

# Greene County Soil & Water Conservation District



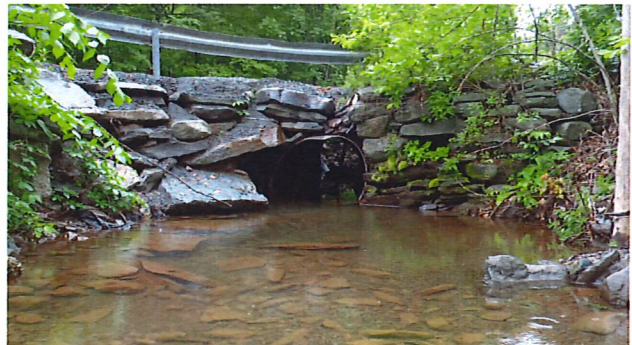
## 2017 ANNUAL REPORT

In 2017, GCSWCD continued to assist Greene County landowners, municipalities and others in meeting their natural resource management objectives. The District continues to focus on multiple benefit programs that help achieve a balance between community growth and conservation. Over the years, the District has positioned itself as a respected agency that is known for its ability to address complex natural resource issues. The District continues to expand its technical capabilities and uses them to help constituents throughout the County. While the District continues to increase its natural resource planning activities, it still maintains its primary strength as an agency that implements effective on the ground conservation. The following sections summarize some of the diverse activities undertaken in the previous year.

Collaborating with NAACC for Assessing Stream Crossings

### 1 Collaborating with NAACC for Assessing Stream Crossings

The North Atlantic Aquatic Connectivity Collaborative (NAACC) is a network of organizations, universities, state, and federal departments working to improve aquatic passage, as well as resiliency in the northeast. NAACC's focus is on the assessment of road-stream crossings, such as culverts. The assessments are compiled into a database, where high priority crossings are identified for upgrade and replacement.



An example of an undersized culvert.

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A culvert's function is to convey water across a roadway. Traditional culverts tend to be a simple pipe under the road. Many of these pipes can cause problems.

Types of problematic culverts include:

**Undersized culverts**, which restrict the natural flow of

waterways and cause a backwater on the upstream side of the culvert. This condition during extreme rain events can cause flooding over the roadway. This flooding not only creates a public safety issue but it can also cause erosion and deterioration of both the road surface and stream channel.

**Perched culverts** sit above the stream surface, creating a waterfall on the downstream side that blocks aquatic organism passage. Several fish species, including trout, rely on migrating upstream to spawn, and these types of culverts block native fish and other aquatic organisms from moving upstream to the cooler waters and habitat they need to survive and reproduce.



An example of a perched culvert.

GCSWCD staff, in collaboration with Columbia-Greene Cornell Cooperative Extension and NAACC, have been working on the assessment of identified stream crossings in the Catskill Creek watershed. As inventories are completed for individual towns, management plans will be developed to prioritize replacement projects and funding sources for replacement of structures will be sought.



## Batavia Kill Stream Feature Inventory Completed

GCSWCD staff and interns spent the summer conducting a stream feature inventory (SFI) on the Batavia Kill. They began in Maplecrest in June and worked their way downstream to end in Prattsville at the confluence with the Schoharie Creek in August. A total of 19.3 miles of the Batavia Kill was assessed using a GPS to map the locations of important stream features.

A stream feature inventory is one of the first steps in watershed assessment, as it helps understand the current conditions of the stream and its surrounding watershed. In the past, SFIs have been used to develop a Stream Management Plan (SMP). The Batavia Kill SMP was written in 2002, so this year's SFI can be

used to see how the stream has changed over the years since the original SMP was written. One of the big questions was what impact Tropical Storm Irene had on the stream corridors. In addition, some areas identified during the SFI may become sites of future restoration projects.

The Results: 5,000 ft of fine sediment is exposed on the bed or bank of the stream, 73 acres of invasive species (specifically Japanese knotweed) were mapped, 22,700 ft of revetment (mostly rip-rap), and 475 ft is lined with berms. Infrastructure was also recorded, such as culverts, bridges, and piped outfalls.

