

# PATUXENT RESERVOIRS WATERSHED PROTECTION GROUP TECHNICAL ADVISORY COMMITTEE

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## 2023 ANNUAL REPORT

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Established in 1996 to protect the long-term integrity of the Patuxent Reservoirs and the contributing watershed



# MESSAGE FROM THE CHAIR

On behalf of the Patuxent Working Group's Technical Advisory Committee, I am pleased to present our 2023 Annual Report of the Technical Advisory Committee. It has been a distinct honor to work alongside many professionals dedicated to the protection of the natural resources within the reservoirs' watershed, ultimately resulting in further protection of the drinking water supplied by WSSC Water.

The protection of our valuable water resources is critical to the health and sustainability of our communities and the partnership between our respective jurisdictions plays a pivotal role in ensuring the protection of these resources remains of paramount importance.

The TAC priorities for 2023 included on-going efforts for refining our GIS geodatabase and mapping tool project, analyzing salt related impacts to the watershed, promoting the accomplishments in meeting the sediment TMDL goals with the State, and beginning an initiative to better understand the challenges associated with the implementation of Agricultural Best Management Practices on rented agricultural lands.

While the GIS Mapping and Analysis tool was completed in 2022, an effort is underway to transition the home of the mapping and analysis tool from Prince Georges County to WSSC. The TAC also considered data needs and enhancements to the mapping tool that would make this tool more effective for the TAC members to use on a regular basis.

During 2023, the TAC submitted a technical memorandum providing the justification for re-categorizing the Sediment TMDL for Triadelphia Reservoir to MDE. As of the printing of our annual report, the justification is still being considered by MDE and awaiting a final determination for a future *Integrated Report of Surface Water Quality in Maryland*.

The TAC also formed a subcommittee to study and better understand the challenges with implementing Agricultural Best Management Practices on rented agricultural lands. The Subcommittee is currently working on a landowner/operator survey that will be used to help understand and illustrate the challenges. The goal will be to compile this information and subsequently offer a workshop that can identify avenues to increase the implementation of these practices on rented lands.

I was honored to not only serve as the TAC chair this past year, but to once again witness the collaboration and teamwork of individuals that represent the partner agencies. I would especially like to express my thanks to Laura O'Donnell and Robin Forte, TAC coordinators, for their continued support that helped the TAC stay focused and set the workgroup priorities. As we look forward to the coming year, the TAC will remain focused on the ongoing projects of 2023, as well as look at new initiatives in the upcoming year. One thing that all partner jurisdictions share is a passion for protecting our soil and water resources and through our collective efforts we remain highly focused on finding avenues and opportunities to protect and improve the Patuxent Reservoirs Watershed.

Sincerely,

John Zawitoski

2023 Chair, Technical Advisory Committee

# INTRODUCTION



The Patuxent Reservoirs are the source of drinking water to approximately 600,000 customers, most of whom are located in eastern Montgomery County and northern Prince George's County. The Patuxent Reservoirs watershed encompasses an area of about 132 square miles and is located almost entirely in Howard County (53%) and Montgomery County (46%), with the remaining drainage area (1%) located in Prince George's and Frederick Counties. The Patuxent Reservoirs watershed boundary consists of two watersheds: the Brighton Dam watershed, which drains into the Triadelphia Reservoir, and the Rocky Gorge Dam watershed, which drains into the Rocky Gorge Reservoir (also referred to as T. Howard Duckett).

In 1996, the Patuxent Reservoirs Watershed Protection Group (PRWPG) was established to protect the long-term biological, physical, and chemical integrity of the Patuxent Reservoirs watershed. The PRWPG consists of the Policy Board and the Technical Advisory Committee (TAC).

The Policy Board is comprised of executive and management level staff from the member agencies. The Board considers strategies and funding to address present or anticipated problems and work activities for the coming year. The TAC advises the Policy Board on issues that may affect the reservoirs and their watershed.

Since 1997, the TAC has completed an annual report for the Policy Board to summarize its accomplishments and identify funding needs to address watershed priority resource issues.

This annual report provides an update of on-going efforts and those completed in 2023.

