendations. Volunteers will plant approximately 100 native trees in shrubs to establish riparian vegetation along the tributary.

B. Stream Restoration Projects and Modifications: The GCSWCD and NYCDEP will complete the following stream restoration projects. The GCSWCD and NYCDEP will also work cooperatively with the Schoharie Watershed Advisory Committee (SWAC) and others to identify additional sites. Projects are contingent on available funding, proper design, landowner cooperation and appropriate environmental and weather conditions. Implementation of these projects includes assessment, design, permitting, contracting, and construction oversight.

Site 1. Kozak Streambank Stabilization and Riparian Planting: Located along the Schoharie Creek, this project involves addressing 750 linear feet of erosion with clay exposures by grading the bank and stabilizing the toe with rock and bioengineering treatments. The proposal also includes creating a 50 foot wide riparian buffer by planting native tree and shrub species.

GCSWCD Staff: Buchanan, Langworthy
Project Partners: GCSWCD, NYCDEP, Landowner
Project Funding: SMIP Round 4, NYCDEP/GCSWCD Schoharie SMP Contract
Project Schedule: Construct in 2015
SMP Recommendation: Schoharie – Flood Protection 6.1.11, 6.1.12; Water Quality 6.3.11
Date Added to Action Plan: 2011
Progress: Awarded SWAC SMIP funds March 2011. Site was assessed in summer 2011. Due to Hurricane Irene (August 2011), the site required additional assessment and was topographically surveyed in the winter of 2015. The planning, assessment, permitting and design are currently in progress and upon approval by the regulatory agencies and landowners the project will be constructed in the summer of 2015.

Site 2. Shoemaker Project Repairs: Damages sustained to the Shoemaker project on the West Kill are scheduled for continued repair work in 2015.

GCSWCD Staff: DuBois
Project Partners: GCSWCD, NYCDEP, Landowners, FEMA
Project Funding: Schoharie SMP Contract, FEMA, NYCDEP/GCSWCD
Project Schedule: Survey 2012, Design 2013, Construct 2014 and 2015
SMP Recommendation: West Kill Stream Management Plan 6.8.7 Stream Stability Restoration
Date Added to Action Plan: 2012
Progress: Construction began in the fall of 2014. Construction was suspended at the end of October as the permit window expired. Construction is expected to resume in the 2015 construction season.

Site 3. Big Hollow Project Repairs: Damages sustained to the Big Hollow project on the Batavia Kill are scheduled for repair work in 2015.

GCSWCD Staff: Buchanan
Project Partners: GCSWCD, NYCDEP, Landowners, FEMA
Project Funding: FEMA, NYCDEP/GCSWCD Schoharie SMP Contract
Project Schedule: Survey 2012, Design 2013, Construct 2014
SMP Recommendation: Batavia Kill Stream Management Plan NO. SC -02, SC- 07
Date Added to Action Plan: 2012
Progress: Design, permitting and bidding were completed in 2013 and upon approval by a single landowner, construction will be performed in the summer of 2015.

Site 4. Manor Kill Stream Restoration: This project entails a stream bank restoration project adjacent to the Conesville Town Park in order to stabilize eroding streambanks and protect water quality by reducing fine sediment sources.

SCSWCD Staff: Nichols
Project Partners: SCSWCD, GCSWCD, NYCDEP, Town of Conesville
Project Funding: NYCDEP/GCSWCD Schoharie SMP Contract
Project Schedule: Design and construct 2015
SMP Recommendation: Manor Kill SMP 5.3 Water Quality and 5.2 Public Recreation
Date Added to Action Plan: 2015
Progress: The NYCDEP and SCSWCD are working with Milone and MacBroom Inc. on assessment, design, permitting and implementation of the Manor Kill Stream Restoration Project. The project also involves a potential property buyout and connection to the Town of Conesville recreation park with access for fishing included. Construction is planned for 2015.

III. Creative Stormwater Practices and Critical Area Seeding

In order to reduce runoff and protect groundwater resources in the basin, the GCSWCD and NYCDEP support promoting the infiltration of stormwater through erosion and sediment control techniques such as hydroseeding of open ditches, stormwater techniques to infiltrate water into the ground, wetland enhancement, filter strips, and creation of rain gardens and bioswales to manage stormwater. The GCSWCD will work with multiple partners to implement stormwater projects within the Schoharie Watershed. Creative Stormwater Practices and Critical Area Seeding action items include, but are not limited to:

A. Kaaterskill United Methodist Church Stormwater/Rain Harvesting Project: (Village of Tannersville) Several BMP's are proposed to treat the water quality of the roof drainage and provide storm water infiltration. BMPs include rooftop rain harvesting (gutter system), and above ground cistern to capture the runoff and serve as a water source for the community garden, and four rain gardens to provide stormwater filtration and infiltration. These components were selected based on existing land uses, physical feasibility, cost, and treatment capability and performance. Ease of maintenance, and educational benefits were also considered. Preference was given to infiltration and filtering practices.

| | |
|----------------------------|--|
| GCSWCD Staff: | Buchanan |
| Project Partners: | NYCDEP, Kaaterskill United Methodist Church |
| Project Funding: | NYCDEP SMIP Round #10 |
| Project Schedule: | Completion of project design in 2015. |
| SMP Recommendation: | Batavia Kill WQ-08 (Very High, 4.23); Schoharie – WQ-6.3.7, PR-6.2.3 |
| Date Added to Action Plan: | 2015 |
| Progress: | A conceptual design is complete and detailed design and estimates will be performed winter 2015. Project construction is planned for 2016, |