Over 16,000 ft of streambank along the Batavia Kill is eroding. The soil in the bank collapses and is carried away

by the water. Eroding banks can contain fine sediment which can be a water quality issue. Bank erosion can also affect buildings at the top of bank as the soil underneath falls. However, only a portion of the recorded bank erosion on the Batavia Kill has these negative effects. A majority of the erosion in this corridor occurs in a forested area and contains little fine sediment.



The lack of vegetation on the bank and leaning trees at the top are both signs of active erosion.

## County Route 2 Culvert Project

During the 2016 Stream Feature Inventory (SFI) of the Little West Kill, an improperly aligned and undersized culvert was identified under County Route 2 in Prattsville. The original culvert consisted of two metal pipes surrounded by a rock retaining wall.

The misaligned culvert didn't match the flow of the stream as it approached the road. This caused the stream to scour the streambank

on either side of the culvert.

During high flows, the undersized culvert caused water to back up and erode the land upstream of the culvert, which endangered the road. It also confined and increased velocities of water flowing through it, causing erosion downstream.

The culvert was replaced this past fall with a three-sided box culvert. The alignment was improved, and the new culvert is sized to pass the 100-year storm event. The larger culvert will

reduce the risk of flooding and enhance stream stability. Additionally, three-sided culverts allow for a natural channel bottom which enhances aquatic organism passage.

This SMIP-funded culvert replacement is a cost-share with the Greene County Highway Department. The GCSWCD/NYCDEP Stream Management Program covered the design costs and contributed \$100,000 towards implementation of the project.



Left: The original metal double culvert.



Center: Installation of the new concrete box culvert.



Right: Completed culvert



## Ten Mile Creek Restoration Project

This past summer GCSWCD in collaboration with Trout Unlimited completed a stream-bank stabilization project on a reach of the Ten Mile Creek in the Town of Durham. The project used a combination of structural and bioengineering methods to restore an eroding streambank to limit the amount of sediment entering into the stream.

The project site included a tall slope failure along the right-hand bank. A bank failure occurs when a stream erodes into the base of the bank, destabilizing the ground above it.

The streambed and bank also contained clay deposits. In streams, clay can contribute to turbidity and is potentially a water quality issue. This is because unlike larger size sediments (like sand and gravel), clay particles remain suspended in the water column for extended periods of time.

Work on the site began in late August. The proper channel dimensions were reestablished in

the over-widened reach and an armored floodplain bench was created at the base of the mass failure to prevent erosion from future stream scour.

Live willow stakes were installed along the edge of the stream. Willow stakes are branches cut from native willow plants that are installed upright in the ground. Willows are helpful species because they can grow quickly from live cuttings and have extensive root systems that further secure the stone and the bank as they mature.

In October, 200 native trees and shrubs were planted on the newly graded project site. As the Ten Mile Creek is a known trout habitat, volunteers from Trout Unlimited assisted with the planting.

Once the trees and willow stakes become established, they will act as a riparian buffer zone to the stream. The established riparian buffer zone will have many benefits including: providing shade to maintain the cold water habitat in the stream, acting as a filter for sediment and pollutants before they enter the water, and providing a habitat and food source for insects.



Project site in 2011 at time of initial assessment



Site after the restoration project was completed.

## Mountain Cloves Scenic Byway, Inc.

This past year, the District’s Watershed Assistance Program (WAP) has continued coordination and grant implementation for the Mountain Clove Scenic Byway (MCSB) group and is in the process of finalizing interpretive byway panels with the consultant to be installed at five gateway locations of the MCSB. In addition, WAP has worked with the Catskill Mountain Scenic Byway (Ulster, Delaware Counties, Rte. 28) and Genius Loci Planning to secure a \$74,000 NYSDEC Smart Growth grant for coordinating efforts between the two byways, advertising and marketing materials, and extending the MCSB into Jewett and Lexington.

## Catskill Park Projects Benefiting Greene County

The District’s Watershed Assistance Program (WAP) supported the Catskill Park wayfinding signs for DOT Region 1 (Greene County). The first group of signs is expected to be installed in 2018. WAP also attended meetings of Catskill Park Advisory Committee, Kaaterskill Clove Working Group and Catskill Park Transportation Working Group to advance items that improve transportation and recreational management and to further strengthen working relationships and communication with state and city agencies that are responsible for management of the Catskill Park public lands.





