



down to earth

Environmental Restoration Quarterly • Fall 2020

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A Balance of Stormwater Management and Floodplain Restoration

By Elizabeth Spencer, Watershed Restoration Engineer

Humans continue to find ways to modify their environment, typically in effort to either harness the power in Earth's inherent processes, or to slow, stop, or relocate the Earth's natural processes. In particular, humans have taken great interest in modifying streams and their floodplains. We create dams, constrict valleys, create agricultural ponds, build roadway embankments, bridges and culverts, and fill in floodplains to accommodate development. We have straightened streams and narrowed their floodplains to minimize them and move them out of the way of development. Nature; however, continues to show us that our human modifications do have a lifespan. With more extreme storms and greater flooding events, it is important to continue to consider the compounded effects of our modifications and seek to mitigate them.

As a part of the Clean Water Act, the Bureau of Resource Management is responsible for managing the quality and quantity of storm water in Carroll County. In efforts to maximize the beneficial impact of our restoration projects while also maintaining the safety and design standard for our current stormwater management facilities, the County has responsibly focused on retrofitting existing facilities to meet these varied goals, where feasible.

Willow Pond is a stormwater management facility on Sunshine Way in the Eden Farms Subdivision in Westminster.

It was originally converted from an agricultural pond into a wet pond facility. The stream valley adjacent to Willow Pond is one area that has been heavily modified over time. The floodplain had been severely constricted to make room for the pond, relegating the stream channel to be straightened and pinned against a roadway embankment. The floodplain of the channel up- and downstream ranges from 175 feet to 250 feet wide, while the floodplain adjacent to Willow Pond has been restricted to 50 feet. Further study has also indicated that the groundwater table may be more than 2 feet below the existing stream channel. Thus, the stream and its floodplain have lost its natural form and function.

Converted in 1991, this stormwater management facility no longer conformed to current safety and design standards. The Bureau of Resource Management has been working on the design and construction of a combined stormwater retrofit and adjacent stream restoration for Willow Pond. The innovative design, by the engineering firm RK&K, balances stormwater treatment while also creating diverse habitat in the pond, floodplain and stream. With this design, the specifications of the facility were raised to meet current standards while reducing the footprint of the pond. The reduced footprint has allowed the adjacent floodplain to be widened back out to approximately 105 feet.

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A Balance of SWM and Floodplain Restoration (continued from Page 1)

This design utilizes a structure engineered to intercept the floodway, diverting flood flows into the stormwater pond, while still maintaining the base stream flow within the channel. The stormwater pond will manage storm events by collecting rapidly accumulating flood flows to disperse more slowly. This will allow time for pollutants to settle out into the pond and filter more slowly back to the stream channel.

The intent of the floodplain design is to reconnect the floodplain, stream channel, and groundwater table. The reconnection helps to reduce stresses and velocities of flood flows that do overtop the weir wall by spreading them across the wide floodplain. The floodplain access also allows flows to percolate into the groundwater table.

The design creates 4.5 new acres of floodplain wetlands which will be planted with trees, shrubs and native herbaceous seeding. The vegetation will provide further benefits to the stability of and hydrology on the floodplain as well as assist with nutrient uptake. However, it will take some time for the vegetation to become well established and for the stream and floodplain to re-establish their dynamic balance.

In order to provide immediate protection as well as jumpstart natural processes, onsite trees removed will be utilized in the stream and floodplain. Logs will be placed across the floodplain and stream channel to provide stability. Root wads and smaller woody debris will be used to add localized mounded and depressional areas that will enhance habitat and help breakup floodplain flows. As the material breaks down over time, it will add its stored carbon back into the ground, and the planted vegetation will take over the job of providing stability and roughness to the floodplain.

Kibler Construction began construction on this project in February and is expected to complete construction by the end of the year.

*Grant funding for this project
provided by:*



Stream channel flowing to the weir wall, where it will be diverted into baseflow to return to the stream and flood flows to enter the stormwater management facility.



The smaller footprint of the retrofitted Willow Pond.



Root wads and smaller woody material being laid out for placement in localized mounded and depressional areas.

Stormwater Update

By Janet O'Meara, Watershed Management Coordinator

Construction is complete on the **Roberts Mill Stormwater Management Facility** in Taneytown. The grading permit will be held until the Spring of 2021 to ensure good stabilization of the site is achieved. A portion of the construction costs for this project are being paid for by a grant received by the County from Maryland Department of Natural Resources, Chesapeake and Atlantic Coastal Bays Trust Fund.

Construction is complete on the **Whispering Valley Stormwater Management Facility** located off of Michelle Road and MD Route 30 in Manchester. A landscaping contract was recently awarded to Thomas Hunter Landscaping, Inc. to replace trees that had to be removed as part of construction. We anticipate this landscaping being planted this fall. A portion of the construction costs for this project are being paid for by a grant received by the County from Maryland Department of Natural Resources, Chesapeake and Atlantic Coastal Bays Trust Fund.