IV. Highway and Infrastructure Improvements

During development of SMPs for the various sub-basins, the GCSWCD, NYCDEP, and the SWAC Highway and Infrastructure Subcommittee identified a number of recommended actions that would provide water quality protection. Maintaining high water quality in the Schoharie Creek and its associated tributaries will provide multiple benefits including, improved recreational use, supplying quality drinking water, and enhancing the ecological health of the stream systems. Water quality protection activities may be site-specific, community-wide, or basin-wide. Highway and Infrastructure Improvements action items include, but are not limited to:

A. Glen Avenue Culvert Upgrade: The existing culvert under Glen Avenue located near the entrance of Camp Loyaltown is undersized, contributing to damage of the roadway, erosion, and roadway flooding during high flows. Culverts upstream of this one are drastically larger further indicating this culvert is undersized. The GCSWCD will work with the Village of Hunter Highway Department to design a properly sized culvert with a buried bottom for improved habitat, and oversee the installation of this culvert.

| | |
|----------------------------|--|
| GCSWCD Staff: | Buchanan |
| Project Partners: | Village of Hunter Highway Department, NYCDEP, SWAC Highway/Infrastructure Subcommittee |
| Project Funding: | SMIP Round 4 |
| Project Schedule: | Survey in 2011, design 2013, installation in 2015 |
| SMP Recommendation: | Schoharie – Flood Protection 6.1.11 |
| Date added to Action Plan: | 2011 |

Progress: A SMIP grant was approved to offset costs of upgrading this culvert size and creating a buried culvert bottom. Culvert and roadway were damaged in Hurricane Irene, The assessment, planning, design and permitting were finalized in the spring of 2014 and construction is planned for the fall of 2015.

B. Cranberry Road Culvert Upgrade: The existing culvert under Cranberry Road is undersized, contributing to flooding of the roadway during high flows. The culvert is also substantially perched, which presents a barrier for fish passage. The GCSWCD will work with the Town of Hunter Highway Department to design a properly sized culvert and oversee the installation of this culvert.

GCSWCD Staff: Buchanan
Project Partners: Town of Hunter Highway Department, NYCDEP, SWAC Highway/Infrastructure Subcommittee
Project Funding: SMIP Round 3, Town of Hunter Highway Department
Project Schedule: Design in early 2012, installation in summer 2015
SMP Recommendation: Schoharie – Flood Protection 6.1.11
Date added to Action Plan: 2011

Progress: A grant was approved by the SWAC SMIP to offset costs of upgrading this culvert, and correcting its perched condition. Survey, design and permitting are complete and construction is planned for the summer of 2015.

C. Schoharie Watershed Stream Crossing/Culvert Design: A second component to the E/O workshop above (Schoharie Watershed Stream Crossing Workshop) is setting aside \$50,000 for engineered design services on retainer to work with towns to ensure prioritized culverts are designed properly.

GCSWCD Staff: Flack, Education & Outreach Coordinator
Project Partners: Highway superintendents subcommittee, SWAC, NYCDEP
Project Funding: SMIP Round 3, NYCDEP/GCSWCD Schoharie SMP Contract
Project Schedule: RFP in Fall 2011: funded design for the following culverts to be constructed: Griffin rd.(Jewett, 2012), Partridge Ridge (Ashland, 2011), Cranberry rd (Hunter, 2014) and Glen Ave (Village of Hunter, 2014).
SMP Recommendation: Schoharie – Water Quality 6.3
Date added to Action Plan: 2011

Progress: Currently the Cranberry road (Hunter), Glen avenue (Village of Hunter), South Gilboa rd (Gilboa) and Beech Ridge rd (Lexington) projects are being designed using these monies. The culverts are being upgraded to allow for proper conveyance and passage of aquatic organisms.

D. Mitchell Hollow Rd (CR 21) Stormwater Sewer Upgrade: Install water quality treatment components associated with 370' of stormwater sewer with catch basins along Mitchell Hollow Rd. to mitigate stormwater flooding in area along NYS Route 23.

GCSWCD Staff: Flack
Project Partners: County Highway Department, Town of Windham, SWAC, NYCDEP
Project Funding: SMIP Round 3, NYCDEP/GCSWCD Schoharie SMP Contract
Project Schedule: Design in 2013, Construction 2014
SMP Recommendation: Schoharie – Water Quality 6.3
Date added to Action Plan: 2010

Progress: The roadway stormwater and outlet protection was installed in 2014 and the added water quality treatment is being design and constructed in 2015.

E. Street Sweeper with Vacuum: After the winter season, highway crews sweep road abrasives (sand) using different machines. Some communities have their own outdated sweepers (Villages of Hunter and Tannersville), others brush the material aside with a broom. Greene County owns a sweeper with a vacuum that is effective at collecting leftover sand material and cleaning out stormwater structures. Given its limited availability during certain times of the year, purchasing

another one for the mountaintop communities was recommended by the highway subcommittee which would allow more road miles to be cleaned and maintained across the Mountaintop, therefore reducing the amount of abrasives washing into ditches and waterways.

