

# 2022

# MONTGOMERY COUNTY WATER QUALITY SUMMARY REPORT

The Anacostia watershed has always been central to the growth and prosperity of those who live on its banks. Flowing through the densely populated Washington DC metropolitan area, the Anacostia watershed provides recreation opportunities and natural respite within an ever more urban landscape. In the past, the health of the watershed has languished in part because of this growth; resulting in the proliferation of pollution, damaged ecosystems, and lost biodiversity in our rivers and streams. In recent decades, however, the watershed and its streams have undergone a surprising resurgence, due to the combined efforts of residents, local stakeholders, and the government. Montgomery County's Department of Environmental Protection (DEP) has made significant investments in restoration efforts to curb stormwater inputs to the river and its tributaries, in addition to educating County residents about the impacts of stormwater and how they can help. These efforts are impactful as 35 percent of the Anacostia watershed lies within Montgomery County.

This project was awarded to Anacostia Riverkeeper (ARK) in 2022 through the Montgomery County Watershed Restoration and Outreach Grant program funded through the Montgomery County Water Quality Protection Fund and in partnership with the Chesapeake Bay Trust. Anacostia Riverkeeper worked with Friends of Sligo Creek and Neighbors of Northwest Branch to recruit and train volunteers to collect and disseminate up-to-date, bi-weekly recreational water quality data to residents and visitors alike.



The Anacostia watershed encompasses **176 square miles** across the District of Columbia, Prince George's County, MD, and Montgomery County, MD. The watershed is one of the most urbanized watersheds in the United States with **70% of the land designated as urban/developed**. "Residential" is the primary land use encompassing 45% of the watershed.



