



Soil and Water Conservation District
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SWCD

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ANNUAL TREE & SHRUB SALE

ORDER FORM IS ON OUR WEBSITE

ucswcd.org

SAVE THE DATE: APRIL 16 -APRIL 17, 2025

Tree species availability is limited

SOIL GROUP WORKSHEETS

- In order to qualify for the 2025 tax season, soils group worksheets will need to be submitted to your Town's Assessor by March 1, 2025. Please contact your assessor first to see if your land qualifies. If it does, the District will prepare the Soils Group Worksheet.. Cost is \$40 per parcel. If you need to come to the office, please call first at (845) 883-7162, ext. 3 to schedule an office visit.

Welcome Cooper HERNSDORF!!!



Cooper started with us this past August as the new Junior District Technician. He has a Bachelor's of Science in Environmental Science with a minor in Sustainable Community Food Systems, as well as hands on agricultural experience on local farms where he grew up. Cooper is also a Certified Arborist and has experience operating various types of heavy machinery, which has greatly helped us expand our no-till drill and soil health equipment rental programs. He is an invaluable addition to our team, especially during a time when we have expanded our scope of services to the agricultural community and to Ulster County residents. On his spare time, Cooper enjoys rock climbing and rumor has it that he is a good cook too.

Congratulations

Mount Academy, Esopus, New York Hudson Valley, New York State and National Champions

The Mount Academy took 1st place at the Lower Hudson Regional Envirothon and the **NYS Envirothon** for 2024. Student Teams from 41 High Schools across the State *Competed* in 34th Annual Environmental Science Competition. Since the Mount academy continued their 11th-year winning streak at the State Envirothon, that allowed them to represent New York at the National Conservation Foundation Envirothon in Geneva, New York, where they placed in 2nd place overall. Congratulations and a special thank you to Neal Horning, who has been an instrumental science teacher for the Mount Academy and a good friend of the Ulster County Soil and Water Conservation District.



Partnerships = Projects = Progress

In our field of work, just like most jobs, it is all about the relationships to get things done. We have been fortunate to partner with various County agencies, units of government and non-for-profit organizations. Our longstanding partnership with the NYC Department of Environmental Protection has resulted in tens of millions of dollars in stream restoration projects while protecting private lands and supporting the local economy. Working with the Ulster County Department of the Environment with the third annual municipal Arbor Day Initiative, supplying native trees to Ulster County Towns and Villages. We worked with the Ulster County Department of Public Works to complete a storm water drainage improvement project. The Orange County Land Trust partnered with us to do two farmland protection forums in Ulster County, resulting in increased interest in farmland protection. We work closely with the USDA Natural Resources Conservation Service with the design and funding of various agricultural best management practices. Ulster County Economic Development and the County Executive's office have supported our local cover crop program and funded a lime spreader and cost shared a 12' no-till drill and a row mulcher. Cornell Cooperative Extension of Ulster County have played an integral role in providing education and outreach for our Ashokan Stream Management Program and our soil health program. If we did not have these positive relationships and partnerships, we would not be where we are today, providing valuable services for landowners and agricultural producers. Thank you everyone and Happy New Year!



County DPW Storm Water Management Project



County Arbor Day Initiative



Farmland Protection Forum with the Orange County Land Trust

Jake Wedemeyer, Executive Director

Wallkill River Riparian Buffer Projects

Riparian buffers are a common thread among both the district's office as well as the Ashokan Watershed Stream Management Program. The AWSMP will attest to the importance of riparian buffers for the benefit they provide to mountain streams that feed our large waterways and drinking water sources. However, equally important are buffers along the rivers which wind through the fertile bottomland areas here in Ulster County. The Wallkill River, Rondout Creek, and Esopus Creek are lined with thousands of acres of agricultural land as they meander through the heart of the county. The proximity of farmland to these waterways presents a significant water quality concern if gone unchecked. Riparian buffers are effective at addressing this concern because they can stabilize riverbanks and slow surface runoff. Functionally, this prevents erosion and helps to keep prime agricultural soil where it belongs. Without effective buffers, nutrients and soil can flow across fields and into adjacent waterways during wet periods. This year the district has chosen to implement riparian buffer improvements along the Wallkill River in New Paltz. Two sites were selected based on a lack of existing vegetated buffer and proximity to active agricultural fields. These buffers will both improve water quality and stabilize erosion of the riverbank which will prevent the loss and degradation of usable agricultural land.