GCSWCD Staff: Flack, Yost
Project Partners: Highway departments, Cornell Local Roads Program, SWAC Highway/Infrastructure Subcommittee
Project Funding: CWC, SMIP Round 1
Project Schedule: 1. Research the cost of purchasing a street sweeper with a vacuum.
2. Investigate the feasibility of providing, storing and coordinating shared access to the street sweeper.
SMP Recommendation: Schoharie – Water Quality 6.3.5
Date added to Action Plan: 2009
Progress: Application was submitted to CWC stormwater retrofit program in August 2010 and subsequently put on a waiting list until other projects were completed and CWC's new contract registered with DEP. New Stormwater program rules were released in Dec. 2014, the annual application deadline is October 1, a new application needs to be submitted with updates to the budget, A local match is no longer required, however, the application will rank higher if a cost share is included. Greene County Highway will oversee and operate the unit, and store it at either the Ashland or Hunter facility (allowing the other unit to be shared with fewer municipalities). As the program rules were revised with CWC's contract renewal, a new application will be required and submitted in 2015.

F. South Gilboa Road Stormwater Mitigation Project: This project will replace a culvert that conveys stream flow from an unnamed tributary to the Schoharie Reservoir under South Gilboa Road. The SCSWCD will work with the Schoharie County Department of Public Works, NYCDEP and Milone and MacBroom to design and install a culvert that will provide for the appropriate alignment and structure to convey flow and provide better continuity of the floodplain associated with the wetlands and stream channel.

SCSWCD Staff: Nichols
Project Partners: Schoharie County Department of Public Works, SCSWCD, NYCDEP, GCSWCD, Private Consultant
Project Funding: SMIP Round 11
Project Schedule: Design and installation, 2015
SMP Recommendation: Schoharie – Flood Protection 6.1.11; Manor Kill – Flood Protection 5.1.11
Date added to Action Plan: 2015
Progress: A SMIP grant was approved replace the existing culvert and improve the alignment. Culvert and roadway were damaged during high flows. The assessment, planning, design and permitting will be finalized in the spring of 2015 and construction is planned for fall, 2015.

V. Planning and Assessment

During development of SMPs for the various sub-basins, the GCSWCD and NYCDEP identified a number of recommended actions that would require additional planning and assessment at various scales. Planning may be site-specific, community-wide, basin-wide or on the county level. Assessments may range from remote assessment of streams and their watersheds to site-specific streambank assessments, and will include survey and monitoring of various locations and project sites. Planning and Assessment action items include, but are not limited to:

A. Town of Hunter Land Use Regulation Review & Development Guidelines: Conduct detailed review of current land use regulations with intent of adopting revisions, new regulations &/or guidelines promoting low impact design, climate smart and smart growth principles. In the absence of zoning, the town is seeking to investigate, and adopt as appropriate, innovative land use practices which will be an incentive to achieve desirable future growth. The town is participating in proactive planning efforts (Climate Smart Action Plan, Hunter Regional Corridor Study, expansion of designated hamlets, Scenic Byways, Stream Management Plans), and this project would integrate the planning principles amongst the individual plans (low impact development, climate smart, & smart growth) and position the town to adopt changes to current regulations, propose new local rules and regulations as relevant and create detailed guidance resources for planning board and developers.

| | |
|----------------------------|--|
| GCSWCD Staff: | Yost, Martin |
| Project Partners: | Greene County IDA, Town of Hunter |
| Project Funding: | SMIP Round 2 |
| Project Schedule: | Approved for SMIP funding in March, 2010; Combined with MBSDW efforts 2012; Develop guidelines 2014-2015 |
| SMP Recommendation: | Schoharie – Programmatic Approach 6.5.3 |
| Date Added to Action Plan: | 2010 |
| Progress: | Awarded \$35,000 SWAC SMIP funding in March 2010, contract and scope of work completed with the Town of Hunter; project was on hold until the Town hired a new consultant, Delaware Engineering. Project commenced in June 2014, with expected completion in 2015. A land use committee was formed to guide the process and make recommendations for local code improvement including revisions to the town site plan law. The review of current land use regulations has been completed and revisions are in process in 2015. |

B. Tributary Stream Inventory and Assessment: While existing SMPs cover the main stem of most major stream systems within the Schoharie Watershed, they do not address any tributaries to these systems. Therefore, less than 10% of total stream miles have been inventoried, assessed and planned. Inventory and assessment of tributaries is an on-going priority, although assessment of the tributaries and the subsequent planning efforts may not be at the same level as those efforts conducted along the main stems. In 2009-2010, the GCSWCD/NYCDEP worked to develop a condensed SMP planning process to include assessment of baseline conditions and an abbreviated SMP. This methodology should be applied to prioritized tributaries.

| | |
|----------------------------|---|
| GCSWCD Staff: | Martin |
| Project Partners: | NYCDEP, |
| Project Funding: | NYCDEP/GCSWCD Schoharie SMP Contract |
| Project Schedule: | 1. Developed protocol for inventory & assessment, spring 2009 2. 2009 – North Settlement, Furnace Creek, Mitchell Hollow Brook (Mad Brook) 3. 2015 – abbreviated SMPs (North Settlement, Furnace Creek, Mitchell Hollow (Mad) Brook) 3. 2016 – Two small tributaries TBD |
| SMP Recommendation: | Schoharie – Water Quality 6.3.8, 6.3.11; West Kill – Water Quality 6.3.8 |
| Date Added to Action Plan: | 2007 |

Progress: The GCSWCD and NYCDEP have identified three tributaries that were assessed during the 2009 field season; these include North Settlement Creek, Furnace Creek (along Dent Road) and Mad Brook (Mitchell Hollow Brook). Historical alignments, riparian vegetation mapping, watershed analysis and Geodatabases were completed in 2010. Abbreviated Stream Management Plans are expected to be completed in 2015.