## New Mountaintop Sweeper and Vacuum Truck



The new sweeper/vacuum truck to be used for the Schoharie Watershed municipalities within Greene County.

The Greene County Highway Department received funding through the District’s Stream Management Implementation Program (SMIP) and the Catskill Watershed Corporation (CWC) to purchase a new sweeper/vacuum truck to aid in the highway department’s management of stormwater practices in the NYC watershed.

Prior to this, the Schoharie watershed municipalities within Greene County have been using one sweeper/vacuum truck to maintain over 600 lane miles of

roadway. With such a large geographic area to cover and so many miles of roadway, relying on one truck has been an extremely difficult task to undertake the needed work in a timely manner. The second sweeper/vacuum truck will double the capacity for these municipalities to pick up road abrasives at the end of the winter season as well as maintain stormwater systems. This will allow for reduced road abrasive materials, sediment inputs, and water quality impacts to local waterways.

## Over 5,000 Plants Ready for Future Projects

In spring 2017, GCSWCD coordinated staff, interns, and local volunteers for potting up events. Together, over 5,000 native trees and shrubs were potted up for future streamside restoration projects.

The bare root trees and shrubs start out looking like small sticks with some roots attached. After a few growing seasons at our nursery, the containerized plants are ready to be installed to help stabilize streambanks and create habitat for fish and wildlife.

Some of the species potted up this year are red and white oak, black

cherry, speckled alder, service-berry, pussy willow, elderberry, red osier and silky dogwood, as well as white pine. This variety of species offers plants that can be used in different riparian (streamside) areas, with some preferring drier upland conditions and others best suited for wetter locations right along the stream.

These newly containerized plants will be stored at our Plant Materials Center for future use in streamside restoration plantings, including projects for the Catskill Streams Buffer Initiative (CSBI).



## Flood Mitigation Assistance

The District’s Watershed Assistance Program (WAP) served as outreach lead for the Town of Hunter and facilitated the initial steps for two erosion hazard properties in the NYC Flood Buyout Program.

WAP also coordinated Tannersville’s flood advisory committee and consultant to complete their Local Flood Analysis (LFA), which was finished in December 2017 (adopted in March 2018). Currently working with the village on implementation of projects involving highway garage relocation, voluntary buyouts of abandoned and dilapidated buildings in the floodplain, and elevation of a home. Phase 2 of this LFA is currently underway in the Town and Village of Hunter.

In addition, WAP assisted Greene County Emergency Services in getting municipalities to formally adopt the updated County Hazard Mitigation & Resilience Plan.



## Education & Outreach Efforts

### Municipal



**2017 Schoharie Watershed Summit (Saturday, March 25, 2017)** - This was the 11<sup>th</sup> anniversary of the annual Schoharie Watershed Summit, which takes place at the Hunter Elementary School in Hunter, NY. The 2017 theme was “*Forests of the Future: Predictions for the Schoharie Watershed.*” The program covered a variety of topics regarding future forest health, including: climate change, warming temperatures, increased extreme weather events, invasive species, and other impacts. As always, the summit continued to provide a forum for discussion about water quality. Afternoon sessions included a choice of four workshops that gave two hours of municipal credits for planning and zoning board members. There were a total of 89 attendees at this event.

**NYSDEC Endorsed 4-Hour Erosion and Sediment Control Training (Wednesday, March 29, 2017)** - The GCSWCD offered the erosion and sediment control training at the Greene County Emergency Services building in Cairo, NY. Don Lake presented the information for the training. This program was geared for highway supervisors and staff, code enforcement officials, municipal officials, engineers, and more. There were a total of 50 attendees at this event.

### Youth and General Public



Invasive Species Day during Schoharie Watershed Month.

