

down to earth

Environmental Restoration Quarterly • Spring 2024

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**EARTH DAY
APRIL 22**



Little Pipe Creek Assessment & Prioritization

By: Byron Madigan, Water Resource Supervisor

As water quality improvement projects continue to be implemented across the County to restore watershed health and address stormwater runoff from impervious surfaces in impaired watersheds, Resource Management wanted to develop an initial subwatershed assessment screening tool that would aid in prioritizing watershed restoration potential and assist in determining the direction of future projects.

For this project, the Bureau partnered with the Center for Watershed Protection (CWP) through a grant that was funded by the National Fish and Wildlife Foundation (NFWF), to create a prioritization method, based on existing land cover parameters, as well as stream channel conditions from the County's previous Stream Corridor Assessment (SCA) to determine high priority areas for focusing watershed restoration efforts. To properly document the process, the first step of this project involved working collaboratively with CWP to create a Quality Assurance Project Plan (QAPP) for Environmental Protection Agency (EPA) approval.

Once the project received EPA approval, CWP and Resource Management worked together to develop the screening tool that would rank and prioritize each inputted catchment for further field assessment. To rank each watershed, the screening tool assigned values on a sliding scale to the land cover parameters selected for the tool, which included things like impervious cover, percent of untreated impervious cover, amount of remaining buildable land, and soil hydrologic

groups. Additionally, the screening tool also assigned values on a sliding scale to the data previously collected from the County's SCA and provided a total ranking score for each catchment based on all parameters.

A subwatershed of Little Pipe Creek was selected for this initial pilot assessment. This watershed consists of 7,442 acres, approximately 33 miles of streams, and is the most urban subwatershed within the larger Double Pipe Creek Watershed with regards to impervious cover. This subwatershed contains ten individual catchments, and to narrow the field assessment focus down to one of the ten catchments, each was ranked based on the parameters within the screening tool developed.

Field Assessment:

Once the focus catchment was selected through the screening process, the field assessment consisted of two different field teams, an upland assessment team and a stream corridor assessment team. The upland team focused on visiting potential stormwater retrofits within the watershed, whereas the stream assessment team walked the stream corridor collecting information on stream channel and bank conditions.

Upland Reconnaissance:

CWP staff performed the upland assessment, which focused first on
(continued on Page 2)

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<https://www.carrollcountymd.gov/government/directory/land-resource-management/resource-management/>

Protecting and managing Carroll County's natural resources for the pleasure and enjoyment of its Citizens

Little Pipe Creek Assessment & Prioritization Continued ...

evaluating the conditions of existing stormwater management BMPs for retrofit potential. The upland team visited 18 potential stormwater retrofit project sites, which were a combination of both existing stormwater practices and new locations throughout neighborhoods, commercial areas, and institutional/municipal operations within the watershed.

A Retrofit Reconnaissance Inventory (RRI) field form was used to evaluate restoration opportunities at the 18 field sites visited. At each site, the upland assessment team looked specifically at drainage patterns, the amount of impervious cover, available space, and other site constraints when developing concepts for restoration at each individual site visited.

Stream Channel Conditions:

The stream assessment team included both CWP and Resource Management staff. The stream assessment utilized a rapid Bank and Nonpoint Source Consequences of Sediment (BANCS) scoring methodology developed by Hydrologist and Geomorphologist Dave Rosgen along about a mile of the Cops Branch stream reach from Tahoma Farm Road to Windsor Drive. This modified assessment was conducted to provide an understanding of the degree of streambank erosion that has occurred, the potential for additional stream bank erosion, and to identify potential areas that may be suitable for stream restoration. The BANCS assessment uses two measurement methods to predict the potential rate of bank erosion. The first, is the Bank Erodibility Hazard Index (BEHI), which rates the banks erodibility potential from very low to extreme, and the second is Near Bank Stress (NBS), which rates the shear stress being applied against the stream bank. The BEHI and NBS conditions of all eroding banks were photographed and rapidly assessed, the two measurement method ratings results were then combined providing an estimate of the bank erosion rate through the corridor assessed.

*Stormwater Retrofit Project
Prioritization:*

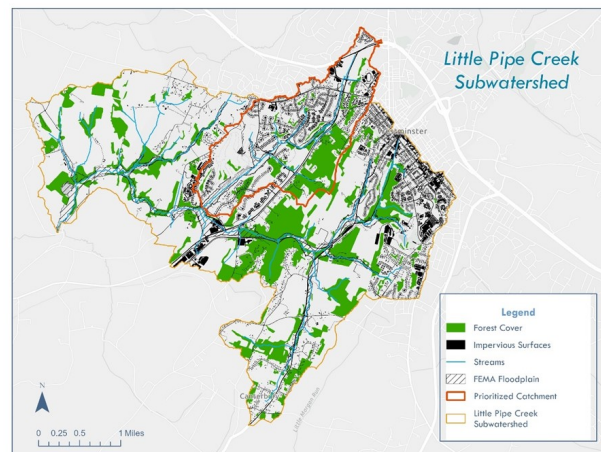
Following the field assessment, potential projects identified for implementation

during the field assessment were evaluated and ranked for cost effectiveness, nutrient removal potential, volume treated, and practice type. Additionally, considerations were also given to the following criteria: maintenance burden, value as a demonstration project, property ownership of where the practices are sited, and potential implementation constraints.