C. Fisheries Assessment & Improvements Strategy: During development of SMPs for the various sub-basins, the GCSWCD and NYCDEP identified the need for further evaluation of fisheries and the importance of developing a comprehensive strategy to improve fish habitat. Improvements to fisheries would also provide economic and water quality benefits. In order to effectively evaluate basin fisheries, the GCSWCD and NYCDEP recognize the need for additional funding, increased coordination with potential project partners, and an understanding of the appropriate field methodologies.

GCSWCD Staff: Martin
Project Partners: NYCDEP, NYSDEC, Greene County Promotions, municipalities, Trout Unlimited, others
Project Funding: TBD, NYCDEP/GCSWCD Schoharie SMP Contract
Project Schedule: 1. Research potential funding sources, 2015.
2. Identify appropriate field methodologies, 2015.
3. Coordinate fisheries assessment, 2015.

SMP Recommendation: Batavia Kill – Public Enjoyment-04 (Medium, 0.38), Fisheries Habitat-03 (High, 2.31); Schoharie – Public Recreation 6.2.1, 6.2.2, 6.2.; Fisheries Habitat-6.6.1, 6.6.2, 6.6.3, 6.6.4, 6.6.5; General Stream Management Activities-6.8.8; West Kill – Fishery Habitat 6.6, 6.6.1, 6.6.2

Date Added to Action Plan: 2007

Progress: Public access maps were created during the stream management planning process and a thermal study was completed through the SMIP. Working through the SWAC Habitat and Recreation Subcommittee the GCSWCD will prioritize recommendations for fisheries improvements in 2015.

D. Project Monitoring: The GCSWCD will continue to monitor previously constructed stream restoration sites to document the projects status and performance. Monitoring will include measurements and analysis of geomorphic form, rock structures, and vegetation. Monitoring will be performed in accordance with ACOE permit requirements as well as GCSWCD/NYCDEP annual assessments of the need for additional monitoring. Data will be collected to monitor project stability and vegetation establishment.

- 1. Monitoring of Restored Stream Reaches (2015):** Annual monitoring of restored stream reaches provides valuable information on the effectiveness of restoration practices in addition to fulfilling the permit requirements associated with these projects. Monitoring includes a visual inspection of the reach, photo documentation, pebble counts, and a survey of monumented cross sections and the longitudinal profile.

GCSWCD Staff: Langworthy
Project Partners: NYCDEP, GCSWCD
Project Funding: NYCDEP/GCSWCD Schoharie SMP Contract
Project Schedule: Monitor annually
SMP Recommendation: Schoharie – Water Quality 6.3.11, Riparian Zone Management 6.7.2; West Kill – Management Unit Recommendations 4.10, 4.11

Date Added to Action Plan: 2009

Progress: Nine (9) sites were monitored in 2014. The 2014 project monitoring sites included Ashland Well Head (Batavia Kill), Maier Farm 2013 Repairs (Batavia Kill), Conine 2013 Repairs (Batavia Kill), Sugar Maples (Batavia Kill), Holden (Batavia Kill), CR 6 (West Kill), CR 42 (West Kill), Vista Ridge (East Kill), and Apple Hill (East Kill). The 2014 Sugar Maples monitoring also included a full as built in accordance with the ACOE requirements for the 5th and final year of monitoring. The 2015 monitoring season will include eleven (11) sites. The scheduled monitoring sites for 2015 include Ashland Well Head (Batavia Kill), Brandywine/Ashland Connector Reach 2014 repairs (Batavia Kill),

Maier Farm 2013 Repairs (Batavia Kill), Conine 2013 Repairs (Batavia Kill), Holden (Batavia Kill), CR 6 (West Kill), CR 42 (West Kill), Long Road (West Kill), Vista Ridge (East Kill), Apple Hill (East Kill), and the Lanesville 2014 repairs (Stony Clove).

2. **Vegetation Monitoring (2015):** Annually, the GCSWCD and project partners monitor the native riparian vegetation that has been installed along streambanks within the West of Hudson New York City Watershed. Riparian plantings are completed in conjunction with the installation of natural channel designed (NCD) stream restoration projects. Vegetation provides for increased stability as trees and shrubs continue to mature, and is a critical component to the long-term success of these types of projects. Additionally, the Catskill Streams Buffer Initiative (CSBI) helps residential landowners protect their property and preserve natural habitat along streambanks by cultivating strong streamside buffers that use vegetation native to the Catskill region. Annual monitoring of restored stream reaches provides valuable information on the effectiveness of restoration practices in addition to fulfilling the permit requirements associated with these projects. Annual monitoring of CSBI projects provides valuable information on the effectiveness of riparian plantings. Vegetative monitoring of restored stream reaches and CSBI projects includes, photo-documentation, vegetative health observations and measurements to document vegetative cover, vigor, growth rates and survival of planted vegetation.