**Schoharie Watershed Month (May 2017)** - This was the 8<sup>th</sup> Annual Schoharie Watershed Month, which involves a series of watershed-focused educational programs throughout the month of May. This year’s programs included: Schoharie Creek Arbor Day Volunteer Planting (Saturday, April 29), Student Art Exhibit Opening Reception at the Mountain Top Library in Tannersville (Friday, May 5), Volunteer Potting-Up events in Maplecrest (May 9 and May 17), Student Trout Release for Trout in the Classroom at Hunter Elementary School in Hunter (Wednesday, May 10), *Liquid Assets* author Diane Galusha presenting “Schoharie Passage: From Mountain to Manhattan” at the Hunter Public Library in Hunter (Wednesday, May 10), Invasive Species Day and lesser celandine removal at the Mountain Top Arboretum in Tannersville (May 13 and May 20), a film showing of *Hometown Habitat: stories of bringing nature home* at the Orpheum Theater in Tannersville (Friday, May 19), and the expanded Kaaterskill Rail Trail Opening at the Mountain Top Historical Society (Saturday, May 20). These events reached a total of 244 participants.

**CCE’s Catskill Day in the Forest (May 18, 2017)** - GCSWCD set-up the EmRiver stream table as a station for Cornell Cooperative Extension’s Catskill Day in the Forest with the 4<sup>th</sup> grade from Catskill. The stream table provided a hands-on way for students to learn about natural stream processes. Students learned that streams are dynamic and have a natural tendency to flow in a meandering pattern. The demonstrations led to a discussion on how human development in floodplains can have negative consequences for both people and wildlife. There were approximately 150 students who attended this program.



**Greene County Youth Fair (July 2017)** - The GCSWCD team set-up a display table and the EmRiver stream table at the Greene County Youth Fair from July 27<sup>th</sup>-30<sup>th</sup>. The stream table is an interactive model stream that allows visitors to see how streams form, how erosion occurs, test different stabilization techniques, and create their own stream features. Youth-focused activity sheets, bookmarks, and colored pencils were offered to visitors to the GCSWCD booth. An estimate of 300 attendees interacted with staff at the GCSWCD booth during the weekend of the youth fair.

**Summer Camp Outreach (August 2017)** - GCSWCD staff and interns visited Twilight Park Day Camp on August 1<sup>st</sup> & 9<sup>th</sup> to offer a program focused on water quality and pollution. The camp students learned about the different types of water pollution using the EnviroScope watershed model. Staff also read the book *All the Way to the Ocean* and led a pollution-related crafting activity. These outreach days reached a total of 90 camp students.

**CCE’s Environmental Awareness Days (September 12 & 13, 2017)** - GCSWCD set-up the EmRiver stream table as a station for Cornell Cooperative Extension’s Environmental Awareness Days. The stream table provided a hands-on way for students to learn about natural stream processes. Students learned that streams are dynamic and have a natural tendency to flow in a meandering pattern. The demonstrations led to a discussion on how human development in floodplains can have negative consequences for both people and wildlife. There were 234 students who attended this program.



## Meet the 2017 GCSWCD Interns

### Lyn Watts

#### *SCA Stream Stewardship Intern*

Lyn graduated in spring 2017 from Smith College with a degree in Geosciences. She completed a 5-month SCA internship with GCSWCD in 2017, during which time she worked on completing an SFI on the Batavia Kill and assisting in community conservation and outreach. Lyn joined the District eager to learn about the stream restoration efforts in the area and excited to build a strong understanding of stream ecology. She hopes to use this experience with the GCSWCD when she enters graduate school to study hydrology in 2018.

### Haley Keff

#### *GCSWCD Summer Intern*

Graduating in the spring of 2019 with a bachelor's degree in wildlife management from SUNY Cobleskill, Haley worked as a summer intern for the District. Haley's goals for this internship included learning new

survey methods and techniques, taking part in community conservation efforts that improve our local streambanks, and gaining a stronger understanding of stream ecology in general. Haley was honored to be part of a program that is working hard to improve our community and environment.

### Michelle McDonough

#### *SCA Stream Stewardship Intern*

Michelle graduated from SUNY College of Environmental Science and Forestry in 2015. Michelle completed her second 11-month SCA internship with GCSWCD. Since working with the District, Michelle completed three stream feature inventories (SFIs) within the Schoharie watershed, coordinated a 3-day volunteer event supporting over 40 SCA interns, and has acted as the cartographer for the Hunter Area Trails Coalition (HATC). For the

remainder of her term, she focused on the Batavia Kill SFI, aided in the assessment and restoration of riparian zones, and participated in community outreach programs promoting stream ecology.



