



A LAND OF RIVERS



Anne Arundel County
Bureau of Watershed
Protection
& Restoration

AARivers.org
FY 2022 REPORT



DPW & YOU

Making a difference, together

Introduction

Dear Anne Arundel County Resident,

In the ninth year of our watershed restoration efforts, we officially achieved compliance with our State-issued stormwater permit, receiving our new 5-year permit in November of 2021. The implementation progress that we've made over the course of the past couple of years has positioned us to comply fully with this new permit over the course of the next several years.

Our restoration projects and programs continue to receive national recognition and awards, including our Preserve at Eisenhower Golf Course stream and wetland restoration project, recognized by the National Association of Counties (NACO) for the innovative collaboration between County departments in the service creating a model environmentally-sustainable recreation facility.

Additionally, our Full Delivery of Water Quality Improvements program, which involves time and money saving public/private partnerships, was recognized by both NACO and the Water Environment Federation (WEF) as an approach that helps the County meet and exceed regulatory requirements in innovative ways that are cost-effective and efficient.

The Bureau of Watershed Protection & Restoration (BWPR), within the Department of Public Works, leads these efforts in its role to provide clean water under its Municipal Separate Storm Sewer System (MS4) permit and the Chesapeake Bay Total Maximum Daily Load (TMDL). To date, the County has completed over 146 restoration projects and over 1,000 stormwater infrastructure projects to preserve our waterways for future generations.

This Bureau's 2022 Anne Arundel County *A Land of Rivers* report summarizes the watershed protection and restoration actions initiated by the County and our partners during fiscal year 2022 (July 1, 2021 – June 30, 2022). These actions, combined with those from previous years and work by countless community groups and individual residents, will continue to restore our waterways and protect our communities.

In Anne Arundel County, we are inexorably tied to these streams, rivers, and the Chesapeake Bay. This *A Land of Rivers* report continues to document the conditions of our waterways, describe solutions and communicate the urgent need to protect our County's waters, and live up to our promise to make Anne Arundel County *The Best Place – For All*.

Sincerely,



Steuart Pittman
County Executive



Watershed Health



Over the last few decades, Anne Arundel County residents have consistently made clear that they want healthy watersheds, rivers, and streams. At the same time, regulatory mandates have increased pressure to address evolving ecological problems.

As Anne Arundel County continues to grow, a watershed-based approach to restoration will promote the sustained protection of water quality and native habitat. Solutions that promote healthy watersheds while also addressing other infrastructure objectives are often the most cost-effective approaches.

The County defines a healthy watershed as one where hydrology, water quality, and habitat are suitable to protect human health, maintain viable watershed and other ecological functions and processes, and support healthy populations of native aquatic and terrestrial

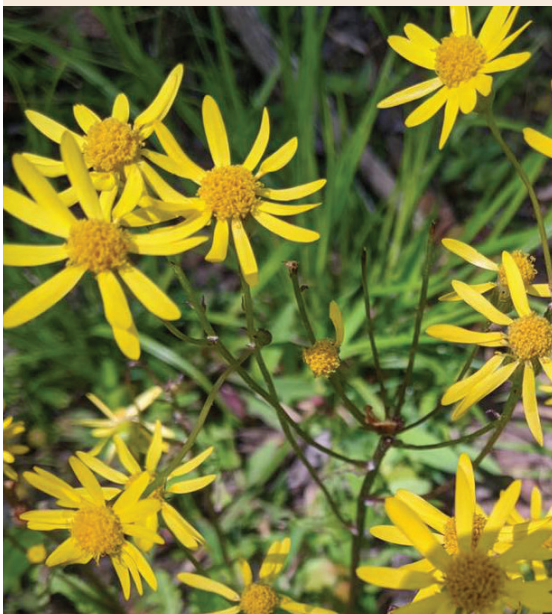
species. Improving watershed health is truly a county-wide effort. Anne Arundel County is committed to managing County operations in a manner that sustains our quality of life and economy while protecting the viability of our natural resources.

This watershed-based approach reflects and implements core Anne Arundel County values. In addition to protecting and improving watershed functions such as providing clean water and habitat, these projects promote improved public safety, economic vitality, and community stewardship. This approach relies on integrating the activities of multiple County departments and maximizes the use of limited resources by implementing solutions that meet multiple objectives.

The County works with regional watershed groups, community associations, business organizations, and individual

citizens to accomplish its goals. This collaborative approach enables entities to share resources, combine efforts, and address watershed issues that require a comprehensive approach. By prioritizing improvements that achieve multiple benefits to watersheds and infrastructure, we can cost-effectively meet our regulatory obligations while also achieving a net benefit to the long-term health and livability of our County.

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Solutions that promote healthy watersheds while also addressing other infrastructure objectives are often the most cost-effective approaches.
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Regulatory Drivers



Anne Arundel County's National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System (NPDES-MS4) permit and the Chesapeake Bay Total Maximum Daily Load (TMDL) set forth rigorous goals for controlling stormwater pollution and improving water quality. The NPDES-MS4 attainment goal tracks the management of 12% of Anne Arundel County's impervious surface area, such as roads, sidewalks, and driveways, which have little or no stormwater management. The County's Phase III Watershed Implementation

Plan (WIP) tracks the nutrient and sediment load reductions allocated to the County by the State for achieving the Chesapeake Bay TMDL. Progress toward meeting the Chesapeake Bay TMDL is reported in the County's NPDES-MS4 Annual Report to the Maryland Department of the Environment.

The seven jurisdictions (Delaware, the District of Columbia, Maryland, New York, Pennsylvania, Virginia, and West Virginia) in the Chesapeake Bay Program (CBP) partnership agreed to

develop Watershed Implementation Plans (WIPs) in three phases to provide a framework for reducing nitrogen, phosphorus, and sediment loads to meet water quality standards in the Chesapeake Bay and its tidal tributaries. The Phase III WIPs provide a road map for the numeric and programmatic commitments the jurisdictions intend to implement between 2019 and 2025 so that all practices are in place by 2025 to achieve the Bay's dissolved oxygen, water clarity/submerged aquatic vegetation, and chlorophyll-a standards.

2020 – 2022 2-Year Milestone Highlights (Stormwater, Wastewater, Septic)

- **13** – BWPR stormwater management restoration projects completed
- **5** – NGO stormwater management projects funded
- **3** – NGO stormwater management projects completed
- **188** – culverts and storm drains repaired or replaced
- **6,654** – curb miles swept
- **225** – nitrogen reducing septic systems installed
- **23** – septic systems connected to sewer



The Restoration Plan



Anne Arundel County is committed to helping Maryland meet its Chesapeake Bay clean-up goals by 2025. The County has already upgraded its six Water Reclamation Facilities (WRFs) to the highest level of wastewater treatment technology, dramatically reducing the amount of

nitrogen and phosphorus to local waterways and the Chesapeake. In addition, the BWPR continues to provide treatment for stormwater runoff from those areas of the County developed prior to modern stormwater management regulations. Finally, the County is pursuing innovative strategies

to deal with additional wastewater pollution from the septic sector, in concert with the Anne Arundel County Health Department and Maryland Department of the Environment. More information can be found at ourwAater.org.