GCSWCD Staff: Weyeneth
Project Partners: NYCDEP, GCSWCD
Project Funding: NYCDEP/GCSWCD Schoharie SMP Contract
Project Schedule: Monitor annually
SMP Recommendation: Schoharie – Water Quality 6.3.11, Riparian Zone Management 6.7.2; West Kill – Management Unit Recommendations 4.10, 4.11

Date Added to Action Plan: 2014

Progress: In 2014, vegetation monitoring was conducted for four stream restoration projects including, Conine, Holden, Vista Ridge and Apple Hill. In 2015, vegetation monitoring will continue at nine stream restoration project sites including, Ashland Wells, Brandywine/ACR, Maier, Conine, Holden, Vista Ridge, Apple Hill, Long Road and Lanesville. In 2014, vegetation monitoring was conducted for five CSBI projects including, Hensonville, Cervini, Torsiello/Hegner, Slutzky and Cole. Five CSBI project sites including, Kelly, Enochty, Higgins, Wilkie and Donnelly were monitored using photo documentation. In 2015, CSBI vegetation monitoring will continue at 10 project sites including, Kastanis, Kane, McRoberts, Avella, Brunsdon, Valenti, Mayo, Hensonville, Benjamin and Cole; 2016: Toriello, Cervini, Kelly, Slutzky, Hegner; Donnelly, Wilkie, Enochty, Higgins, Windham Path, Dodson, + any projects installed in 2015
2017: Mayo, Hensonville, Benjamin, Cole, + projects installed in 2016

VI. Recreation and Stream Habitat Improvements

In the general recommendations of all SMPs, enhanced public access to streams for recreational purposes was identified as a priority. The GCSWCD already has a number of these projects underway, and between 2011 and 2013 will continue to move forward with these projects. Assessing, protecting and improving fish habitat have also been recommended in the SMPs, and many of the following action items were developed by the SWAC Recreation and Habitat Improvement subcommittee. Recreation and Stream Habitat Improvements action items include, but are not limited to:

A. Schoharie Creek Park (Town of Lexington): The GCSWCD has been assisting the Town of Lexington with the development of a small “pocket park” to be located on the Schoharie Creek. Components of the project included the permanent removal of a derelict house right on the streambank, cleaning up weedy growth, enhancement of riparian vegetation and installation of low impact improvements such as demonstrative plantings, informational signage and stream access.

GCSWCD Staff: Weyeneth
Project Partners: NYCDEP, Town of Lexington, Greene County, Trout Unlimited, SWAC others
Project Funding: SMIP Round 3, NYCDEP/GCSWCD Schoharie SMP Contract, Town of Lexington, ACOE-(WRDA)

Project Schedule: Install sign, 2015
SMP Recommendation: Schoharie – Public Recreation-6.2.2, 6.2.3; Riparian Zone Management 6.7.4, 6.7.7
Date Added to Action Plan: 2010
Progress: Building removal and cleanup was completed during the summer of 2007. The Town of Lexington submitted a SWAC SMIP grant which was approved in August of 2010 for demonstrative plantings, fencing and signage. The plantings were installed in 2010, and then repaired in 2012 following Irene-related damages. In 2012, split rail fencing to define the park and protect the plantings was also installed, and the signage will be installed in 2015.

B. Windham Path Phase 2. The Windham Area Recreation Foundation will expand the Windham Path, a 1.3 mile non-motorized, multi-use recreational trail in the Town of Windham near the Batavia Kill. Phase 2 will extend the trail to the Route 296/South Street business district.

GCSWCD Staff: Yost
Project Partners: Town, NYCDEP, GCSWCD-WAP, Windham Area Recreation Foundation (WARF)
Project Funding: SMIP Round 10, Town of Windham, NYCDEP/GCSWCD Schoharie SMP Contract; WARF
Project Schedule: Complete, 2015
SMP Recommendation: Batavia Kill – Public Enjoyment 03, 01; Schoharie – Public Recreation 6.2.3, 6.2.2
Date Added to Action Plan: 2015
Progress: A SMIP grant was approved in December, 2014 to cover the cost of materials for two small wooden footbridges that will cross wet areas along the path, and a trailhead sign and kiosk on Route 296. Contracting and scope of work are complete. Construction is scheduled for 2015.

C. Conesville Town Park Walking Path. The SCSWCD will work with Town of Conesville to rehabilitate the existing walking path in the Conesville Town Park.

SCSWCD Staff: Nichols
Project Partners: Town, NYCDEP, SCSWCD, consultants
Project Funding: SMIP Round 10, Town of Conesville, NYCDEP/GCSWCD Schoharie SMP Contract
Project Schedule: Design, permit, construct, 2015
SMP Recommendation: Manor Kill – Public Recreation 5.2; Schoharie – Public Recreation 6.2.3, 6.2.2
Date Added to Action Plan: 2015
Progress: A SMIP grant was approved in December, 2014 to rehabilitate the Conesville Town Park walking path. The design, permitting and construction of the path will be combined with the Manor Kill Stream Restoration Project.

D. Lexington Riverfront Access Park: The Town of Lexington plans to expand the Schoharie Creek Park (Lexington Pocket Park) by purchasing two additional parcels, along County Route 13A, through the FEMA Property Acquisition Program. The project aims to enhance public outdoor recreation and education along the Schoharie Creek within the Town of Lexington. Components of the project may include a low impact path, a shade structure, and signage/informational kiosk.

GCSWCD Staff: Yost
Project Partners: NYCDEP, Town of Lexington, Greene County, SWAC, FEMA, NYDOS
Project Funding: SMIP Round 11, Town of Lexington, NYDOS LTRG
Project Schedule: FEMA approvals 2015; Design, permitting and construction contingent upon FEMA approvals
SMP Recommendation: Schoharie – Public Recreation-6.2.2, 6.2.3
Date Added to Action Plan: 2015
Progress: The Schoharie Watershed Advisory Committee approved funding the riverfront access park contingent upon FEMA, and other regulatory, approvals for development of park-like amenities on FEMA buyout parcels.