# RESERVOIRS & WATER SUPPLY

The aim of this priority resource is to utilize raw water of the highest quality and sustainable quantity, so that the public receives a sufficient quantity of safe and high quality drinking water.

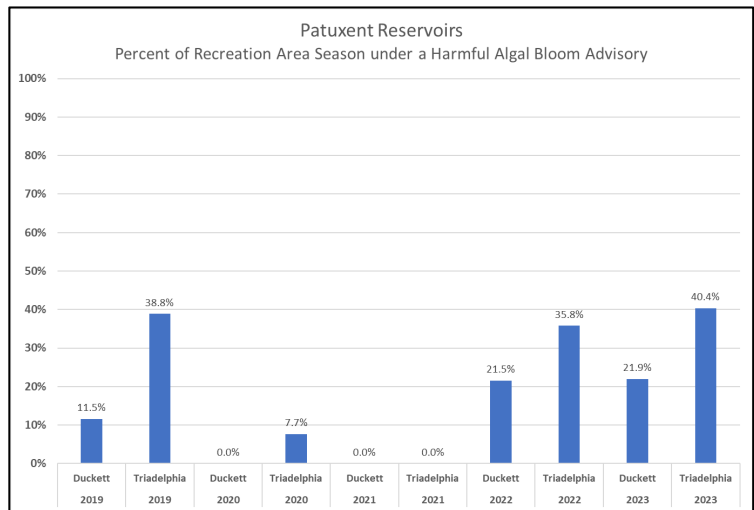
## Reservoir Water Quality Monitoring

WSSC Water continues to implement its reservoir water quality monitoring program for current status and long-term trend evaluation to support protection of the reservoirs and drinking water supply. The monitoring program consists of 1) collecting water samples from several locations in both reservoirs along with water quality profiles throughout the water column, 2) measuring water quality multiple times a day at each dam with a vertical profiling system, and 3) monitoring for harmful algal blooms (HABs) in both reservoirs, including recreation areas.

## Harmful Algal Bloom Monitoring

During 2023, WSSC Water continued to monitor for HABs at its public access recreation areas. This recreational HAB monitoring effort is separate from WSSC Water’s other algal toxin monitoring efforts for drinking water purposes. Samples are collected for a type of phytoplankton (free-floating aquatic plants) known as blue-green algae or cyanobacteria, which can proliferate during the summer months and can persist at high concentrations into early autumn. When this occurs, it is referred to as a HAB because high concentrations of cyanobacteria can cause irritating skin reactions upon contact and produce toxins.

One way to assess the impact of HABs on recreation is to determine what percentage of the recreation season each reservoir was under a HAB advisory. The recreation season extends from mid-March through November annually. During 2023, Rocky Gorge Reservoir was under an advisory about 22% of the recreation season while Triadelphia Reservoir was under an advisory about 40% of the season. Triadelphia Reservoir was closed to water-contact recreation due to a sediment dredging operation. Similar to past years, all advisories were initiated based solely on cyanobacteria cell counts; no toxins were detected greater than their threshold values.



## Sediment TMDL for Triadelphia Reservoir

In May 2023, the “Triadelphia Reservoir Sediment Impairment Technical Memorandum” was submitted to the MDE by the TAC. The purpose of this Technical Memorandum was to demonstrate that the sediment TMDL had been achieved and to request that the MDE reconsider the impaired status. The MDE informed the TAC that they will not be able to include the findings in the 2024 Integrated Report (IR). However, they will review the memo in early 2024 and will fully assess the delisting request during the 2026 IR cycle. The TAC will continue to work with the MDE and monitor this process.

During 2023, about 10.2 acre-feet of sediment was dredged and removed from Triadelphia Reservoir (equivalent to 1,600 truckloads) providing about 3.23 million gallons of added storage volume.