**ANACOSTIA  
RIVERKEEPER®**



# Program Overview

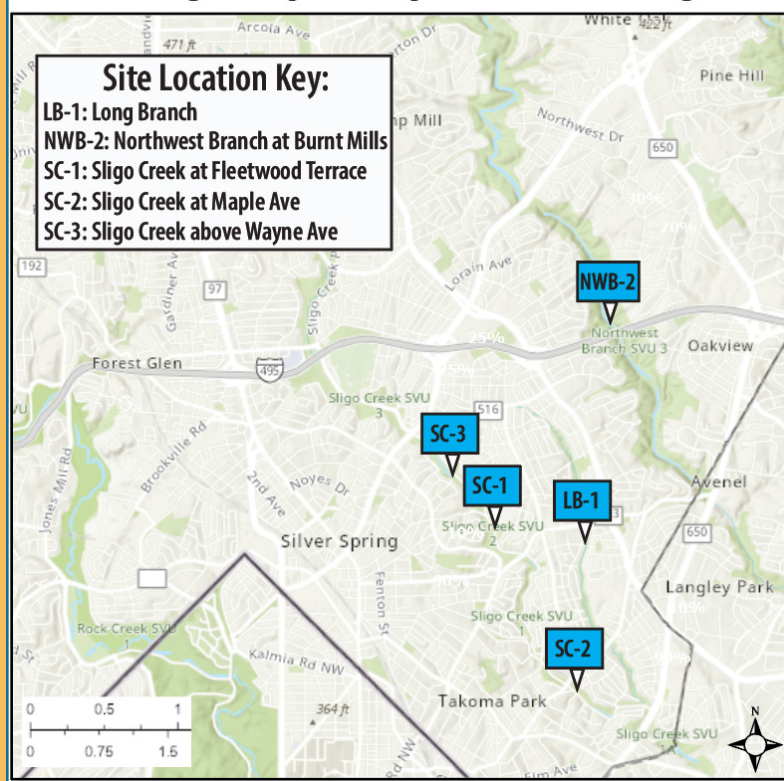
## Site Selection

Five sites were monitored during the 2022 season. Three sites were chosen along Sligo Creek. Sligo Creek sites at Fleetwood Terrace (SC-1) and Maple Ave (SC-2) were monitored by ARK in 2020 and exhibited high levels of bacteria. In order to determine if an outfall by Wayne Avenue was contributing to the bacteria measured at SC-1 and SC-2, a third site above Wayne Ave (SC-3) was chosen upstream of that outfall in 2021 and sampled again in 2022. One site is located along the Northwest Branch at Burnt Mills (NWB-2). This was a priority location for the county due to high recreation on and around the trail. The Northwest Branch is designated as Class IV waters or “Recreational Trout Waters.” Finally, one site was chosen at Long Branch near Rolling Terrace Elementary School (LB-1). Three years of seasonal macroinvertebrate sampling by Nature Forward (previously the Audubon Naturalist Society) at this site had indicated poor to fair water quality. ARK added this site to bi-weekly monitoring to supplement these data and to estimate if there are any trends present.



## Field Methods

### 2022 Montgomery County Percent Passing Rate



Volunteers collected water quality samples from five sites along Anacostia River tributaries every other week on Wednesday mornings. At each site, volunteers measured pH, air temperature, water temperature, and collected water samples for fecal indicator bacteria (*E. coli* and fecal coliform) and turbidity. Volunteers also recorded physical information about the site (i.e., flow conditions, weather, water color) on their field sheet. A YSI probe was used to measure additional parameters such as dissolved oxygen and specific conductivity, both of which have profound effects on the health of aquatic species.

Sample duplicates were collected from one site each week to ensure quality assurance and check volunteer sampling techniques. All physically collected water samples were recorded on a Chain-of-Custody (CoC) form to ensure sample fidelity and provide quality assurance for all samples coming into the Anacostia Riverkeeper lab.





# Methodology



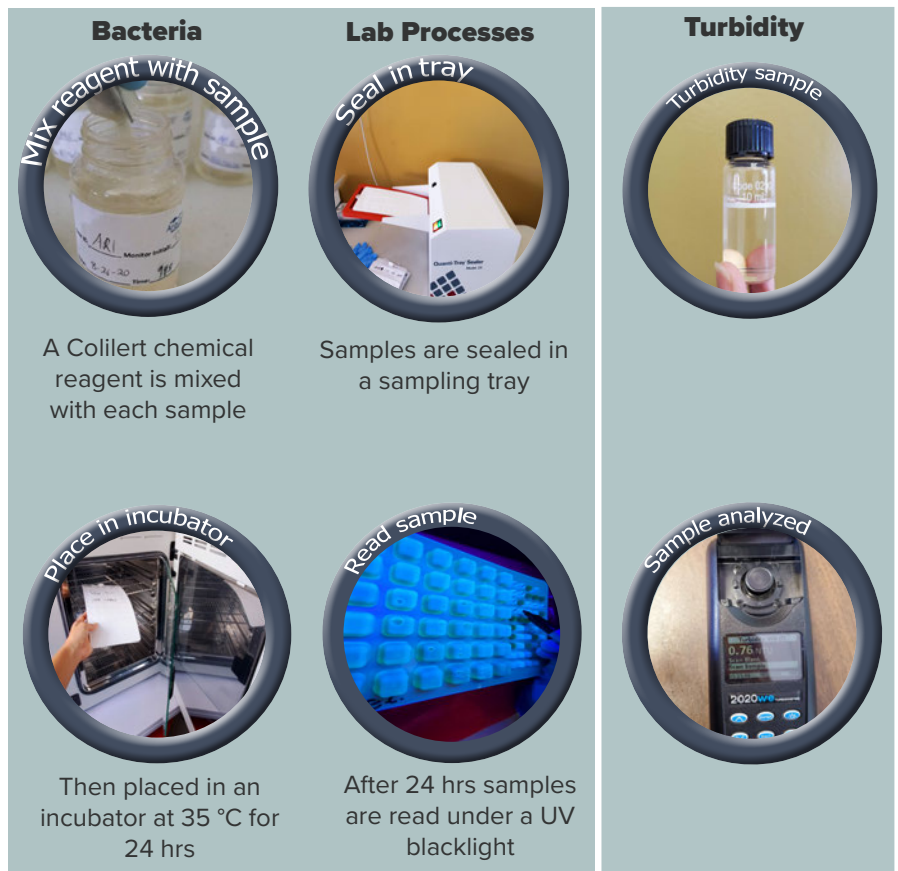
“Retirement gave us the opportunity to carry our commitment to the environment beyond our home and family into the community through volunteering with the Anacostia Riverkeeper. Quality water is important to the quality of life and too many people in the Anacostia watershed recreate in unhealthy water. ARK is working to change that and we’re proud to work as citizen scientists with them.”