VII. Flood Hazard Mitigation

Flooding produces a variety of hazards and impacts to public safety, homes and businesses, infrastructure (roads, utilities, etc.) and the natural environment. It can have direct impacts on water quality, including contamination from dislodged fuel and chemical storage tanks, mobilization of household waste and toxic substances, excessive riverine erosion and massive hill slope failures. As such, flood hazard mitigation – the work of reducing the impacts from flooding - supports the social, economic and environmental interests of communities in the NYC watershed.

A. Local Flood Analysis (LFA): Local Flood Analysis (LFA) is undertaken to determine the causes of flooding, investigate and analyze the overall potential of specific projects, and projects in combination, in an attempt to mitigate flood damages and hazards. It is anticipated this analysis will prioritize projects for further SMIP and CWC funding.

GCSWCD Staff: Yost, Flack
Project Partners: Towns, NYCDEP, GCSWCD, CWC others
Project Funding: NYCDEP/GCSWCD Schoharie SMP Contract, CWC
Project Schedule: 1. Complete LFA for interested municipalities
2. Identify feasible alternatives
3. Complete projects
SMP Recommendation: Manor Kill – Section 5.1, Schoharie Creek West Kill and East Kill SMPs – Section 6.1, Batavia Kill SMP – Section 8(a)
Date Added to Action Plan: 2013
Progress: LFA projects are nearing completion in Lexington (started February 2014) and Windham (March 2014). Flood Advisory Committees (FAC) are assessing alternatives for possible flood reductions in the population centers of both towns. Lexington’s final report is drafted for review and adoption and the consultant is in the process of developing BCA’s for the identified Windham alternatives. Conesville is forming a FAC, developing an RFP and applying for LFA funds in 2015. These committees will also provide input for the 2015-2016 updating of Greene County’s All Hazard Mitigation Plan. Hazard Mitigation Grant Program applications were submitted in October 2013 to NYS SEMO for conducting LFA’s in the Village of Hunter and Tannersville. Prattsville’s LFA is completed and the Town is prioritizing projects for implementation and funding programs.

B. Hazard Mitigation Grant Program Flood Buyout Program: The GCSWCD is facilitating a FEMA flood buyout program for nineteen eligible landowners in six towns following Hurricane Irene in Aug. 2011. NYCDEP is participating in the program by covering the 25% non-federal match for watershed properties. For those that go through with a buyout, all structures are removed from the property and a deed restriction and conservation easement are issued maintaining the property in perpetuity as open floodplain space, therefore eliminating future flood damage to the parcel.

GCSWCD Staff: Yost, Flack
Project Partners: NYCDEP, SEMO, FEMA, Greene Co. Economic Devt, Tourism and Planning, Watershed Towns
Project Funding: FEMA/SEMO, NYCDEP
Project Schedule: 2013 – appraisals and preliminary soft costs (title report and insurance, environmental assessment, property survey)
2014 and 2015 – demolition plan for properties which still have structures. For vacant properties, commence closings.
SMP Recommendation: Manor Kill – Section 5.1, Schoharie Creek West Kill and East Kill SMPs – Section 6.1, Batavia Kill SMP – Section 8(a)
Date Added to Action Plan: 2013
Progress: State Agreements, Memorandums of Understanding with NYCDEP, the County and Towns and purchase contracts with landowners have been completed, as well as demolition and property management plans. Demolition plans have been approved

and closings are underway. NYS Office of Emergency Management is the contracting entity with FEMA and NYSOEM sub-contracts with Greene County. Greene County SWCD is performing the day to day functions of the program. Twenty-three properties in eight towns across the County are active in the buyout program (many more signed up initially but dropped out for various reasons). As of April 2015, nine properties closed and the remaining 14 will complete the program in 2015. Demolition takes place within three months of the closing and the property is restored to its natural floodplain state permanently removing any flood hazard.

VIII. On-going Activities

This section includes the on-going action items that began in 2007 and will continue through the duration of stream management plan implementation efforts. This is a dynamic document that will be modified annually to include additional action items or to update existing items. Efforts were made to make each task measurable within the action plan. However, the following items do not have an end, but rather are ongoing throughout the program.

A. Program Administration and Implementation: The GCSWCD will continue to develop and maintain an effective and efficient process for implementation of the stream management plans for Schoharie Creek and its associated tributaries. This process will help to fulfill the NYCDEP FAD obligations. Development and implementation of the program is an on-going process.

1. **Program Administration:** GCSWCD will provide overall project administration. Specific activities may include contract administration, book keeping, budgeting, schedule development and reporting.

GCSWCD Staff: Flack, Carl-Seebode, Treacy
 Implementation Category: Program Administration and Implementation
 Project Partners: NYCDEP, GCSWCD, MSMA, SWAC
 Project Funding: NYCDEP/GCSWCD Schoharie SMP Contract, Greene County Legislature, Grants, Other funding sources
 Project Schedule: On-going.
 Date Added to Action Plan: 2007
Progress: On-going.

2. **Schoharie Watershed Advisory Committee (SWAC):** The GCSWCD and NYCDEP have worked cooperatively to develop a single, watershed- wide project Advisory team, the Schoharie Watershed Advisory Committee, to help guide SMP implementation. The process by which this committee will guide implementation and allocate funding continues to be developed.