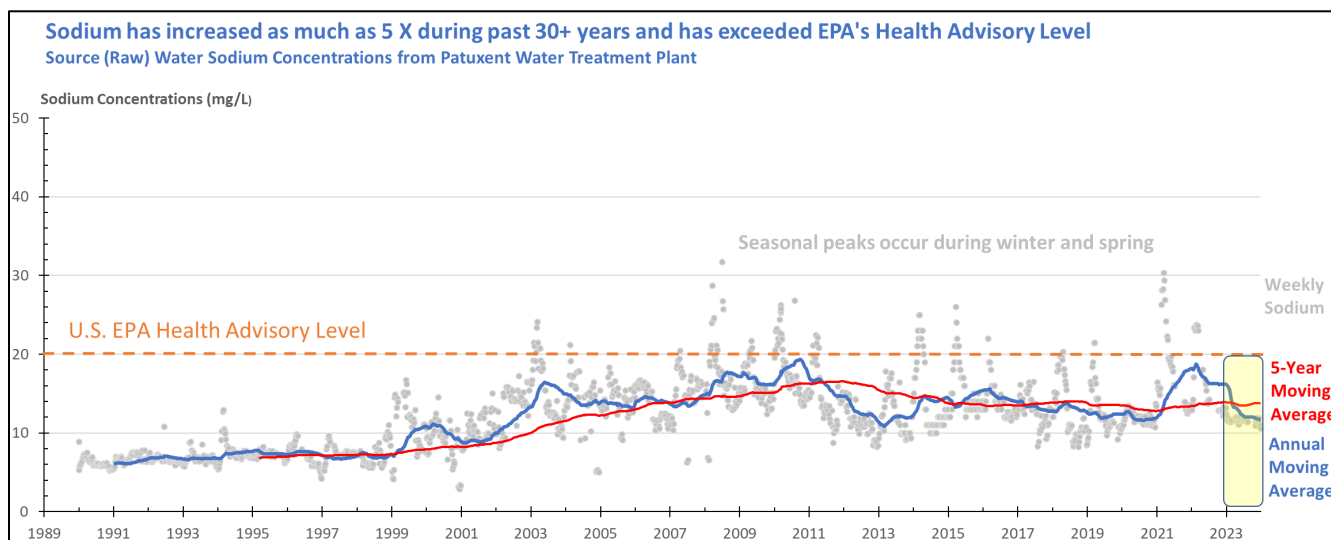
# RESERVOIRS & WATER SUPPLY – WINTER SALT

The primary winter de-icing compound used to improve driving conditions within the Patuxent Reservoirs Watershed is composed of sodium and chloride. The current, annual average chloride concentration at the Patuxent Water Filtration Plant is about three times greater than the 1990 concentration; furthermore, the annual average sodium concentration has more than doubled since 1990 and is approaching the U.S. EPA's health advisory level for those on a sodium restricted diet. The TAC continues to address this issue by collaborating to monitor sources of these pollutants in selected streams and within the reservoirs, while advocating for reduced salt applications that still ensures the public safety.

In January, WSSC Water hosted the third *Salt Summit*, an event created to gather local and regional experts to collaborate on how to manage salt. For this Summit, there was an expanding list of participants from the region focusing on technical, outreach and legislative issues related to salt management.

## Salt Content within the Patuxent Reservoirs

- ❖ Sodium (shown below) and chloride concentrations from Rocky Gorge (aka T. Howard Duckett) Reservoir decreased during 2023. Since the annual moving average peak in 2022 was near the EPA Health Advisory level for those on sodium restricted diets, values have decreased further below this advisory level likely due to the mild winter seasons with few storms.
- ❖ The somewhat rapid response to less salt loading measured in the reservoir is encouraging and indicates that a similar response may occur when the various salt management strategies to reduce salt loading to this regional water supply are fully implemented.