Water Reclamation Facilities – Enhanced Nutrient Removal

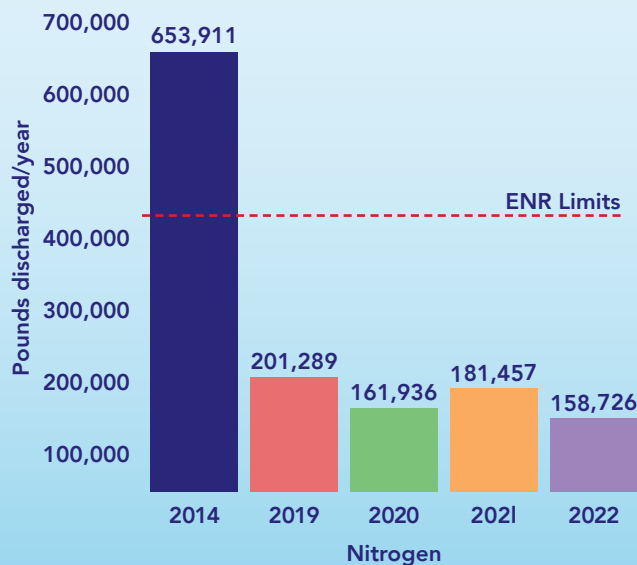
Anne Arundel County's \$249 million investment to upgrade each of its six Water Reclamation Facilities (WRF) with Enhanced Nutrient Removal (ENR) technology was completed in July 2017. These ENR upgrades have enabled each plant to

remove a far greater amount of nutrients, like nitrogen and phosphorus, from treated wastewater discharged to our rivers, creeks, streams, and Chesapeake Bay after the treatment process.

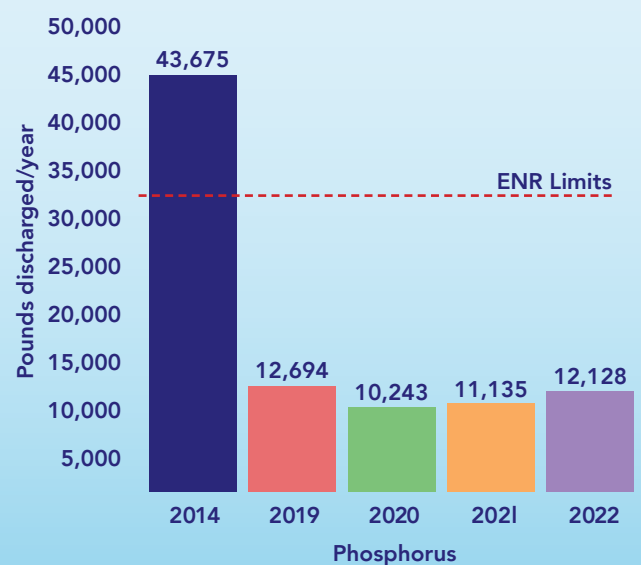
All County-owned facilities have been upgraded to achieve

annual average nutrient goals of wastewater effluent quality of Total Nitrogen (TN) at 4 mg/l and Total Phosphorus (TP) at 0.3 mg/l. Over the past four years, the new facilities have been performing at a level well below the required limits for Total Nitrogen and Total Phosphorus discharge rates.

Anne Arundel County Permitted Nitrogen Discharge Limits



Anne Arundel County Permitted Phosphorus Discharge Limits



Stormwater Remediation

As of the end of FY20, the County has met the primary restoration goal of its fourth generation MS4 permit by restoring the equivalent of 4,996 acres of impervious surface. The County's fifth generation MS4 permit was issued in November 2021 and set a new goal requiring the restoration of an additional 2,998 acres of impervious surface by November 4, 2026. The County has been making excellent progress and by the end of FY22 has restored the equivalent of 1,566 acres of impervious surface and is halfway there to meeting this new permit goal.

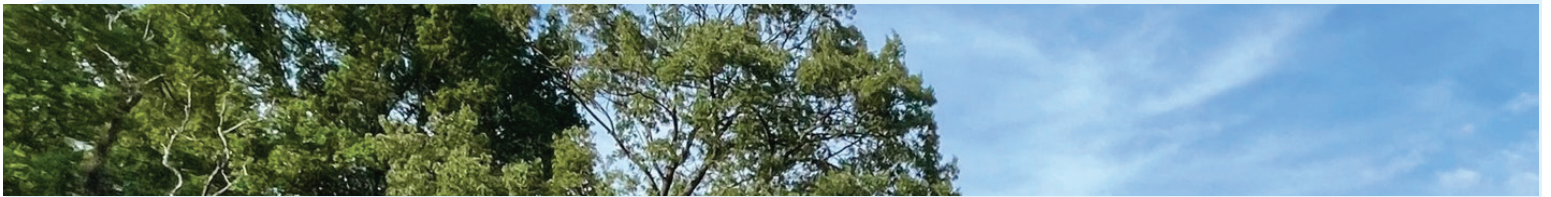
Septic System Conversions

There are approximately 41,000 septic systems in Anne Arundel County. Of these, several thousand are located within the "Critical Area," land within 1,000 feet of tidal waters. The typical septic system does not remove nitrogen, instead delivering about 23.2 pounds of nitrogen per year to the groundwater, which eventually makes its way to our streams and rivers.

The Anne Arundel County Department of Health locally administers the Bay Restoration Fund (BRF). The BRF is a state-supported initiative that provides funding to replace conventional septic tanks with

nitrogen-reducing technology. The units reduce the amount of harmful nutrients, such as nitrogen, that septic systems discharge into the Chesapeake Bay and its tributaries. An upgraded, nitrogen-removing septic system cuts a system's nitrogen load in half. The Department of Public Works and Health Department continue to work closely together to direct Bay Restoration Funds for septic conversions and septic-to-sewer connections, as revenues are available. In FY22, BRF funds were leveraged to cost-shared 225 pretreatment units and 13 connections to public sewer. For more information on the BRF grant program, visit www.aahealth.org.