One site was 're-forested' with a planting of 50 deciduous trees. Native tree species were selected based on preferred growing conditions to match the site and spaced appropriately to accommodate mature size but maintain density appropriate for an effective buffer. Tree species included were red maple, white oak, tulip poplar, river birch, and a Dutch elm-resistant variety of American Elm! The second site was addressed with live-stake planting. Cuttings of willow and American sycamore were pounded into the steep riverbank. These stakes will grow lateral roots quickly and stabilize the highly erodible riverbank, preventing further erosion and encroachment.



The deciduous tree saplings came from Story's Nursery in Freehold, NY and the live stakes were ordered from Ernst Seeds in PA. Next year the district is looking forward to addressing riparian buffer restoration on the Esopus Creek.

Article by Cooper Hernsdorf,
Junior District Technician

How AWSMP is Combatting Deer Herbivory on Riparian Plantings

Article by Gabe Bonse, Watershed Technician/Intern

Deer Fences Deer herbivory poses a substantial challenge to the health and sustainability of riparian restoration plantings. At AWSMP (Ashokan Watershed Stream Management Program), we go to great lengths to prevent the potentially devastating effects deer herbivory poses on our newly established plantings. One of the ways this is done, is through the installation of deer fencing. Deer fences have been installed on numerous plantings done through CSBI (Catskill Stream Buffer Initiative). Referenced below in Figures 1 and 2 are comparisons of a planting done with deer fencing and one done without. These plantings were done on the same property a few years apart. The figures demonstrate that installation of deer fencing helps to ensure the success of restoration efforts. The deer fences shield the tender vegetation from browsing as it grows, and allows for healthy growth. Additionally, deer fences reduce the need for potential replanting and maintenance proving them to be a cost-effective solution for our long-term conservation goals.

Deer Repellant Another way in which AWSMP works to combat the ill-effects of deer herbivory is through application of deer repellant spray. This past summer,

staff has applied “Plot Saver” deer herbivory spray at the Elk Buskill and Pantherkill restoration sites. Plot saver is a USDA certified, organic spray that deters deer browse. Application is conducted on a 2-3-week cycle. The spray is directly applied to each individual plant where it dries onto the leaves and stems. This spray results in a large decrease in leaf and bud consumption and provides the young plants with the ability to grow. This is especially important during the first few growing seasons as the plants are working to establish themselves. The application of deer repellant has proven quite successful in larger scale projects where deer fence installation may not be feasible.



Figure 2. 3-Year Monitoring Photo from Planting Site (No Deer Fence)



Figure 1. 3-Year Monitoring Photo from Planting Site (Deer Fence)

Ulster County Soil Health Program Continues to Expand

With 2024 coming to a close, our soil health program was busier than ever this year. Our local cover crop program saw its third year, with record acreage. Despite a county wide drought this fall, growers planted a lot of cover crops, and they grew exceptionally well. This year saw our Esch no-till drill seed 277.5 acres. This was more than double last year's acreage. Most of our acreage was in the fall for cover crops and cover crops planted with the drill did exceptionally well considering the drought conditions we experienced this fall. No-tilling in cover crops allowed the soil to hold onto what limited moisture was available, giving cover crops a chance to germinate and grow.

In its third year, our local cover crop program saw record acreage reimbursed with vital support from Ulster County. We continued to use Climate Resilient Farming Grant Round 6 funds to reimburse for cover crops and we are excited to announce that we were awarded Climate Resilient Grant Round 8, which will pay for cover crops on four farms, as well as mulching on an orchard. Together with our local program and CRF 6, we certified 930 acres of cover crop, reimbursing county producers \$62,800.00.

Our soil health program looks to have an even better year next year. This past year we were awarded a Climate



Cereal rye cover crop planted with District no-till drill.



Esch 5612, 12' swing hitch no-till drill that we will be purchasing.

Resilient Farming Grant Round 8 from NYS Ag and Markets to purchase a larger 12' no-till drill and a Mill Creek row mulcher. This grant was made possible with local matching funds from Ulster County's American Rescue Plan Act money dedicated to ag relief. State and local funding will help add a drill, row mulcher, and lime spreader to our rental fleet. We expect to have the lime spreader soon, and the drill and row mulcher before fall of 2025.

Ulster County Soil & Water is excited to continue both these programs in the coming year. If you're a producer in Ulster County interested in either

or both programs give us a call at 845-883-7162 ext. 3 or email our District Technicians Travis or Cooper at travis.ferry@ny.nacdnet.net or cooper.hernsdorf@ny.nacdnet.net. Its never too early to start planning, we expect our drill rental to fill up quickly.