# TERRESTRIAL HABITAT

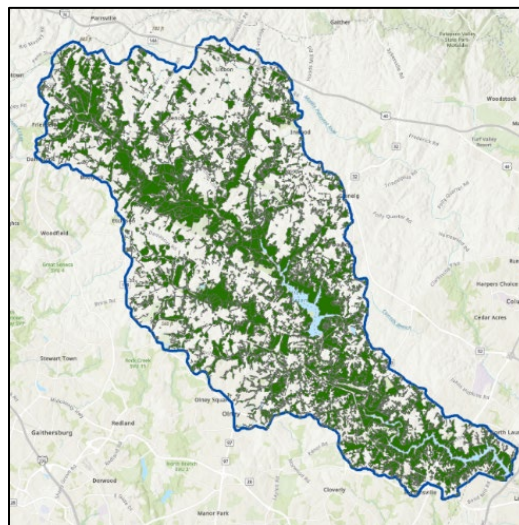
The focus of this priority resource continues to be the increase, preservation and management of forested land that provides water quality benefits to the reservoirs and their tributaries. Forests provide numerous, well-documented water quality benefits, such as filtering and infiltrating runoff, stabilizing stream banks, and reducing thermal impacts to streams, as well as providing habitat for wildlife.

Using the TAC GIS Mapping Tool and based on the 2013-14 Chesapeake Bay Program (CBP) Land Use Data, the PRW contains approximately 36,270 acres (or approximately 43%) of forested land, as shown as green in the map below.

## Howard County

Howard County's Department of Recreation and Parks (DRP) manages both the *Stream ReLeaf* and the *Turf to Trees* programs, which plant trees on private property. Trees planted via the *Turf to Trees* program can be planted anywhere on a property, while *Stream ReLeaf* trees are planted to establish stream buffers.

In 2023, the DRP planted 1,130 trees on 12 properties in the Triadelphia Reservoir watershed and 285 trees on four properties in the Rocky Gorge watershed through the *Turf to Trees* program. In 2023 the DRP planted 740 trees on 8 properties along 3,822 feet of stream buffer in the Triadelphia Reservoir watershed and 12 trees on one property along 150 feet of stream buffer in the Rocky Gorge Reservoir watershed through the *Stream ReLeaf* program.



## Montgomery County

The Montgomery County Planning Department launched its No Net Loss of Forest initiative in early November 2021.

Montgomery Planning manages the *Reforest Montgomery* program, which plants trees and forests throughout Montgomery County, and also funds a native tree coupon program. In 2023, coupons were reimbursed for 30 native trees with addresses in the watershed.

## Prince George's County

The Department of Public Works and Transportation developed the *Right Tree Right Place* program to systematically remove and replace dead, dying, and high-risk street trees. Additionally, the program seeks to increase the urban tree canopy along County roads. Choosing the right tree for the right place safely and sustainably improves the tree canopy and transforms communities. In 2023, about 66 street trees were planted under this program.



# STREAM SYSTEMS

Stream corridor management activities include stream channel stabilization and restoration, and implementing streamside BMPs, especially forested stream buffers. These activities help restore and protect the stream system, improve habitat and water quality for aquatic biota, and support protection of the reservoirs and water supply (i.e., minimize loss of capacity due to sedimentation).

## Duckett Park Stream Restoration

The Prince George's County Department of the Environment (DoE) is completing a stream restoration project in T.H. Duckett Park. The project area is located just east of the T. Howard Duckett Community Center north of the intersection between Brooklyn Bridge Road and Leo James Court in Laurel, Maryland. DoE contracted Bourn Environmental LLC to implement the stream stabilization and restoration project located on land owned by WSSC Water.

The restoration work will focus on stabilizing over 1200 linear feet of the stream banks with stone, wood, wetland creation, floodplain reconnection, and native vegetation. The project will treat the runoff from the adjacent roadways and ballfields that becomes concentrated causing significant erosion and the formation of an entrenched channel into the Rocky Gorge Reservoir. Water quality is of critical importance, especially for drinking water reservoirs, therefore this project will help in treating the runoff into the reservoir. The fewer nutrients (nitrogen and phosphorus) and sediments contained in reservoir water, the better it is for drinking water treatment by WSSC Water. This project is estimated to reduce sediments by 322 tons per year and the equivalent impervious acre treatment is 55.8 acres.

The project will be constructed and completed in compliance with permits obtained from the Maryland Department of the Environment, United States Army Corps of Engineers, and other regulatory agencies within Prince George's County including M-NCPPC.

The work to restore the stream channel is estimated to take 8-12 months. The construction phase started in December 2023 and is estimated to be completed within the August-November 2024 timeframe.