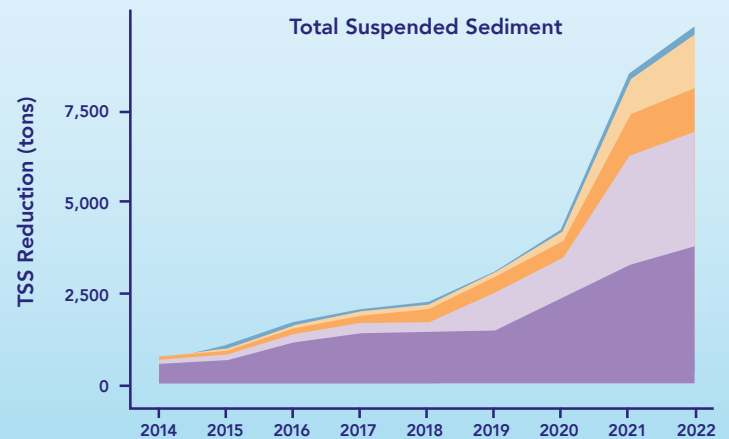
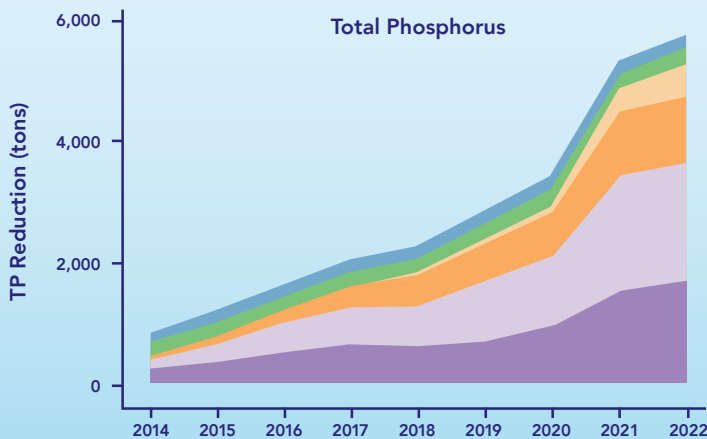
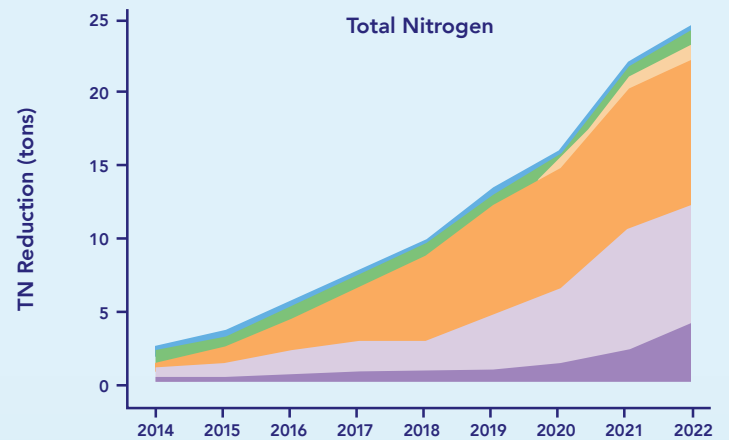
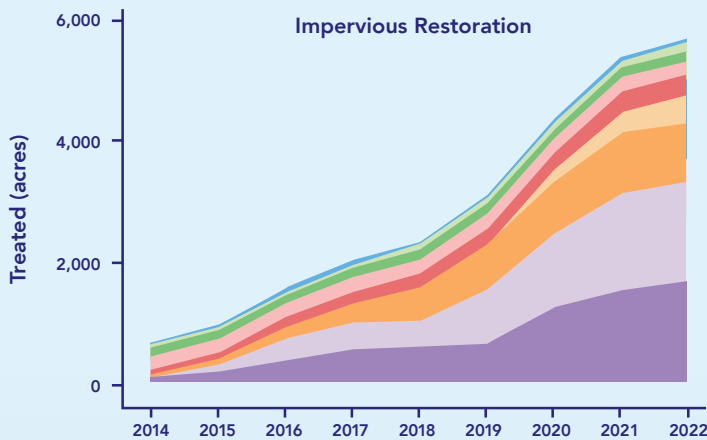


Healing Our Rivers

The health of Anne Arundel County's waterways is tied to the health of its watersheds. While the health of the Chesapeake Bay itself is integrally tied to inputs from the region's largest waterways, such as the Susquehanna and Potomac Rivers, the health of our

ivers and creeks has been demonstrated to be largely driven by activities – both past and present – in our own, local watersheds. Nutrient discharges from our water reclamation facilities and septic systems, coupled with sediment and nutrient delivered from our businesses and homes, are

the drivers of our local impairments due to excessive stormwater runoff. Our restoration work, paired with that being required of the other bay jurisdictions, can ensure that our creeks and rivers, as well as the Chesapeake Bay, are on the path to recovery.



The Funding History



Through fiscal year 2022, the majority of the County's stormwater-related work was funded through the Watershed Protection and Restoration Fee (WPRF), an impervious surface-based fee on properties throughout the County. That work includes not only the County's clean water restoration projects, but also the maintenance and replacement of existing drainage infrastructure, the inspection of public and private stormwater facilities, and key programmatic efforts around environmental education, illicit discharge detection and elimination (IDDE), and monitoring of restoration projects to evaluate their success. As detailed in this report, the WPRF supports staff in the Department of Inspections

and Permits, Department of Public Works Bureau of Highways, Anne Arundel County Soil Conservation District, and the Department of Public Works Bureau of Watershed Protection and Restoration working to protect and restore the County's watersheds.

As required by Anne Arundel County's NPDES-MS4 permit, the proposed FY20 Financial Assurance Plan was introduced at the January 4, 2021, Anne Arundel County Council Meeting as Resolution 4-21. The Resolution was passed February 1, 2021. The 2022 Financial Assurance Plan will be submitted to the County Council by December 31, 2022.

How is the fee calculated?

The Department of Public Works utilized Geographic Information Systems (GIS) technology along with parcel data collected from the Consolidated Property File and County Zoning Maps to estimate the imperviousness of residential properties in the various zoning districts. This information was used to determine a baseline Equivalent Residential Unit (ERU) of impervious surface of 2,940 sq. ft. An ERU is the base unit for calculating the annual charge for residential and non-residential properties. Currently the charge is \$89.25 per ERU, per year. The fee structure varies between land use type and intensity as seen in the table below:

ANNUAL WATERSHED PROTECTION AND RESTORATION FEE RATES		
Zoning	Rate Calculation	Current Fee
R10, R15, R22	$\$89.25 \times .4$	\$35.70
R1, R2, R5	\$89.25	\$89.25
RA, RLD	$\$89.25 \times 2$	\$178.50
Non-Residential	Actual sf of impervious surface divided by 2,940 x \$89.25	Varies

To view the WPRF for your property, visit www.aarivers.org.