GCSWCD Staff: Martin, Yost
 Implementation Category: Program Administration and Implementation
 Project Partners: NYCDEP, Towns, Villages, Counties, local, county, state and federal agencies, NGO's, landowners
 Project Funding: NYCDEP Contract
 Project Schedule: On-going review of applications March 15th and September 15th each year.
 SMP Recommendation: Schoharie/East Kill – Programmatic Approach -6.5.8; West Kill – Programmatic Approach 6.5.2
 Date Added to Action Plan: 2007
Progress: The Schoharie Watershed Advisory Committee (SWAC) meets between two to three times a year to assist with funding and programmatic decisions associated with the Stream Management Implementation Program. The SWAC was formed in 2008 and represents the collective interests of local government, property owners, watershed agencies, and non-profit organizations, and consists of appointed representatives from each Schoharie Basin municipality, representatives from three subcommittees (Highway Superintendents, Education and Outreach and Recreation and Habitat), a Greene County Legislator and other local, state and federal agencies. The SWAC participates in reviewing applications and has approved 44 projects through eleven grant rounds. Funding rounds will continue through 2017.

B. Local Technical Assistance: The GCSWCD and NYCDEP will work cooperatively to develop program resources and policies to provide technical assistance for municipalities, planning boards, highway departments, developers, landowners and other interested parties. Technical assistance may include, but is not limited to, stormwater planning & retrofit, stream management activities and land use planning.

GCSWCD Staff: Flack, Langworthy
Implementation Category: Program Administration and Implementation
Project Partners: NYCDEP, Greene County Legislature, Local municipalities
Project Funding: NYCDEP/GCSWCD Schoharie SMP Contract, Greene County WAP Funding, Others
Project Schedule: On-going.
SMP Recommendation: Batavia Kill – Stream Corridor-01, Water Quality-08; Schoharie/East Kill – Flood Protection-6.1.2, Programmatic Approach-6.5.1, Riparian Zone Management-6.7.4, Stream Management Activities-6.8.2; West Kill – General Stream Management Activities 6.8.2
Date Added to Action Plan: 2007
Progress: The District and DEP have negotiated a new five year contract 2015-2020, which should register by the summer of 2015. The District continues to administer the county’s FEMA buyout program, as well as traditional stream and stormwater programs.

C. Inter-Agency Coordination: Further coordination between the agencies with stream management responsibilities is a key component of SMP implementation. Specifically, GCSWCD will coordinate with NYSDEC to have all stream disturbance permits (Article 15) undergo an appropriate review by local stream managers; this will help to ensure a high degree of consistency with SMP goals and objectives. To facilitate this process, it is important to provide streamside landowners with resources to help individuals with permit applications and to help develop better alternatives for addressing erosion sites.

NYSDEC/ACOE Permit Reviews: The GCSWCD/NYCDEP will continue to work with NYSDEC and the USACE to facilitate review of stream disturbance permits received by the agencies. The permits will be reviewed for their consistency with SMP goals and objectives and to evaluate stream channel morphology issues.

GCSWCD Staff: DuBois, Buchanan
Implementation Category: Program Administration and Implementation
Project Partners: NYSDEC, NYCDEP, ACOE
Project Funding: NYCDEP/GCSWCD Schoharie SMP Contract
Project Schedule: On-going
SMP Recommendation: Batavia Kill – Programmatic Resources-03 (High, 2.5); Schoharie – Programmatic Approach-6.5.1; West Kill – Programmatic Approach 6.5.4, Riparian Zone Management 6.7.1, 6.7.9
Date Added to Action Plan: 2007
Progress: Permit applications will be reviewed as they come in.

D. Catskill Streams Website – The GCSWCD will continue to provide logistical support in the development and maintenance of the Catskill Streams Website (www.catskillstreams.org) as a valuable tool for sharing information with watershed stakeholders.

GCSWCD Staff: Martin
Implementation Category: Education on Watershed Protection
Project Partners: NYCDEP
Project Funding: NYCDEP/GCSWCD Schoharie SMP Contract
Project Schedule: On-going maintenance and updates as appropriate
SMP Recommendation: Schoharie/East Kill – Education and Outreach 6.4.3; West Kill – Education and Outreach 6.4.2
Date Added to Action Plan: 2007

Progress: The website, Catskillstreams.org, is a comprehensive information source for streamside landowners in the Catskill Mountains. The website is updated regularly to include current resources and reports, and to provide a list of upcoming events. In 2013, CRSR Designs, Inc. updated the format, presentation style and content of the website. The new site went live in February 2014 and will continue to be improved and updated.

E. Community Outreach: Success of SMP implementation requires community awareness and involvement. In order to keep watershed communities and interested stakeholders informed of SMP implementation progress and activities, the GCSWCD and its partners may use a variety of outreach media including newspaper articles, an “e”-newsletter, program print newsletter, brochures, facts sheets, project announcements, media contacts, press releases and kiosks. In addition, in accordance with the MOU between the GCSWCD and local municipalities, GCSWCD is required to provide the municipalities with a detailed action plan of stream management activities in the beginning of each spring. Furthermore, the GCSWCD will regularly report on the status of the annual action plan, and be available at the request of the municipalities to attend meetings, workshops or similar events when the annual action plan or specific items contained therein, require a more detailed understanding by the municipality or its constituents.

GCSWCD Staff: Yost
Implementation Category: Education on Watershed Protection
Project Partners: NYCDEP
Project Funding: NYCDEP/GCSWCD Schoharie SMP Contract, CWC, GCSWCD-WAP, others
Project Schedule: 1. On-going production of educational and outreach materials for dissemination of information
2. Conduct 22 community reviews (One review per community per year) by 2012.
3. Re-appoint SWAC representatives in 2012.