Construction is complete on the **Shiloh Middle School Stormwater Facility** in Hampstead. A final walk through was held with a representative from the Board of Education in September. The grading permit for this project will be held until the Spring of 2021 to ensure good stabilization of the site.

Langdon Oil Company Stormwater Management Facility in Westminster is well underway. Construction of the retaining wall is complete, the bulk of the excess material has been removed via Maryland Midland Railway to a disposal site in New Windsor. We anticipate construction

continuing into the Fall and wrapping up in early December. This project received partial grant funding from Maryland State Highway Administration's Transportation Alternatives Program and Maryland Department of Natural Resources, Chesapeake and Atlantic Coastal Bays Trust Fund.

The **Greens of Westminster Stormwater Facility** is located in Westminster. Construction began in August with the relocation of an existing sanitary sewer line. Work is ongoing to construct the weir wall and the new embankment for the facility.

A portion of the construction costs for this project are being paid for by Maryland Department of the Environment through the Bay Restoration Fund.

The **Twin Ridge Stormwater Management Facility** is located off of Deer Hollow Drive in Mt. Airy. This retrofit will take the two existing facilities and create a wetland facility. Construction was awarded to Hamilton Site Construction in March. Construction began in August. All costs associated with this project are being paid by the Town of Mt. Airy.



Langdon
Grant funding provided by:



MDOT MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

Seeking Nominations! Accepting nominations for 2021 Environmental Action Awards starting January 1.

Carroll County

Environmental Action Awards

Check the website for more details after December 31.

<https://www.carrollcountymd.gov/government/boards-commissions/environmental-advisory-council/environmental-awareness-awards/>



Twin Ridge

Meet the Environmental Inspections Division

The Environmental Inspectors/Grading Reviewers perform grading reviews and inspection to ensure compliance with Federal, State, and local laws, codes, regulations, and conformance to approved plans and specifications as related to erosion and sediment control, grading, storm-water management, floodplain, forest conservation, and landscape ordinances.

Each inspector performs review, inspection, and enforcement for the following conditions:

- Residential sites
- Commercial sites
- Road construction
- Building construction
- Stream, floodplain, and wetlands protection
- Landscape/forest conservation
- Perform concept, preliminary, and final grading plan review
- Stormwater management maintenance inspections
- NPDES outfall inspections
- Illicit discharge inspections



Tim Matt

Environmental Inspector/
Grading Reviewer

Tim was born and raised in Frederick County, Maryland and graduated from Middletown High School. He attended Towson University and graduated with a BS in Psychology. His previous experience with geotechnical engineering, construction material testing, and environmental inspections led him to join the Environmental Inspections Division in 2019. Tim enjoys seeing and exploring the beauty of Carroll County while traveling to his inspections. During his free time, Tim can be found on the disc golf course or selling oysters from his family's oyster farm, King Corrotoman Oysters, in Lancaster, Virginia.



Charlie Goss

Environmental Inspector/
Grading Reviewer

With a career spanning almost 25 years, Charlie earned a BS in Geoenvironmental Science from Shippensburg University. He has worked as a Land Surveyor, Biology Teacher, GeoTechnical Inspector, and Motorsports Territory Manager. Charlie and his family live in Westminster. He enjoys challenging himself with DIY projects in the home and garage, as well as motorcycle travels and track days.



Tim Hare

Chief Environmental Inspector/
Grading Reviewer

Tim has worked for Carroll County for 32 years. He lives in the Hampstead area with his wife and 3 children. Tim enjoys playing golf, fishing, and traveling.



Robin Hill

Environmental Inspector/
Grading Reviewer

Robin spent most of her childhood in the Manchester area, graduating from North Carroll High School before receiving an Associates degree in General Studies from Carroll Community College. She has also resided in Westminster, Taneytown, and Union Bridge. Robin worked for 4 years as a dispatcher for the City of Westminster Police Department before coming to County Government. She worked in the Tax Collections Office, as a Zoning Technician, and as a Zoning Inspector before joining the Environmental Inspections Division.



Rich Wolters

Environmental Inspector/
Grading Reviewer

Rich worked for the Maryland Forest, Park & Wildlife Service as a Park Ranger before transferring to MDE as an Environmental Compliance Specialist until retiring from the State in 2015 which is when he joined the County staff. He enjoys going on road rallies with family in their classic cars (mostly Bimmers) and cruising to interesting locations. Rich enjoys traveling the United States and Europe. In his downtime he likes to listen to one of his favorite contemporary jazz artists through his Klipschorn speaker system with a glass of wine and great company.