Next Steps:

This initial assessment within the Little Pipe Creek subwatershed and screening

tool developed was successful at prioritizing the focus catchment based on existing land cover conditions, as well as assisting with identifying potential restoration projects through the field reconnaissance, which the Bureau is currently exploring further for potential implementation. The Bureau also anticipates utilizing this screening tool in other focus watersheds across the County to assist in identifying stream reaches and catchments that are in the greatest need of restoration as well as potential restoration projects within those watersheds.



Funding provided by:



Stormwater Update

By: Claire Hirt, Watershed Management Coordinator

This month we are kicking off our next stormwater restoration project in the Liberty Reservoir watershed. Located off of Deer Park Road in Finksburg, the existing stormwater facility is a detention basin that was built in the 1990s to provide quantity management of stormwater for the Saint George's Gate residential development. *Quantity management* means that the basin holds back water from storm events and releases it slowly, reducing the risk of flooding downstream.

Through the retrofit process, we are converting the basin into a surface sand filter. In addition to continuing to provide quantity management by collecting and slowly releasing the stormwater, it will now also provide *water quality management* by passing the water through a filter layer that removes pollutants. This results in cleaner water flowing to local streams, reservoirs, groundwater, and – eventually – the Chesapeake Bay.

The filter layer at this site will be comprised of a sand/soil/wood chip mix that is enhanced with biochar as part of a research project with the Center for Watershed Protection (CWP). Biochar

has been shown to enhance pollutant removal, and CWP will be focusing on nitrogen removal in this project. The research will help provide deeper insight into how biochar can be used effectively in stormwater management.



Magstone, LLC is the construction contractor for the retrofit, and the design engineer is Brudis and Associates (BAI). We look forward to completing another impactful project with these partners, and for the continued improvement of our watersheds.

Looking further down the road, we have several projects that will be coming up soon. In Eldersburg, Century High School will see a conversion of the existing shallow marsh to a surface sand filter, and the stream channel above the Oklahoma retrofit will be restored. In Hampstead, the Roberts Field pond will be upgraded to a wet pond with a submerged gravel wetland, and the stream will also be restored.





Saint George's Gate


April

-  4/17 - Order deadline for Rain Barrel and Compost Bin Sale (pickup 4/27 at County Office Building)
-  4/18 - Carroll County Monocacy River Board Stream Cleanup at the Ag Center (6-8 p.m.)
-  4/20 - Earth Day at Bear Branch Nature Center (10 a.m. - 3 p.m.)
-  4/20 - Household Hazardous Waste & Shredding Event at Carroll County Maintenance Center (8 a.m. - 12 p.m.)
-  4/26-4/28 - City Nature Challenge

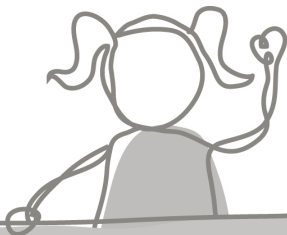
May

-  5/11 - Westminster Flower and Jazz Festival (10 a.m. - 4 p.m.)
-  5/16 - Carroll County Monocacy River Board Tree Maintenance, Location TBD (6-8 p.m.)

June

-  6/28 - Family Summer Bash at the Carroll County Farm Museum (5-9:30 p.m.)

Carroll County
Water Resource Team



Invites you to check
out these events:

Carroll County's Tree Planting Program

By: Garrett Tucker, Water Resource Technician



Carroll County's tree planting program has planted over 250 acres of the county with trees since 2013. These are across both the public and private lands. Thanks to a grant award from the Department of Natural Resources Chesapeake and Coastal Service, the County recently planted 6 properties, 4 public and 2 private, adding about 10 acres to our totals. **Figure 1** shows an upland planting planted in the fall of 2023 with the Town of Manchester in the Double Pipe Creek Watershed. These plantings not only increase the native population of Carroll County forests but can act as a resource for other native plants and animals. Going even beyond the aesthetic benefits, these trees prevent harmful chemicals from polluting our waterways and slow down the speed of

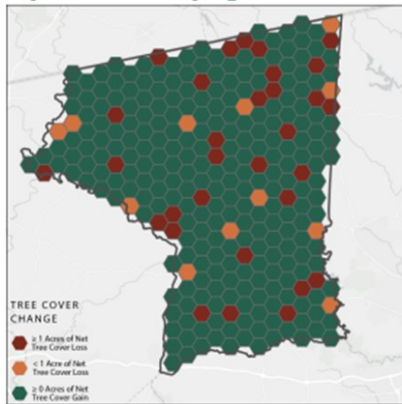
water runoff reducing erosion. The program is doing well thanks to our participants and the growing interest. If you would like to participate, please email gtucker@carrollcountymd.gov or call 410-386-2548.