The 2017 GCSWCD interns: Lyn Watts (left), Haley Keff (center), and Michelle McDonough (right).

## Meet Our New Staff

### Michael Butler

#### *Heavy Machine Equipment Operator*

Michael attended the University of Northwestern Ohio for agricultural and diesel mechanics, before enlisting in the United States Marine Corp. After serving one term active duty, he has worked various jobs in farming, construction, and forestry. He has joined the district staff as a Heavy Machine Equipment Operator.



Michael Butler

### Laurie Deyo

#### *Administrative Assistant*

We welcome Laurie Deyo to our office staff as our new Administrative Assistant. Laurie has an extensive background in accounting. Born and raised in the local community, Laurie looks forward to working with GCSWCD. Be sure to say hello if you see her in the main office in Cairo!



Laurie Deyo

### Michelle McDonough

#### *Conservation District Program Technician*

Michelle graduated from SUNY College of Environmental Science and Forestry in 2015. Michelle completed one AmeriCorps term in the Rocky Mountains of Utah and two 11-month SCA internships with GCSWCD before joining the district staff. She has now started her new full-time position as a Conservation District Program Technician.



Michelle McDonough



## Stream Restoration Project in Ashland

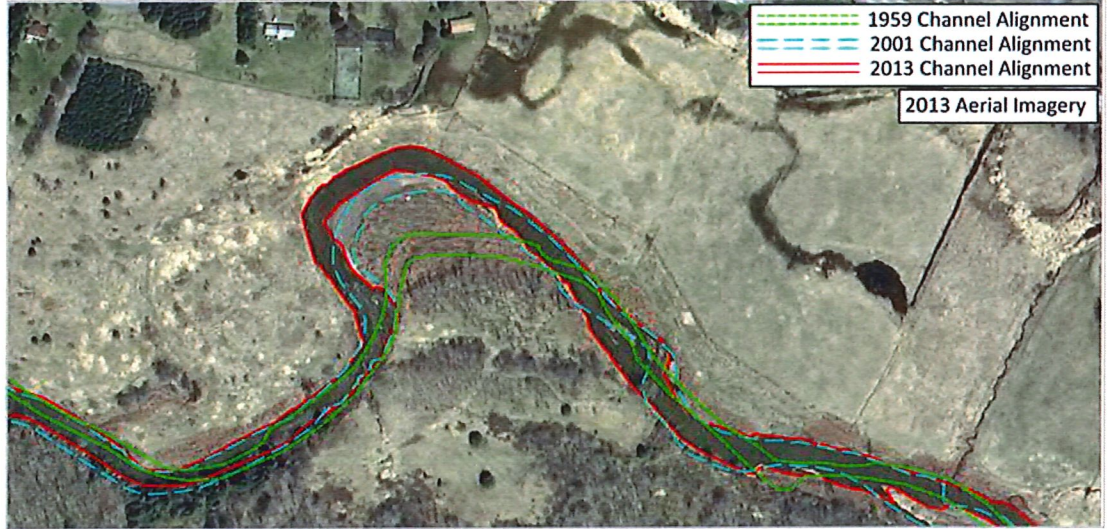
This past summer and fall, GCSWCD completed a stream restoration project on the Batavia Kill in Ashland. The project used a combination of structural and bioengineering methods to restore this reach of stream to a stable condition, reducing streambank erosion and subsequent sedimentation.

The site was originally identified in the 2002 Batavia Kill Stream Management Plan as a site requiring streamside restoration. The water was continually eroding the outside bank of the stream bend. The floodplain consisted of an old field with no trees and very little vegetation in the riparian buffer zone to slow the erosion.

In 2009 and in 2015, parts of the site were planted but the outside eroding bank was avoided as it required more intensive restoration and grading. Finally, this past August, 3,300ft of the Batavia Kill was regraded, willow fascines and brush mattresses were installed, and over 5,000 native trees and shrubs were planted along the new banks.