Article by Travis Ferry, District Technician, CCA, NYSESCCP

Catskill Streams Buffer Initiative Fall 2024 Project

In Fall of 2024 a riparian buffer restoration project was completed along Esopus Creek in Boiceville, NY, aimed at reducing bank erosion and improving water quality after initial stabilization efforts. The project, funded under the Catskill Streams Buffer Initiative (CSBI) program through the Ashokan Watershed Stream Management field office, focused on re-establishing native vegetation along the creek's banks, enhancing both the ecological value of the creek and protecting private property for the engaged landowner.

The site had experienced significant bank erosion following several major flood events in the past decade which resulted in a loss of the existing streamside vegetation. To stabilize the banks the landowner hired a local excavation contractor to install a robust stacked rock wall with flow deflector structures designed to turn the erosive flows back into the stream channel. Construction was guided with technical support from the Ulster County SWCD's stream technical staff.

The rock revetments were essential for halting the immediate erosion, but the project team recognized the need for a long-term, sustainable solution.



Above the rock revetments a very dense

matrix of native trees and shrubs were installed to protect the stream bank. Staff from UCSWCD installed approximately 550 trees and shrubs in 3 days in early November along a 300-foot long eroding bank, with an average spacing of 4 feet on center. The increased density of plants will ensure a solid matrix of roots will help bind the soil and prevent future erosion and enhance the creek's natural resilience to flooding and extreme weather events. Additionally, the buffer provides critical wildlife habitat and enhances the overall biodiversity of the area.

The CSBI program aims to enhance riparian buffers in the Ashokan Reservoir Watershed. Landowners who own streamside properties in the Ashokan Watershed are encouraged to apply for complete funding assistance to restore native streamside vegetation.

Article by Bobby Taylor, CSBI Coordinator, NYSESCCP

Elk Bushkill Stream Restoration: First Year of Post-Restoration Monitoring

The Elk Bushkill Stream Restoration project was constructed in the summer and fall of 2023 on a tributary to the Upper Esopus Creek in Oliverea, NY. This project restored approximately 1,300 linear feet of channel and adjacent floodplains with goals of improving water quality, protecting property, and improving aquatic and riparian habitat impaired by unstable stream conditions. Every stream restoration project conducted by the district includes at least 5 years of post-construction monitoring to track project performance in meeting its goals, identify maintenance or repair needs, and to learn from so we and others can continue to improve our restoration methods on future projects.

Monitoring of restoration projects largely focuses on measuring geomorphic adjustment over time such as changes in channel dimensions (width/depth) and channel slope, bedform development (pools and riffles), erosion rates, and vegetation establishment. With the help of the U.S. Geological Survey, we are also monitoring the response of fish populations and water temperature which will compare 4 years of pre-restoration fish sampling with at least 3 years of post-restoration coupled with physical habitat assessments conducted by UCSWCD.

Within a month of completing construction and before vegetation had a chance to grow, the Elk Bushkill was hit with a large rainstorm resulting in its first bankfull flow on December 18, 2023. This small flood could do significant geomorphic work, easily mobilizing rock in the channel bed and entraining sediment from streambanks. Despite this flow having happened at the most vulnerable time before vegetation establishment, we were pleased to see how well the project performed. With our summer field crew on board, we surveyed the project in July with a combination of traditional ground-based survey and drone LiDAR survey to capture very detailed topographic data throughout the project reach. Data processing and analysis of this year's data is still ongoing but initial results indicate the geomorphic adjustment remain within expected range, there is no new erosional contact with turbidity sources, there is good vegetation survival and growth in the first growing season (thanks to our rigorous deer repellent applications), and preliminary fish sampling results look promising with an increase in fish numbers from previous years (however, more years of monitoring are required to identify actual trends vs typical annual variations).

In addition to the Elk Bushkill Stream Restoration project, the district completed monitoring of three other restoration projects on Warner Creek and Panther Kill along with pre-restoration monitoring at two future projects anticipated for construction in 2025 and 2026. Our field crew was busy!



Elk Bushkill prior to restoration, 2021.



Elk Bushkill during first summer post-construction, 2024



Article by Allison Lent, Stream Assessment Coordinator, NYSESCCP

The Importance of LiDAR for Data Collection and Stream Restoration Projects

Stream assessment monitoring is one of the objectives used by Ulster County Soil and Water Conservation District to understand the health of a stream. Typically, these are more troubled sites where instability is present, often involving stream contact with lacustrine clay. One of these instable sites is located on Broad Street Hollow. This reach is experiencing active bed and bank erosion with major exposures to lacustrine clay. At some point in the future, a stream restoration project will be completed here. Pre-construction survey data is very important process to complete the project. These surveys will help understand the current geomorphic conditions, along with exactly where the stream is unstable. Traditionally, these surveys were collected using only a total station by getting a few cross-sections and a longitudinal profile.