-Deb Briceland-Betts

## Lab Methods

Bacteria samples are collected and analyzed using the IDEXX Colilert system (Method 9223 Enzyme Substrate Coliform Test 2017) and results published in “Most Probable Number of Colony Forming Units” or MPN/100mL (comparable to CFUs). A Colilert chemical reagent is mixed with each sample, sealed in a sampling “tray”, and then placed in an incubator at 35 °C for 24 hours. After 24 hours, samples are read under a blacklight and each sample's MPN/100mL is determined. As an additional quality control check, ARK ran lab QA/QC samples and a lab blank each week.

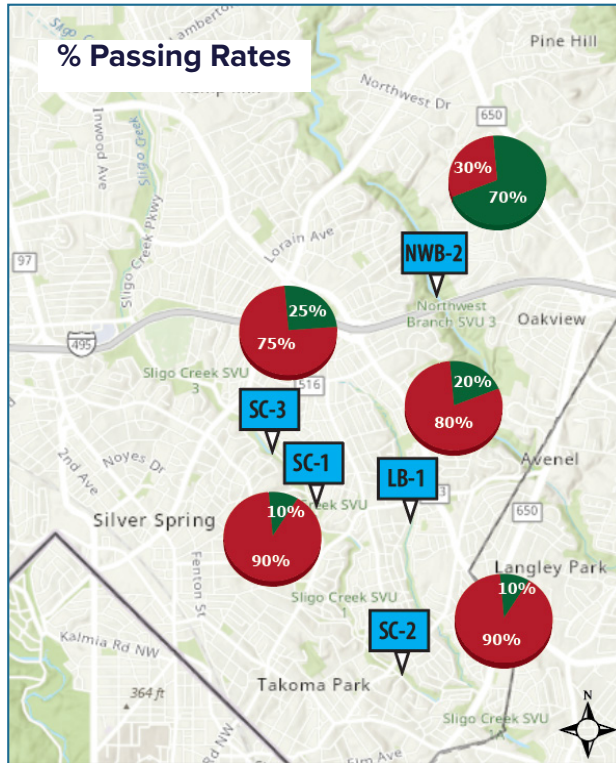
Turbidity samples are assessed using an in-lab LaMotte 2020we/wi turbidimeter which uses light attenuation passing through a sample compared to lab standards to determine the turbidity of a sample in nephelometric turbidity units (NTUs). Standards for 0 NTU, 1 NTU, 10 NTU, and 100 NTU are run before each week’s samples to assure accurate readings. Lab turbidity samples are run concurrently with bacterial samples so both results are available within 24 hours. The Anacostia Riverkeeper's turbidimeter was sent in for repairs in the middle of the season, so turbidity samples were sent to the University of District of Columbia from July 13, 2022 to August 24, 2022.





# Results and Conclusions

Water quality is poor to fair at all of ARK's Montgomery County water quality monitoring sites. All sites passed for physical water quality parameters such as dissolved oxygen, pH (6.5-8), water temperature (<32.2 C), and turbidity (<20 NTU above ambient). Despite this, bacteria levels were frequently high.