Bureau of Watershed Protection and Restoration - Carrying Out the Plan



The Bureau of Watershed Protection and Restoration develops and delivers technical environmental assessment, restoration planning and implementation information and regulatory support to the Departments of Public Works, Inspections and Permits, and the Office of Planning and Zoning. This support enables these agencies to carry out their responsibilities for successfully managing delegated programs outlined in the County's NPDES-MS4 Permit, the State's Critical Area program, and the State Forest Conservation Act, as well as their responsibilities for land use decisions set forth in the County Code. Implementation of the BWPR stormwater restoration strategy is focused on three key areas:

•Stormwater Pond

Retrofits - Existing facilities, such as dry ponds, detention ponds, or infiltration basins that

have failed or are outdated are rebuilt to optimize their pollution reduction capacity and provide an array of ecosystem benefits.

•Stormwater Outfall

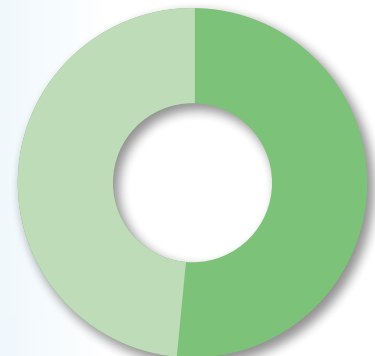
Repairs - Eroded or failing stormwater outfalls – locations where drainage systems discharge onto erosive soils – are reconstructed into systems that can both safely convey high flows as well as provide water quality benefits and habitat.

•Stream & Wetland

Restoration - Stream erosion is the largest contributor of sediment and phosphorus to our local rivers, and the County's strategy to stabilize and re-hydrate valley bottoms through restoration will provide benefits to water quality, flood plain connection, and native habitat on a broad scale.

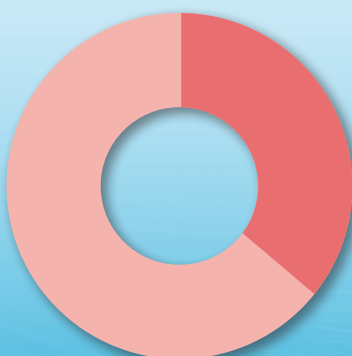
In addition to the work above, funds from the WPRF are used to address a multi-million-dollar backlog of stormwater infrastructure repairs and replacement, ensuring that the County's culverts and drainage infrastructure are functioning properly and are not a threat to public health and safety.

BWPR MS4 Attainment Goals (acres to date/projected acres)



5th Generation MS4 Permit Progress Tracking
1,556 out of 2,998 acres (~52%).

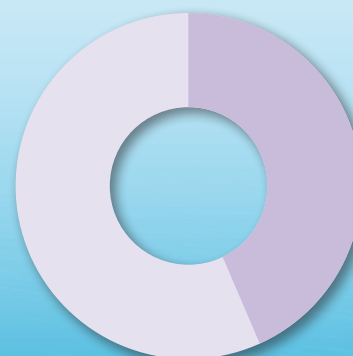
BWPR Restoration Project Goals (Number of projects completed/anticipated)



Stream & Shoreline Restoration
30 out of 84 Completed



Stormwater Management Pond Retrofits
30 out of 66 Completed



Outfall Stabilizations
7 out of 16 Completed

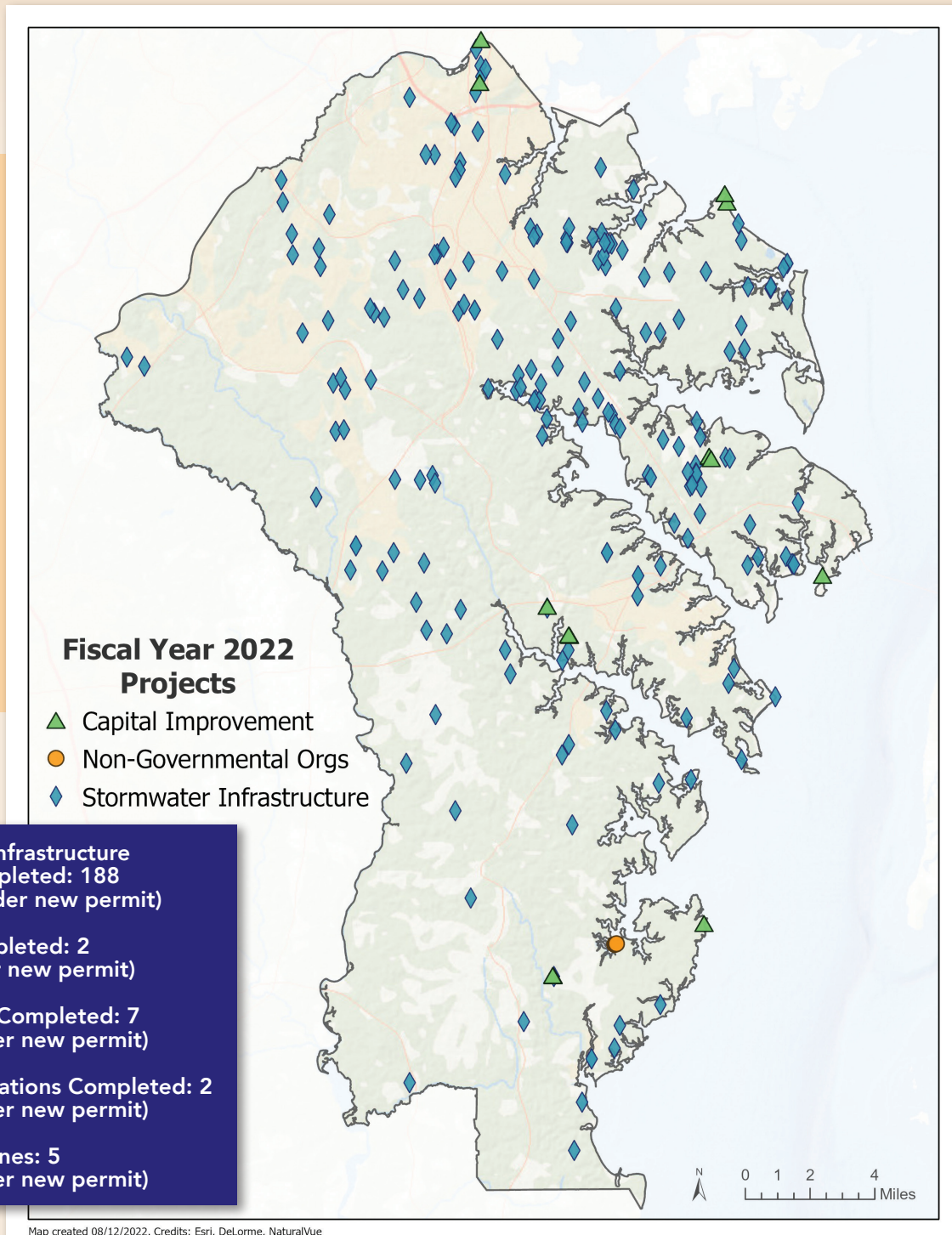
BWPR Restoration Projects Completed in FY22



The following projects were constructed to meet multiple objectives including: water

quality enhancement, infrastructure protection, improved flood attenuation,

improved fish habitat, and improved riparian functions.