This year, the program introduced a drone-based surveying technique that is equipped with a Light Detection and Ranging (LiDAR) sensor, which is used to capture detailed elevation data.

The typical LiDAR workflow begins with establishing precise ground control points. This involves a base station that will set up initial control, which will then base the elevation values for the ground control points (GCPs). These will be placed throughout the study area and act as a georeferenced for the point cloud, which is the product the LiDAR sensor will produce. It is very important to include GCPs with correct data as this is how the point cloud will be able to be cross-referenced with other sources of point clouds, such as from the county. The flight itself is very straightforward, as the pilot will produce a pre-determined flight outline that will capture the entire study area. The drone system

will produce a flight line which can be adjusted, along with various parameters of the drone itself, such as flight speed, height, and ground capture percentage. This is something that will depend on weather and vegetation conditions. During leaf off, these parameters can be more relaxed as the canopy will not be blocking the ground.



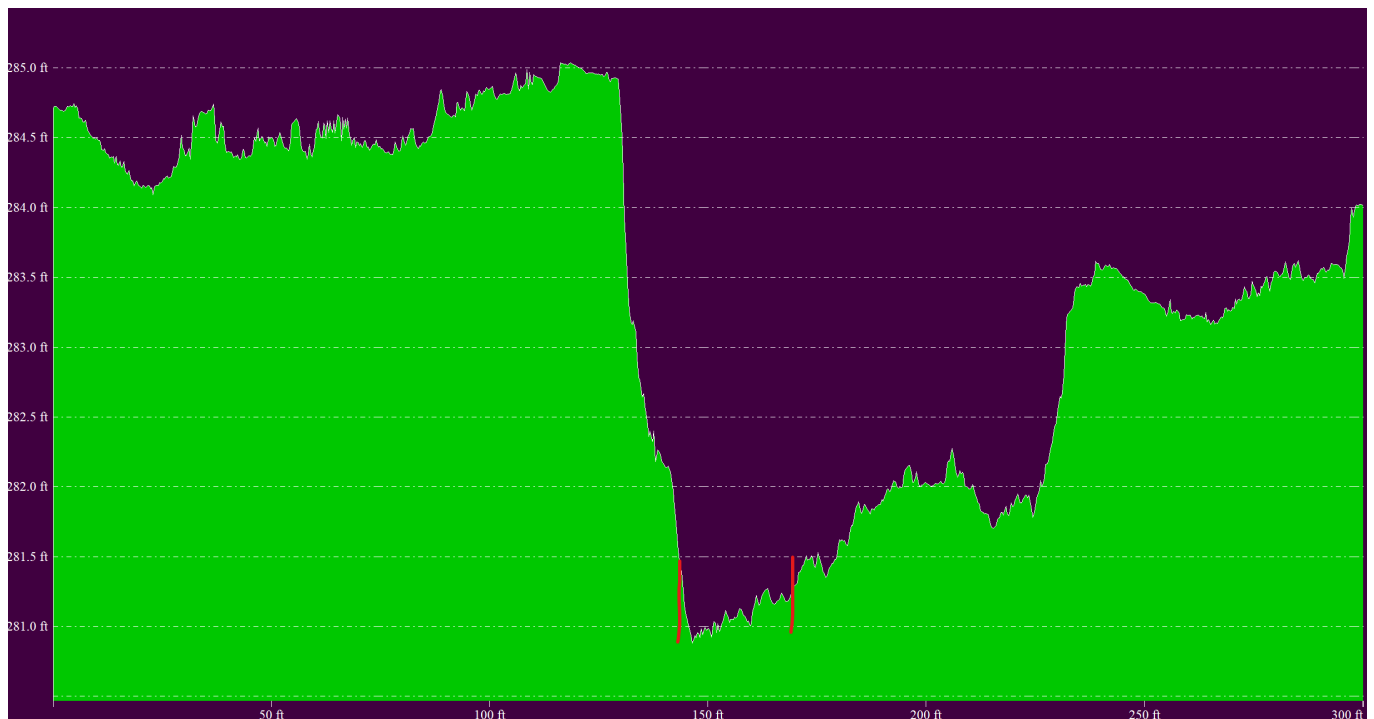
After the flight, the data from the LiDAR sensor is transferred to a computer for post-processing. Here is where all the data can be seen. From a zoomed-out perspective, the point cloud looks much like a photo but is 350 million singular points. The top-left picture is a zoomed in version, where the dots can be seen, along with a down tree across the stream.

For stream assessment, ground shots are the most important. To sort the data to only ground shots, point classification needs to be done. The tool looks at each point and determines if it is ground or not based off elevation data, location, and the point's relationship to its nearest neighbor, grid by grid. After this process, only 29 million points are left.