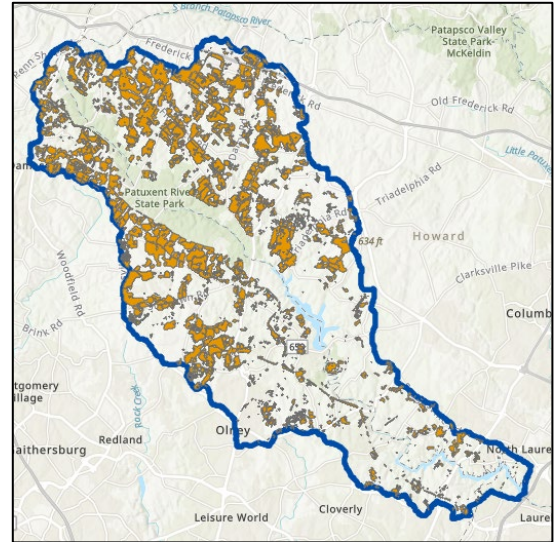
# RURAL CHARACTER & LANDSCAPE

The aim of this priority resource is to preserve open spaces while maintaining an economically viable and environmentally protective agricultural community. Implementation items include open space and easement acquisition and increasing the implementation of agricultural BMPs.

Using the TAC GIS Mapping Tool and based on the 2013-14 CBP Land Use Data, the PRW contains approximately 18,671 acres (or approximately 22%) of agricultural land, as shown as orange in the map below.

## Agricultural BMP Progress

Soil Conservation Districts (SCDs) provide technical and financial assistance using funds from local, state and federal programs to support farmers with the installation of agricultural BMPs. Many BMPs were once again installed during FY23 with assistance from Howard and Montgomery SCDs. Forty-one BMPs were installed within the Triadelphia Reservoir watershed including 1,665 feet of stream fencing to exclude livestock, 12 acres of prescribed grazing, 3 Waste Storage Structures, 56 acres of grass buffers - with an additional 960 acres operating under a new or updated Soil Conservation and Water Quality Plan (SCWQP). Two BMPs were installed in the Rocky Gorge Reservoir watershed, as well as an additional 155 acres operating under a new or updated SCWQP. Also, approximately 4,010 acres of cover crops were planted in the PRW to use nutrients remaining in the soil from the previous summer crop and to protect fields against wind and water erosion.



## Agricultural Cost-Share Program in the PRW

The Montgomery County SCD provided cost-share assistance with the implementation of four grassed waterways and two remote watering systems. Additionally, one remote water system is in the design phase. In total, the Montgomery County SCD provided \$22,879.24 in cost-share assistance. The Montgomery County SCD also allocated an additional \$5,000 for the remote water system (in the design phase).

The Howard County SCD provided cost-share assistance with the implementation of one BMP. The Howard County SCD provided \$3,226.75 in cost-share assistance for the installation of 2,668 feet of fence.

## Agricultural BMP Verification Assessment

The Maryland Department of Agriculture (MDA) initiated this assessment of BMPs that contribute towards the Bay TMDL goals for agriculture. Since the program began in 2017, MDA has:

- ❖ Assessed 84% of the BMPs in Howard County with 74% meeting design standards, and
- ❖ Assessed 97% of the BMPs in Montgomery County with 77% meeting design standards.

## Agricultural Rented Land Survey

The TAC identified a need to engage tenants and landowners on rented agricultural land because agricultural conservation practices are less likely to be installed on rented lands. The TAC is developing a survey to ask tenants and landowners about their willingness to participate in agricultural conservation practices. This information may be used to target future implementation of agricultural conservation practices on rented lands. The TAC plans to send out the agricultural rented land survey in early 2024.