More detail on the locations of these projects can be found at aarivers.org using the BWPR Watershed Restoration Projects Viewer.

Highlighted Project



George Cromwell Elementary School, located in Glen Burnie in the Sawmill Creek (Patapsco Tidal) watershed, partnered with our Bureau to install a multi-faceted stormwater management project that would also serve as an educational resource for the school. The project was managed by Jeff Ratteree of Anne Arundel County BWPR, designed by Ashton Rogers of GHD, Inc. Construction was completed by Underwood & Associates, and construction management/inspection was completed by Gannett Fleming.

The objectives of this restoration project were to design an innovative, natural drainage system for stormwater treatment while also providing adequate drainage and safe conveyance of storm flows, and protecting the school property and adjacent public roadways.

This project also contributes to the County's waste load allocation goals toward the Chesapeake Bay Total Maximum Daily Load (TMDL) by maximizing the water quality credit potential of the site. Annual pollutant load entering this site are estimated to be 117 pounds/year of Total Nitrogen (TN), 7 pounds/year of Total Phosphorus (TP), and 1.8 tons/year of Total Suspended Sediments (TSS). Proposed water quality treatment load reductions achieved by the project for TN, TP, & TSS are 74%, 76%, and 97% respectively.



The bioretention cells & outdoor classroom at George Cromwell Elementary School were installed in June 2021 at a cost of approximately \$770,000 to complete. In addition to the water quality benefit of the project, the project integrated an outdoor classroom space for the benefit of the adjacent elementary school and surrounding community. This space will be used by the school

as an educational tool to expose the school and its students to the water cycle, the preservation of the Chesapeake Bay, and the importance of protecting our natural waterways in an effort to maintain the balance of our environment.

To learn more about this project, please visit www.aarivers.org.

Stormwater Infrastructure Program (SIP)



Effective operations and maintenance practices are critical to watershed health. The County operates and maintains a wide range of infrastructure to protect public health and safety, water quality, and property. It is important to ensure operations and maintenance activities not only keep those assets in good working order, but also protect water quality and habitat functions.

The Stormwater Infrastructure Program is responsible for managing the inventory, inspection, and development of the County's Stormwater Infrastructure Capital Program. This program aims to repair and/or replace aging, damaged storm drain systems and culverts throughout the County, as well as address any associated design and permitting requirements. These projects are normally identified and transferred to the

SIP by the Road Operations Division and are scheduled in a worst-first priority order.

Funds from the Bureau of Watershed Protection and Restoration are used to address stormwater infrastructure repairs and replacements, ensuring that the County's culverts and drainage infrastructure are functioning properly and are not a threat to public health and safety.

STORMWATER INFRASTRUCTURE PROGRAM PROJECTS BUDGETED IN FY22

Culvert & Closed Storm Drain Repair	\$5,167,000
Emergency Storm Drain	\$2,350,000
Storm Drain/SWM Infrastructure (BWPR)	\$1,000,000
TOTAL	\$8,517,000

FY22 STORMWATER INFRASTRUCTURE PROGRAM BWPR CAPITAL PROJECTS

Council District	# of SIP Projects
1	21
2	18
3	38
4	11
5	50
6	17
7	33
TOTAL	188

SIP & Road Operations Division Milestones



The Stormwater Infrastructure Program (SIP) is also responsible for managing the inventory, inspection, and maintenance of over 850 stormwater

management facilities that are collectively referred to as Best Management Practices (BMPs). In addition, SIP works alongside the Road Operations Division to

sweep County roads to remove loose materials, litter, and other debris that is unsightly, hazardous, or could cause possible drainage obstructions.

2022 MILESTONES	
ACTION	RESULT
BMP's Inspected	445
Curb Miles Swept	6,654
Tons of Litter Collected (Street Sweeping)	173
Storm Drain Structures Cleared	1,660
Linear Feet of Drain Pipe Cleared	44,180
Linear Feet of Ditch Cleaned	57,904
Storm Drains Cleared	3,465



Watershed Protection and Restoration Fund Revenue and Expense Report



Maryland Environment Code Ann §4-202.1 (2013) requires that a county make a report publicly available, beginning on July 1, 2014, and every two years thereafter. This requirement was amended in FY15 to require annual reporting of operating expenditures. The following report is being issued to meet these revised requirements, and includes revenues and expenses for FY22, the ninth year of implementation for the Watershed Protection and Restoration Fund in Anne Arundel County, Maryland. This report includes expenses incurred beginning July 1, 2021 through June 30, 2022.

Revenues

The Stormwater Fee was first billed on property taxes on July 1, 2013. There were 223,153 properties in Anne Arundel County that were subject to the fee. For FY22, Anne Arundel County has received \$23,904,000 in revenues as of June 30, 2021. In addition to the Stormwater Fees, the County has received \$867,000 to fund watershed protection and restoration projects from other sources.