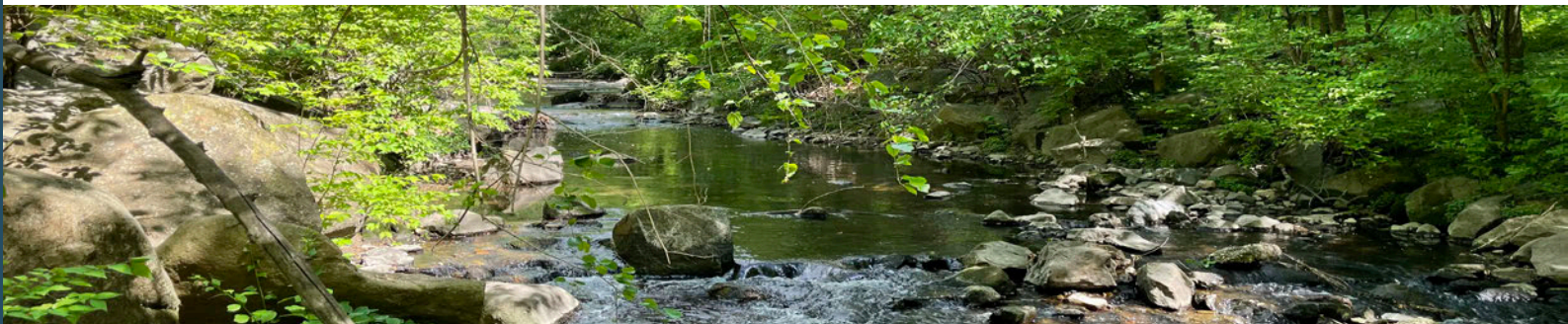
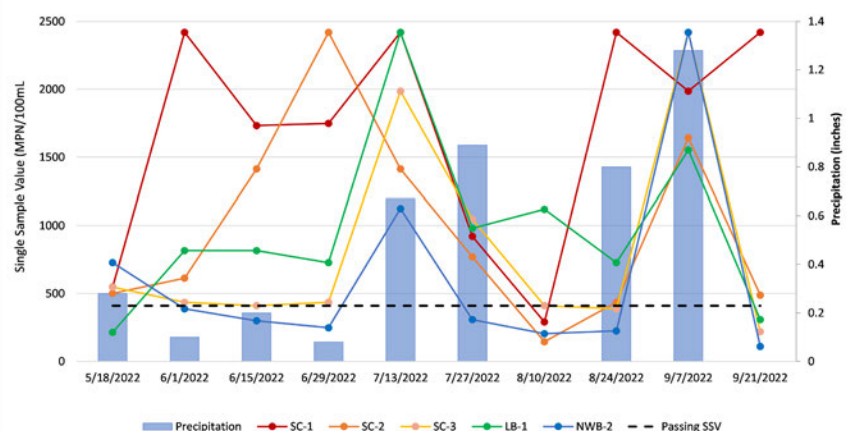
## Bacteria Results

Samples are considered "passing" when bacteria levels are less than 410 MPN.

- NWB-2 had the best water quality, with a 70% passing rate and an average of 605.3 MPN/100mL. NWB-2 bacteria trends mirrored precipitation trends.
- SC-1 and SC-2 passed 10% of the time. These sites had the worst passing rates and averaged 1690.6 MPN and 984.3 MPN respectively.
- SC-3 had better water quality than SC-1 and SC-2 with a 25% passing rate and averaged 829.7 MPN for the season.
- It is possible that non-point sources are an important contributor to high concentrations of bacteria along Sligo Creek. One suspected additional source is pet waste, as a large portion of Sligo Creek runs through park land and highly recreated areas.
- LB-1 had a 20% passing rate and averaged 968.2 MPN/100mL for bacteria throughout the summer. Nature Forward conducts macroinvertebrate studies with volunteers in the spring, summer, and fall. The macro assemblages recorded suggest poor to fair water quality and have not changed much over the four years of monitoring, confirming a trend of relatively poor water quality at this site. This requires further investigation.