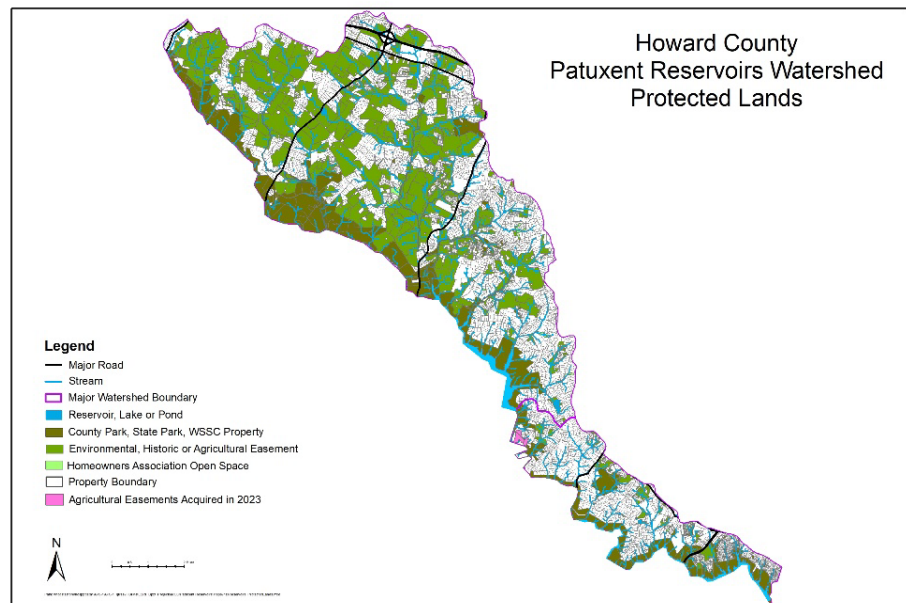


# RURAL CHARACTER & LANDSCAPE & OTHER ONGOING PROJECTS

## Land Preservation

In 2023, several parcels of land were preserved through easement or land purchases by TAC stakeholders:

- ❖ The Howard County Agricultural Land Preservation Program purchased two easements on adjacent 25.7 and 29.2-acre farms in the Rocky Gorge Dam watershed.
- ❖ WSSC Water purchased 18 acres of land adjacent to existing land holdings near Triadelphia and Rocky Gorge Reservoirs.
- ❖ The Montgomery County Department of Parks added 32.9 acres to its parkland holdings in the Rocky Gorge watershed.



## GIS Mapping Tool

The TAC has developed a web-based GIS tool that will enable TAC members to create maps, conduct analyses to track data trends in the watershed, and support more detailed modeling efforts such as the ongoing Stream Buffer Restoration Analysis. The objective was to create a watershed-wide database and geographic analysis platform that will:

- Support efforts to better understand the reservoirs and their contributing watershed, and
- Aid in developing better management options and recommendations for the Policy Board for improving the overall health and long-term protection of the reservoirs and their watershed.

In 2023, WSSC Water obtained approval to rebuild the web-based platform under a new GIS software that will be better supported in the future. In 2024, the TAC will finalize the data layers list and WSSC Water will develop the web-based platform in Experience Builder. The geodatabase will be periodically updated and enhanced as new data become available and new analyses are needed.

## Stream Buffer Restoration Analysis

The TAC is currently conducting a GIS-based analysis on the potential for stream buffer restoration to help meet the reservoirs' TMDLs. The study will evaluate different buffer widths and types (grassed and forested) on both private and public lands. It will also identify potential stream buffer restoration sites, evaluate different implementation scenarios and timeframes for pollutant reductions towards meeting the TMDLs, and will estimate BMP implementation costs. In 2024, the TAC hopes to complete the stream buffer restoration analysis.

# ABOUT US

In 1996, Howard, Montgomery and Prince George's Counties, the Howard and Montgomery Soil Conservation Districts, the Maryland-National Capital Park and Planning Commission, and WSSC Water established the Patuxent Reservoirs Watershed Protection Group to protect the long-term biological, physical and chemical integrity of the Patuxent Reservoirs Watershed. This agreement established the Policy Board and the Technical Advisory Committee.

## MEMBER AGENCIES

- ❖ Howard County
- ❖ Howard Soil Conservation District
- ❖ Maryland-National Capital Park and Planning Commission
- ❖ Montgomery County
- ❖ Montgomery Soil Conservation District
- ❖ Prince George's County
- ❖ WSSC Water