Once completed, manual classification begins. This begins as a review to ensure that the ground points are accurately classified. Errors can occur and are most common in heavily vegetation areas, where the LiDAR sensor may not have penetrated. Points still reach the ground but are much less and the auto tool tends to ignore them as error. This can be checked by the GCPs, since the elevation is known to be on the ground. If a GCP is not nearby, checking the pictures the drone took simultaneously works as a great reference, along with personal knowledge of the study area.

When classification is over, a Digital Terrain Model can be produced. This is turning all the singular points into a raster dataset. Cross-section derived DTMs can reveal the stream characteristics of any specific location. The program can figure out flood-prone width, bank height, look for bankfull features, among others.

The picture below is a cross-section after the DTM was produced. For reference, the red lines represent the approximate location of the stream. This shows a vertical bank with no left bank flood plain access. The Thalweg is also on the left-side, producing high bank stress on this vertical and lacustrine clay filled bank. With further post-processing, the micro vertical adjustments seen on the terrace above will be removed and smoothed out.



The only limitation with LiDAR sensors is that they cannot penetrate beneath the water surface. To produce a complete DTM, integration with a traditional total station survey is still required. This is completed in different software and creates a tin surface that combines the LiDAR points with the total station points. The workflow for this involves getting a point every few feet in a grid-like pattern to get the general pattern of the stream bed. This new LiDAR toolset will help enhance stream assessment and monitoring, bring in more detailed surveys and capture much more elevation data than ever before.

Article by Mark Tollefson, Watershed Technician

USDA United States Department of Agriculture

Natural Resources Conservation Service

5 Steps to Assistance

How to Get Assistance from NRCS for Farms, Ranches and Forests

- 1 PLANNING**
Visit your local NRCS field office to discuss your goals and work with staff on a conservation plan.
- 2 APPLICATION**
With the help of NRCS, complete an application for financial assistance programs.
- 3 ELIGIBILITY**
Find out if you're eligible for NRCS' variety of financial assistance programs.
- 4 RANKING**
NRCS ranks applications according to local resource concerns.
- 5 IMPLEMENTING**
Put conservation to work by signing a contract and implementing conservation practices.

Get Started with NRCS

Do you farm or ranch and want to make improvements to the land that you own or lease?

Natural Resources Conservation Service offers technical and financial assistance to help farmers, ranchers and forest landowners.

1 Planning To get started with NRCS, we recommend you stop by your local NRCS field office.

We'll discuss your vision for your land.

NRCS provides landowners with free technical assistance, or advice, for their land. Common technical assistance includes: resource assessment, practice design and resource monitoring. Your conservation planner will help you determine if financial assistance is right for you.

2 Application We'll walk you through the application process. To get started on applying for financial assistance, we'll work with you:

- To fill out an AD 1026, which ensures a conservation plan is in place before lands with highly erodible soils are farmed. It also ensures that identified wetland areas are protected.
- To meet other eligibility certifications.

Once complete, we'll work with you on the application, or CPA 1200.

Applications for most programs are accepted on a continuous basis, but they're considered in different ranking periods. Be sure to ask your local NRCS district conservationist about the deadline for the ranking period to ensure you turn in your application in time.

3 Eligibility As part of the application process, we'll check to see if you are eligible.

To do this, you'll need to bring:

- An official tax ID (Social Security number or an employer ID)
- A property deed or lease agreement to show you have control of the property; and
- A farm tract number.

If you don't have a farm tract number, you can get one from USDA's Farm Service Agency. Typically, the local FSA office is located in the same building as the local NRCS office. You only need a farm tract number if you're interested in financial assistance.

4 Ranking NRCS will take a look at the applications and rank them according to local resource concerns, the amount of conservation benefits the work will provide and the needs of applicants.

5 Implementing If you're selected, you can choose whether to sign the contract for the work to be done.

Once you sign the contract, you'll be provided standards and specifications for completing the practice or practices, and then you will have a specified amount of time to implement. Once the work is implemented and inspected, you'll be paid the rate of compensation for the work if it meets NRCS standards and specifications.

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To find out more, go to: www.nrcs.usda.gov/GetStarted

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The Millbrook Office Can Assist With:

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- Conservation Programs
- Farm Storage Facility Loans
- Price Support Programs
- Commodity Loans
- GPS & Aerial Photography Farm Data
- Youth Loans
- Low Interest Farm Loans: Operating & Mortgages
- Low Interest Microloans - up to \$50,000

www.fsa.usda.gov/ny

Millbrook USDA Service Center

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