2022 Montgomery County Single Sample Values and Precipitation





## Ecological Results

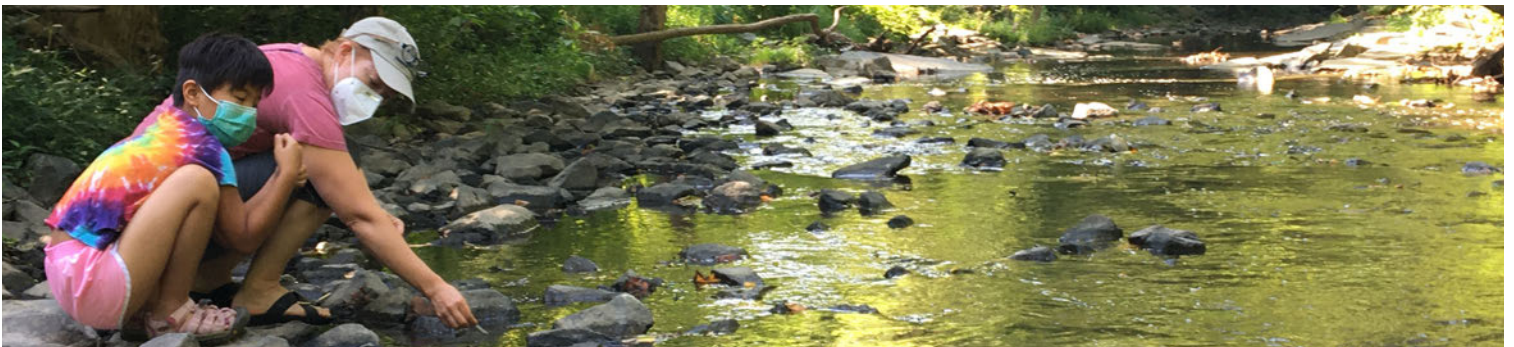
- Across all sites and all weeks of monitoring, there were no exceedances or "failing" values for dissolved oxygen, pH, water temperature, and specific conductivity.
- Average turbidity across the summer was below 20 NTU, indicating high water clarity. There were two weeks in which NWB-2 had turbidity greater than 20 NTU (July 13- 59.5 NTU and August 24- 20.4 NTU), however the average for the season was 13 NTU.
- Low to moderate specific conductivity across all sites demonstrates healthy conditions for aquatic organisms, especially fish. However, sampling occurred in the spring and summer, missing potential contamination from road salt in the winter.
- Samples analyzing nutrient concentrations (total nitrogen-TN and total phosphorus-TP) were collected each month. Trends exhibited mostly normal concentrations with the exception of slight exceedences in TN along Sligo Creek in May, June, and August, and TP in Northwest Branch in July and September.
- Noting healthy ecological water quality paired with high bacteria levels shows that just because a stream looks healthy and has vibrant aquatic life, it can still pose harm to human health.
- Precipitation had inconsistent effects on ecological health with "dry" conditions and "wet" conditions showing variable impacts on ecological parameters.