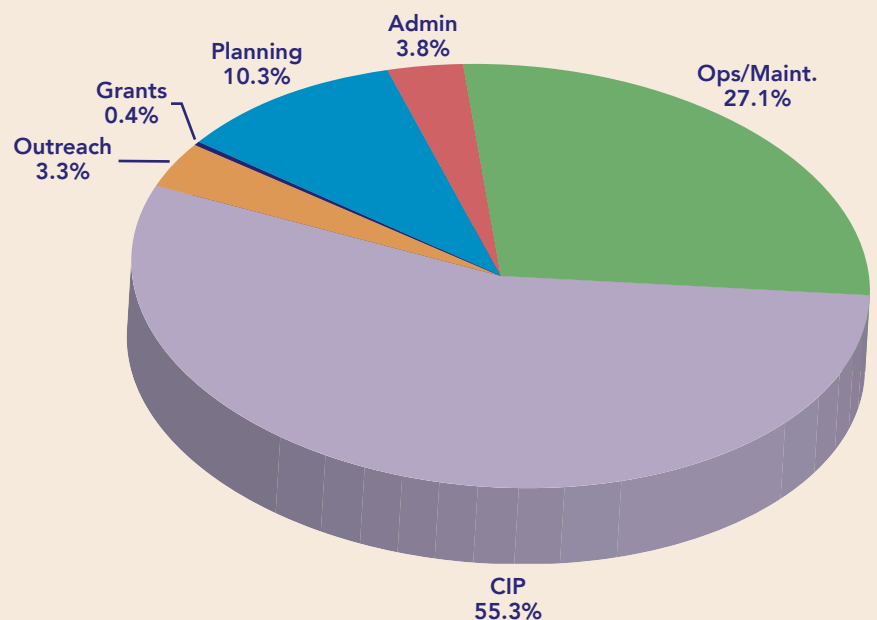
Expenditures

Operating expenditures for FY22 totaled \$23,697,000. It should be noted that beginning in

FY20, the County has taken a more aggressive approach to debt service. In FY22, the County has paid \$10,445,000 out of the total operating expenditures directly towards debt service. Of the remaining operating expenditures, \$6,414,000 was spent on operations and maintenance activities for the county's stormwater infrastructure. An additional \$2,429,000 was spent for planning for future improvements to these systems. The fund balance of \$1,074,000 will be used to pay debt payments associated with the capital improvement projects required to update the aging infrastructure and the construction of best management practices for locations that do not meet current requirements.



FY22 Operating Expenditures



Surface Water Monitoring Program



The Surface Water Monitoring Program is responsible for evaluating the in-stream water quality of the County's non-tidal streams and rivers. The program monitors the health and water quality of the County's streams and rivers in a variety of ways and for a variety of reasons, including:

Biological Health – Biological assessments are a highly effective, scientifically validated approach to understanding the overall health and quality of streams. Since 2004, the County has monitored the biological health of its non-tidal streams and rivers for two overarching purposes: to establish a general baseline of knowledge regarding stream health and to compare

future conditions over the long term to see if management actions are successful in restoring watershed health to degraded systems.

Fish and aquatic insect communities are the stream communities the County uses to understand overall stream health. Aquatic insects are somewhat stationary and integrate a whole season of water quality impacts in a way that a single water sample or short series of water samples simply cannot do.

Fish use different kinds of stream habitat and are mobile, providing a different understanding of stream health. Changes in

biological communities from their known and well-studied natural condition can indicate impairment in stream health.

BWPR finished its third round of sampling in 2021, affording us for the first time a complete baseline of fish distribution across the County and continuing the on-going assessment of aquatic insect communities performed since the program's inception in 2004. Using this fish distribution information, BWPR staff produced an atlas of freshwater fishes found in the County, which can be found on the BWPR Ecological Assessment & Evaluation unit's Biological Monitoring webpage at www.aarivers.org.

Monitoring for Restoration Success



To determine if a stream restoration project is meeting its objectives and ensure that funds are spent efficiently, monitoring is performed to measure water quality, biological, and stream channel stability both before and after restoration activities. Currently, detailed monitoring to characterize pre-restoration conditions has been completed in both the Cowhide Branch and Furnace Branch watersheds. In

Furnace Branch, the County will begin collecting post-restoration water samples and will continue sampling the aquatic insect population now that restoration work is complete to determine how effective the project is at enhancing ecological conditions. Similar characterization work is underway in Cowhide Branch where, in conjunction with a stream restoration project,

a large dam was removed to restore the free movement of fish within the watershed. Physical stability assessments and fish population sampling have been performed in the reaches upstream of the project area so that the actual level of fish habitat restoration can be determined during the post-restoration monitoring period.



Highlighted Research Partnerships



BWPR values its partnerships with academic institutions and other governmental agencies. Bureau staff work closely with a variety of Federal, State, and local governmental agencies and various non-governmental organizations to further its mission. By working closely with partners, the Bureau can participate in cutting edge research and monitoring work, encourage stream and wetland restoration, and support other cost-effective research opportunities. Examples of such efforts include:

USGS Legacy Sediment Study.

The streams we see today are greatly different from what was here 400 years ago. It is believed that our river systems were a mosaic of different kinds of stream channels and shallow wetlands, mediated by the impactful activities of the North American Beaver (*Castor*

canadensis). As the beaver was hunted to near extinction for its fur and the land was cleared and developed beginning in the 1600s, vast amounts of sediment filled our stream valleys. This project is an attempt to understand the ecological and geomorphic conditions of these filled riparian areas prior to European colonization. By understanding the original systems present in these landscapes, this work will inform future approaches to stream and riparian area restoration activities.

eDNA versus Traditional Bioassessment Monitoring Comparison Study.

All organisms shed their DNA into the environment. Using amplification techniques and comparison libraries of DNA from known sources, it is possible to collect a simple water or sediment sample and

determine the presence of a whole variety of aquatic organisms, even if they exist in low numbers. The potential of using environmental DNA (eDNA) as an assessment technique to characterize stream health is great, but it requires calibration with traditional physical sampling techniques that have been extensively used and vetted over the last 40 years. At a handful of stream sites in the County, UMCES scientists have collected eDNA samples while County staff and our consultants have sampled the same reaches using the traditional assessment methods. By comparing the results, UMCES scientists will work to refine and calibrate eDNA sampling techniques for use in stream restoration monitoring and ecological health assessment.

Illicit Discharge Detection and Elimination (IDDE) Program



BWPR is responsible for implementing the County's Illicit Discharge Detection and Elimination (IDDE) Program, which focuses on identifying and eliminating illicit discharges to the County's storm drain system. An illicit discharge is defined as any discharge to the storm sewer system that is not composed entirely of stormwater (except where allowed by a discharge permit). BWPR collaborates with other County agencies that have the legal authority to inspect and enforce any identified illicit discharges. The County screens a minimum of 150 outfalls yearly for dry-weather flow conditions; if dry-weather flow is observed, the discharge is tested for pollutants, and the source of the pollution is investigated. The County's IDDE program has been successful in the identification and removal of a wide variety of sources of pollutants, including illicit wastewater connections, upland pollutant sources, illegal dumping, and spills.