SMP Recommendation: Batavia Kill – Education and Outreach 08, 09, 06, 10; Schoharie/East Kill – Education and Outreach 6.4.2, 6.4.3, 6.4.4, 6.4.5, 6.4.6, 6.4.7, 6.4.8; Flood Protection-6.1.7; West Kill – Education and Outreach 6.4.3, 6.4.4, 6.4.5

Date Added to Action Plan: 2007

Progress: Outreach is ongoing through the GCSWCD and its WAP and consists of newspaper articles, newsletters (print and electronic), and dissemination of educational material to property owners, contractors, and municipal officials. Attendance at municipal and planning board meetings allows WAP staff to provide project updates to municipal leaders and to obtain information on specific municipal needs and issues. In addition, municipal board meetings provide the opportunity to update the municipalities on the progress of stream management plan implementation. MOU reviews are conducted annually with participating municipalities involved in the SMIP. In 2014 GCSWCD began the process to renew the MOU with municipalities, these efforts will continue in 2015. The MOU has been revised to incorporate flood hazard mitigation supports; these changes are being presented to the municipalities during the renewal process. Project summaries are provided on the status of SMIP funded projects for each community.

F. Critical Area Seeding Program: All of the SMPs and the SWAC Highway and Infrastructure subcommittee recommend that local municipalities, county highway departments and NYSDOT should place priority on vegetation management on critical areas such as roadside ditches and steep slopes.

GCSWCD Staff: Flack, Terrill
Implementation Category: Creative Stormwater Practices and Critical Area Seeding
Project Partners: GCSWCD, NYCDEP, County and Municipal Highway Departments
Project Funding: SMIP Round 4, NYCDEP SMP Contract
Project Schedule: On-going - Provide personnel assistance with operation of the hydroseeder.
SMP Recommendation: Batavia Kill – Water Quality 03; West Kill- Water Quality 6.3.3; Schoharie/East Kill – Water Quality 6.3.3; Manor Kill- Water Quality 5.3.3
Date Added to Action Plan: 2009

Progress: The District continues to partner with all highway departments to provide critical area seeding for roadside ditches and slopes using the district’s hydroseeder and power mulcher. In 2013, 9.5 acres were seeded and mulched. In 2014, the seeding program provided seed and mulch for 4 highway sites covering 2,500 square feet and will continue annually.

G. Plant Materials Program: GCSWCD will continue to produce quality native plant materials for its stream restoration projects and riparian buffer plantings.

GCSWCD Staff: Terrill, Sutton
Implementation Category: Landowner Stream Assistance, CSBI
Project Partners: NYCDEP, GCSWCD, Community Volunteers
Project Funding: CSBI, NYCDEP/GCSWCD Schoharie SMP Contract, GCSWCD
Project Schedule: 1. Receive approximately 20,000 Greenbelt plants, 2014
2. Continue native seed program.
SMP Recommendation: West Kill – Riparian Zone Management 6.7.8
Date Added to Action Plan: 2007
Progress: In 2014, there were 20,401 Greenbelt plants delivered and 14,571 of the plants were repotted. The remaining plants, approximately 5,830, will be repotted in 2015.

H. Annual Education and Outreach Plan: The GCSWCD continues to work with NYCDEP and others to develop and implement a comprehensive education and outreach strategy with goals submitted annually in January. The GCSWCD will help identify training needs and plan training activities for a wide range of audiences; training activities may be basin-wide or specific to individual sub-basins.

GCSWCD Staff: Educational Outreach Coordinator, Yost
Implementation Category: Education and Outreach
Project Partners: NYCDEP
Project Funding: NYCDEP SMP Contracts, WAP, CWC
Project Schedule: Goals submitted annually in January, Education efforts are on-going
SMP Recommendation: Batavia Kill – Education and Outreach-01 (Medium, 1.66); Schoharie/East Kill – Education and Outreach-6.4.1; West Kill – Education and Outreach 6.4
Date Added to Action Plan: 2007
Progress: As a sub-set of the WOH Education & Outreach Strategy, the Schoharie Basin's education and outreach programs are guided by the Schoharie Watershed Advisory Committee (SWAC) and the Schoharie Watershed Assistance Program. E & O action items offer watershed stakeholders (local decision-makers, agency regulators, county government, property owners) opportunities to network in small and large groups to learn about current practices, programs, and regulations governing watershed protection. The Schoharie Watershed Program includes E & O activities specific to particular audiences and their role in watershed protection (e.g., highway personnel, planning boards, code enforcement officials, property owners) and are supported by inter-basin and inter-county agencies (SWCD's, Cornell Cooperative Extension, Planning Departments). The GCSWCD also participates on the WOH E & O Committee, sharing information and suggestions on educational programs.

I. Operation and Maintenance: The GCSWCD, NYCDEP and project partners will work to maintain project sites throughout the Schoharie Creek watershed. This may include, but is not limited to, supplemental planting, bioengineering, minor repairs, general maintenance and assessments as needed.

GCSWCD Staff: Buchanan, Langworthy, Dubois, Weyeneth
Implementation Category: Landowner Assistance, CSBI
Project Partners: GCSWCD, NYCDEP, Landowner(s)
Project Funding: NYCDEP/GCSWCD Schoharie SMP Contract
Project Schedule: On-going

SMP Recommendation: Schoharie – 6.8 General Stream Management Activities

Date Added to Action Plan: 2015

Progress: Supplemental plantings and bioengineering are planned for Ashland Connector Reach, Conine, Maier Farm, Brandywine and Lanesville Project Repairs in the summer of 2015 and 2016.