Willow fascines are bundles of live willow branches secured along the bank of the streams. Brush mattress, composed of a flat layer of live willow cuttings, were buried on the banks of the project site. Both the fascines and the brush mattresses are used to trap sediment. Willows grow quickly from cuttings and have extensive root systems. As the willow roots develop and become intertwined, loose sediment along the streambanks is secured from erosion during high flows.

The newly graded banks reduce the risk of significant erosion during storms and create a defined floodplain. The plants will now serve as the riparian buffer for the stream corridor. Riparian buffers are vegetated or undisturbed natural areas which help to protect a waterbody from pollutants by filtering stormwater runoff before it enters the waterbody. With deep rooted trees and shrubs, riparian buffers along streams maintain clean water by keeping sediment and nutrients out and preventing those pollutants from moving downstream.



Map showing stream channel lateral migration on this section of the Batavia Kill.



The Batavia Kill prior to project construction in spring 2017.



The Batavia Kill after completion of the project in fall 2017.



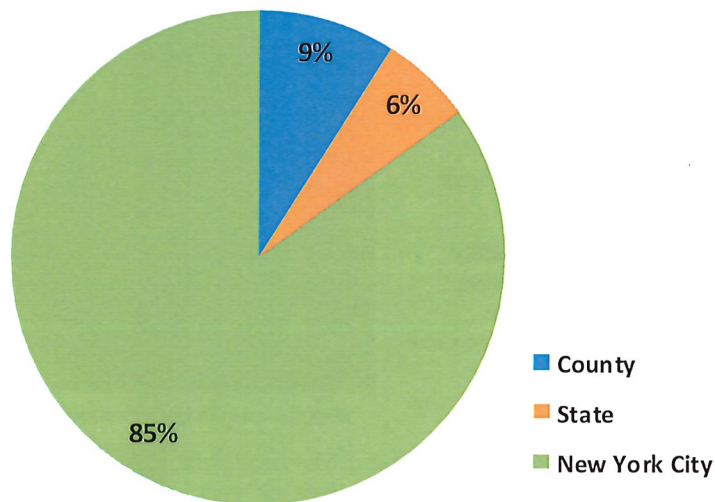
## Public Access/Trail Projects

This past year the District assisted with a number of trail projects through out the county, including the Kaaterskill Rail Trail in Haines Falls, the Madison Avenue Trail at the Hannacroix Creek Preserve in New Baltimore and the establishment of a trailhead and parking area for the Mawignack Preserve on Snake Road in the Town of Catskill.



## District Funding

In 2017, the District received \$2,748,611 in total funding. Included in that amount is \$158,447 from New York State for reimbursement of technical services and conservation projects, a \$254,538 allocation from Greene County, and \$2,335,626 through the District's partnership with NYC Department of Environmental Protection.



### GCSWCD Main Office:

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## Greene County Soil & Water Conservation District

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<b>Tom Hoyt</b>	Treasurer, Member at Large
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<b>Michael Bulich</b>	Legislative Representative
<b>Kevin Lewis</b>	Legislative Representative

### District Staff

<b>Jeff Flack</b>	Executive Director
<b>Deborah Treacy</b>	Administrative Assistant/Executive Secretary
<b>Laurie Deyo</b>	Administrative Assistant
<b>Joel DuBois</b>	Conservation District Program Specialist
<b>Jake Buchanan</b>	Conservation District Program Specialist
<b>Abbe Martin</b>	Conservation District Program Manager
<b>Chris Langworthy</b>	Conservation District Program Technician
<b>Michelle McDonough</b>	Conservation District Program Technician
<b>Michelle Yost</b>	Watershed Assistance Program Coordinator
<b>Laura Weyeneth</b>	Catskill Streams Buffer Initiative Coordinator
<b>Samantha Root</b>	Education & Outreach Coordinator
<b>Michael Butler</b>	Heavy Machine Equipment Operator
<b>Ryan Mitchell</b>	Heavy Machine Equipment Operator/Technician

### 2017 SCA Interns

<b>Michelle McDonough</b>	SCA Stream Stewardship Intern
<b>Lyn Watts</b>	SCA Stream Stewardship Intern

**Website:** [www.gcswcd.com](http://www.gcswcd.com)

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