Case Study: The "Smurf" Pond

In December 2021, while performing an illicit discharge inspection at a stormwater outfall and pond in Linthicum Heights, the County's IDDE stormwater monitoring consultant observed standing water with extensive contamination by a bright blue substance in the pond. Upon investigation of the upstream drainage area, inspectors discovered a thick blue

substance staining the storm drain system, which led back to the loading dock area of a nearby corporate building. At the loading dock, the County's consultant observed a trash compactor into which full bottles of blue hair dye were compacted and allowed to leak out into a trench drain below. The conditions at the outfall were immediately reported to the County's Environmental Hotline, and the inspectors followed up with the Department of Inspections & Permits (I&P) when the source of the pollution was found. Upon investigation, I&P inspectors confirmed the illicit discharge and reported the issue to Maryland Department of Environment (MDE). A subsequent meeting was held involving I&P, MDE, the facility's manager, and an environmental remediation contractor. MDE advised the facility and the contractor throughout the clean-up process.

Follow up inspections of the outfall and pond in January 2022 showed no evidence of remaining blue substance, but the County's IDDE consultant did observe flowing water with extensive suds in the standing water at the outfall. Upon investigation of the upstream drainage area, including the loading dock area of the facility, the County's consultants observed soapy liquids leaking from the trash compactor into the trench drain below. The conditions at the outfall were

immediately reported to the Environmental Hotline. I&P inspectors investigated shortly thereafter and observed numerous examples of "poor housekeeping" and the potential for illicit discharges. Based on the violation that occurred the previous month, I&P once again contacted MDE and a joint inspection of the facility - including the loading dock, trash compactor, and all stormwater infrastructure - was conducted. MDE concluded that the facility was not in compliance with their 12-SW general discharge permit and took over all enforcement responsibilities. Unannounced inspections were conducted in March 2022 (by MDE and I&P) and June 2022 (by MDE only) as MDE continues to work with the facility to bring them into compliance with their permit.



Watershed Restoration Grants



Successful conservation and preservation of Anne Arundel County's watersheds takes teamwork. To that end, in 2014 the Anne Arundel County Department of Public Works, in partnership with the Chesapeake Bay Trust, created the Anne Arundel County Watershed Restoration Grant Program, a community grant program to support watershed restoration activities throughout the County to improve water quality in local streams and rivers. The grant program was created to engage

local nonprofit organizations, landowners, and communities in efforts to restore the County's waterways; to provide resources to these groups to enable them to implement greening and water quality projects; and to assist Anne Arundel County's efforts to meet the requirements of its state and federal stormwater permit and local waterway cleanup plans. This program encourages on-the-ground restoration activities that reduce stormwater flow and pollutants and engage

Anne Arundel County residents in these activities.

For more information about the Anne Arundel County Watershed Restoration Grant Program, please visit www.cbtrust.org.

Below is a list of organizations that were awarded funding from Anne Arundel County for water quality restoration projects in 2022:

ORGANIZATION	PROJECT DESCRIPTION	WATERSHED	FUNDING AMOUNT	MATCH AMOUNT	IMPERVIOUS ACRES TREATED
Severn Riverkeeper	Chestnut Hill Cove (Ph. III) Stream Restoration	Patapsco River (Stoney Creek)	\$299,890	\$460,861	24.5
Severn Riverkeeper	Shipley's Retreat Stream Restoration	Severn River (Severn Run)	\$300,151	\$1,172,087	75.94
Arundel Rivers Federation	Honeysuckle Drive Living Shoreline	South River (Selby Bay)	\$177,427	\$537,400	4.2
Arundel Rivers Federation	Turkey Point (Paca Drive) Bio-Swale	South River (Selby Bay)	\$31,514	\$1,700	0.4
Pines Community Improvement Association	Pines Park Micro-Bioretenion	Severn River (Chase Creek)	\$24,479	\$9,449	0.3
TOTAL			\$833,461	\$2,181,497	105.34



The Anne Arundel County Watershed Stewards Academy (WSA) was created in 2009 out of a partnership between Arlington Echo Outdoor Education Center and the Anne Arundel County Department of Public Works to build capacity within communities to reduce pollutants entering our waterways via stormwater runoff. The Bureau of Watershed Protection and Restoration continues to provide critical support in connecting Stewards and communities with watershed studies, planning, and restoration efforts.

The WSA trains citizens in Anne Arundel County to help neighbors reduce pollution in our local streams, creeks, and rivers. WSA's hands-on training course gives Stewards the tools to bring change to their communities, by turning knowledge and good intentions into action. Stewards work with communities to install projects such as rain gardens or conservation landscapes that capture polluted runoff.

Collectively, these community and individual actions add up to better health for our local waterways and the Chesapeake Bay.

RePlant Anne Arundel: A County-wide Tree Planting Initiative – From 2013 to 2017, Anne Arundel County lost over 2,500 acres of forests, the highest rate of forest loss in any urbanized county in Maryland. In response to this loss, WSA, in partnership with Anne Arundel County and with support from the Helena Foundation, has created RePlant Anne Arundel to train volunteer Tree Troopers and execute tree planting efforts across the County.

RePollinate Anne Arundel – Inspired by the RePlant Anne Arundel Program, Watershed Stewards, in collaboration with Anne Arundel County Master Gardeners and the USGS Bee Lab, grow and distribute native plants.

2022 WSA Successes:

- Hosted 21 outreach and continuing education events, 2 short courses and the 15 session Watershed Steward Certification Course (over 120 hours of training and outreach to over 1,100 attendees)
- Reached 19,121 residents, providing technical assistance or environmental education.
- Planted 27,295 native perennial plants and shrubs, along with 3,033 trees for a total of 30,328 plants in the ground.
- Led more than 575 restoration projects
- Stewards donated 10,265 volunteer hours towards restoration, education, and outreach in their communities
- Removed 250,000 square-feet of invasive species

For more information about WSA, please visit www.aawsa.org.



Public-Private Partnerships - Full Delivery of Water Quality Improvements Contract

North Gully at Cecil Avenue (Jabez Branch) Stream & Wetland Restoration -

Launched in 2016, the County's "Full Delivery of Water Quality Improvements" contract was designed to increase the county's environmental restoration capacity. The contract is structured to help Anne Arundel County meet its federal pollution reduction permits and goals by partnering with the private sector to implement cost-effective restoration projects that reduce runoff. Specifically, the work supports the County's Municipal Separate Storm Sewer System (MS4) and Chesapeake Bay Total Maximum Daily Load (TMDL) permits.