Thanks to the Chesapeake Tree Network, we can track how much tree canopy the county is gaining and losing. From their report, from 2013 to 2018 Carroll County has gained 491 acres of tree canopy and lost 341 acres of tree canopy for a total of 150 acres gained (**Figure 2**). Carroll County is the only county in Maryland according to the Chesapeake Tree Network to have gained tree canopy cover from 2013-2018. Thank you to our grants and participants for making this possible and keep planting trees!



Figure 1: Town of Manchester Planting

How is tree cover changing on developed and developing lands?



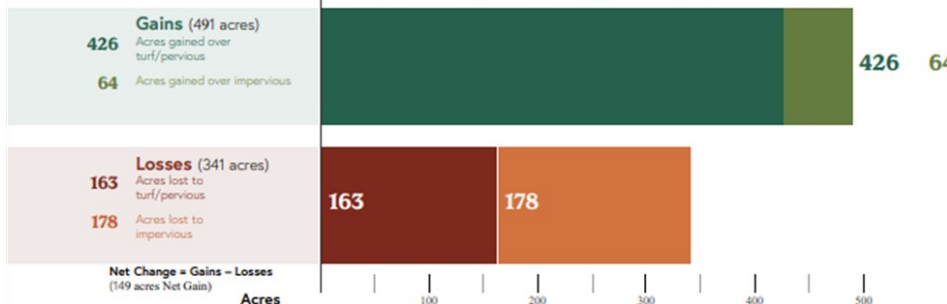
Understanding how your tree cover changes over time can inform the sustainable management of forests and community trees. The map to the left shows where your county has lost and gained tree cover from 2013 to 2018, focusing on land that is already or newly developed.

Tree cover can be lost quickly due to human activities (e.g., construction) or natural events (e.g., severe weather).

Tree cover can be gradually increased through tree planting and natural regrowth, but these gains may take 10-15 years to be detected in high resolution imagery.

Since mature, healthy trees provide significantly greater community benefits than newly planted trees, it is important to both preserve existing tree cover and seek opportunities to grow new trees and forests. Local land use planning, ordinances, and tree programs play a critical role!

Tree Cover Change on developed/developing lands (2013-2018)



Learn More:

Chesapeake Tree Canopy Network
Links to county fact sheets, user guides, map viewers, datasets, and more

Tree Equity Score
Explore maps of how tree benefits are distributed across communities

Capitalizing on the Benefits of Trees
A slideshow for local leaders featuring tree benefits, case studies and resources

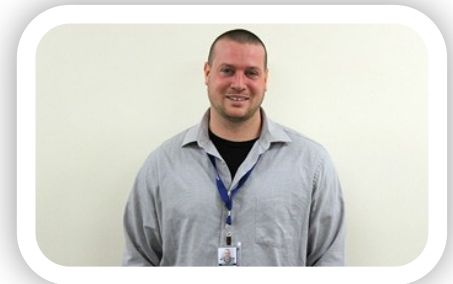
State Urban and Community Forestry Assistance
(Maryland Website)



Fact sheets produced through a grant from the USDA Forest Service. USDA is an equal opportunity provider, employer and lender.

Meet the Staff

Mitch Masser
NPDES Compliance Specialist



Mitch has joined the Bureau of Resource Management as an NPDES Compliance Specialist, supporting the county's efforts to meet MS4 permit goals. He enjoys fishing Carroll County's waterways and is excited to join the Watershed Restoration Division and contribute to the betterment of the county's watersheds. Mitch grew up on a farm in Frederick County, graduated from Walkersville High School, and has a bachelor's degree in Fisheries Science from Virginia Tech. His career has kept him near the water- completing oyster restoration projects in Virginia, collecting fisheries data aboard commercial ships in Alaska's Bering Sea, and serving as a lifeguard with the Ocean City Maryland Beach Patrol. Mitch was proud to serve overseas as a Peace Corps Volunteer in Zambia, where he collaborated with a rural village on fish-farming and community wide school projects. He and his fiancé live in Taneytown with their two funny cats. On weekends they enjoy hiking, fishing, cooking new recipes, and working on their "urban farm".

Figure 2: Carroll County Tree Cover Change