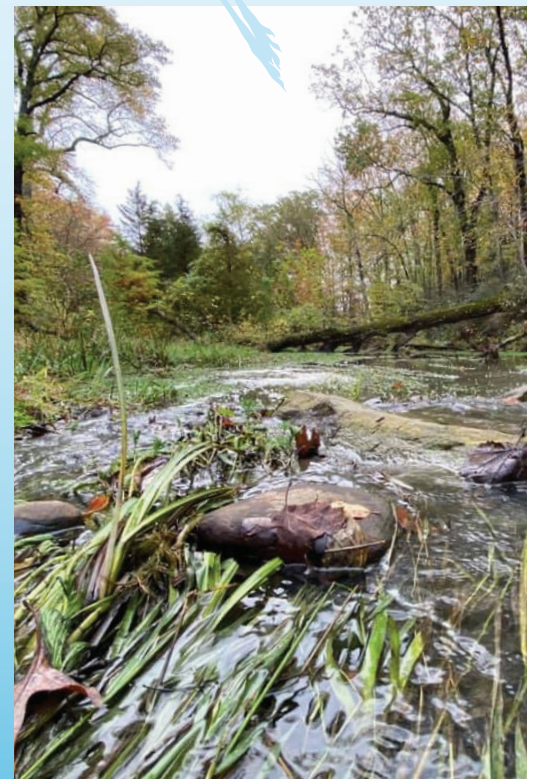
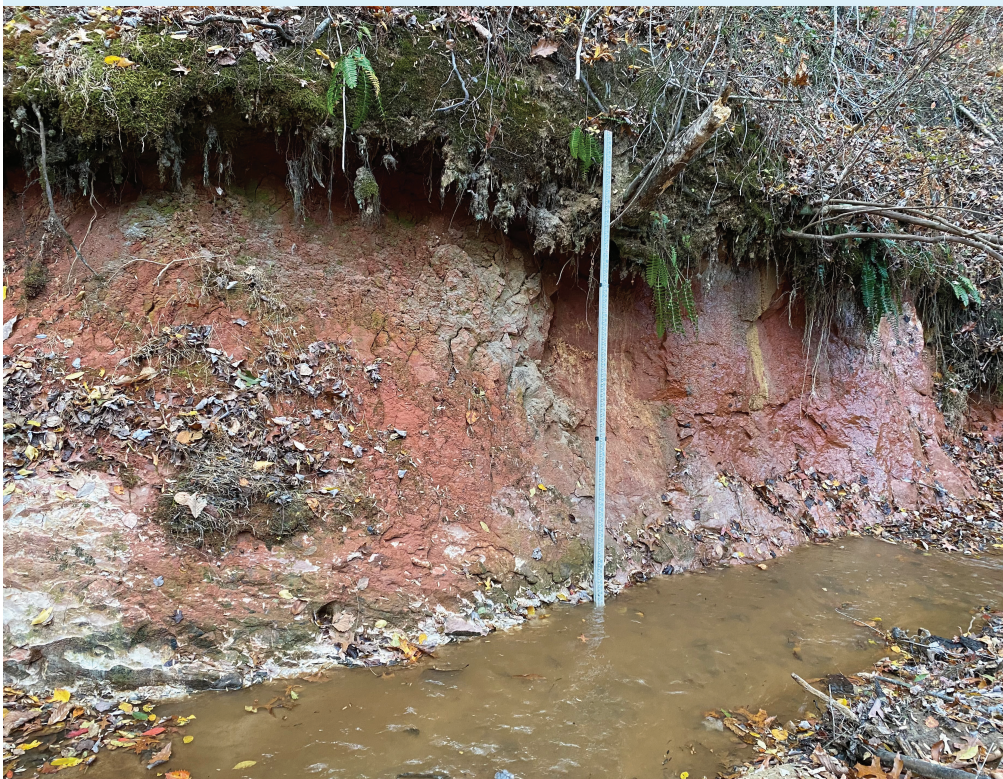
During FY22, the Bureau of Watershed Protection and

Restoration awarded \$1.99 million through its innovative Full Delivery of Water Quality improvements contract for stormwater management and wetland creation in the Jabez Branch sub-watershed (Severn River watershed). The winning design-build team, Underwood & Associates, Inc. will undertake the landowner coordination, design, permitting, and construction of the stream restoration project.

The Jabez Branch Stream & Wetland Restoration project, located in Millersville, will use Regenerative Stream Channel techniques to restore 260 linear feet of stream and create approximately 17,000 square feet of shallow, ephemeral pools, capturing drainage from 9.67 acres and

connecting the North Gully RSC to the receiving stream. The project will also result in significant annual pollutant load reductions draining to the Chesapeake Bay, including over 1,900 pounds of total nitrogen, 800 pounds total phosphorus, 760 tons of total suspended sediments, and 200 equivalent impervious acres treated. The full award will only be paid upon completion of the project and verification of the project's benefits, which is anticipated to be completed in the fall of 2023. The County's capital program intends to make an additional solicitation in the fall of 2022.

More information about Underwood & Associates can be found at www.ecosystemrestoration.com.





Soil Conservation Districts were formed in response to the Dust Bowl that occurred in the 1930s, when eroding land led to dust storms and economic devastation. There was an initiative to form Soil Conservation Districts throughout the country and local landowners made up a Board of Supervisors that could convey to the federal government the needs of the local agricultural community. Each county in Maryland has a Soil Conservation office with Frederick County having two.

The Anne Arundel District was formed in 1946. Working with agricultural landowners, the District provides guidance as well as engineering services to keep soil and nutrients on the land. The District partners with Anne Arundel County, the Maryland Department of Agriculture (MDA), the Natural Resources Conservation Service (NRCS) and the Southern Maryland Resource Conservation and Development (RC&D) to accomplish its mission. The

office houses both state and federal employees, all working together to accomplish the same goals. The office currently works with approximately 400 agricultural cooperators throughout the County.

Since Soil Conservation Districts have experience with controlling soil on agricultural land, when the Maryland Sediment Control Law was passed in 1970, the state assigned the Districts with the task of reviewing all sediment and erosion control plans for urban development. Thus, the Anne Arundel Soil Conservation District reviews the sediment and erosion control portion of a grading plan that is submitted to the County.

A high priority mission of the District is to meet the federally mandated Chesapeake Bay Total Maximum Daily Load (TMDL) by 2025. These goals have been set by the Environmental Protection Agency and reaching these goals in the agricultural community of the County is the

responsibility of the Maryland Department of Agriculture. Soil Conservation Districts throughout the state have partnered with MDA to accomplish this task. Districts accomplish this by installing Best Management Practices (BMPs) on agricultural land. There are 122 BMPs, both agronomic and structural, each having their own standard and specification. One of our more recent tools to combat eroding stream on agricultural properties are Step Pool Storm Conveyance systems (SPSC) that, until recently, have only been installed on urban sites.

With Anne Arundel County working with the urban community and Soil Conservation working with the agricultural community, we are working together to meet our TMDL goals and thus improving the water quality in the Chesapeake Bay.

Learn more at
www.annearundelscd.org.

A LAND OF RIVERS

Anne Arundel County
Bureau of Watershed
Protection
& Restoration

AARivers.org

FY 2022 REPORT



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