## Conclusions

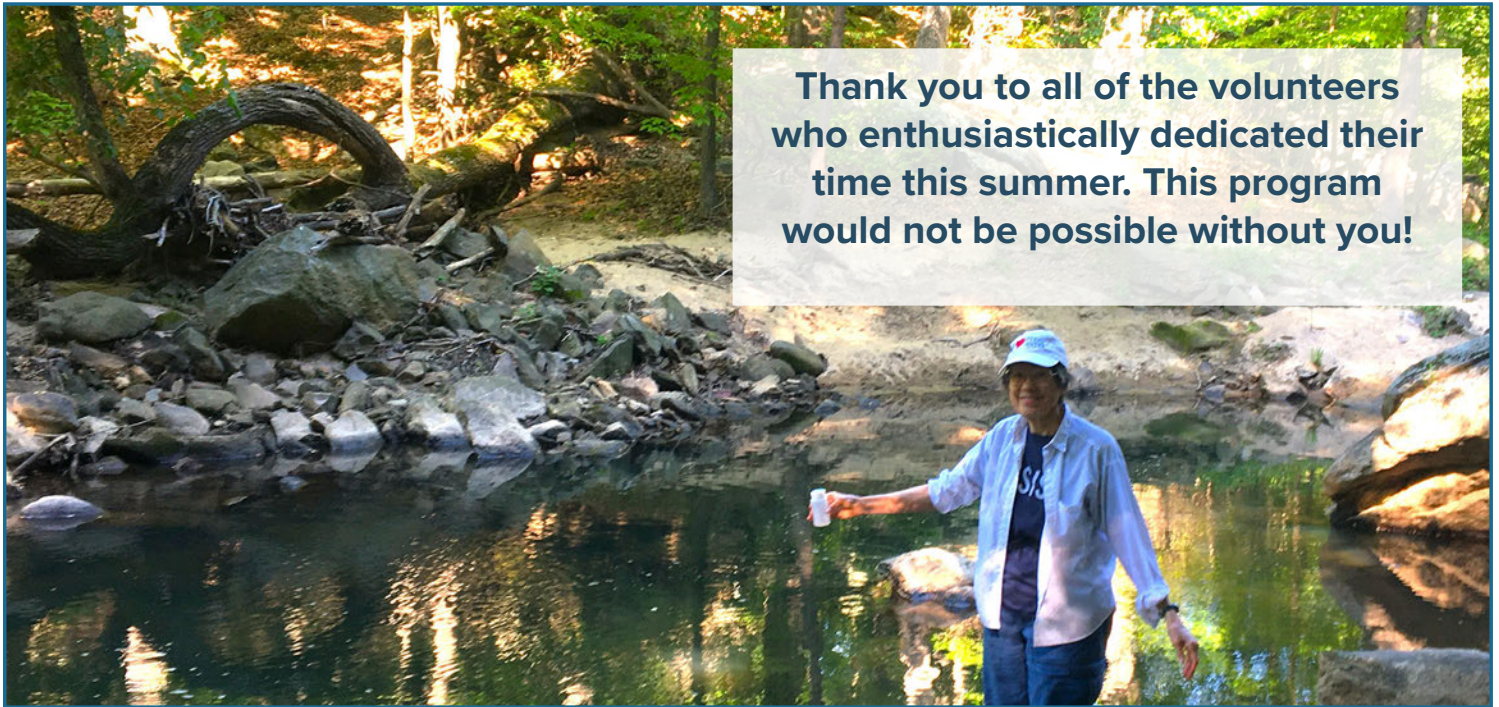
Precipitation is an important factor to analyze regarding water quality because some recreators base their recreation decisions on recent rainfall and how the water appears, (water level, turbidity, color, etc.). Precipitation trends indicate a potential relationship between bacteria levels and "wet" conditions (>0.5 inches of rain), specifically at NWB-2. However, there are multiple instances of "dry conditions" (<0.5 inches in the previous 72 hours) and high bacteria levels. Therefore, other factors are driving high bacteria in addition to known issues with leaky sewer connections.

Long Branch (LB-1), in particular, exhibits consistently poor water quality as shown through this bacteria monitoring program, as well as Nature Forward's biological monitoring program. This site's issues are mirrored to a degree in Sligo Creek and, due to stormwater pipes leading into these streams, may have a common contributor to high bacteria counts. Both LB-1 and Sligo Creek at Fleetwood Terrace (SC-1) exhibited some of the highest bacteria results throughout the summer, and were also directly downstream of stormwater outflow pipes.

While ecological data remain healthy, recreational water quality in the Northwest Branch and Sligo Creek subwatersheds of the Anacostia still remains a matter of concern. High amounts of public recreation along these waterways and around our monitoring sites makes this an even more troubling issue. Looking to the future, an increase in monitoring frequency and geographical coverage, as well as signage indicating potential water quality dangers to recreators is necessary. While our Montgomery County waterways have made strides when it comes to their overall health, there are still pressing issues stemming from urbanization that need to be met in order for these waters to be safe for all.



# Thank You!



Thanks to our funder:



This project was funded through the  
Montgomery County Water Quality Protection Fund

And to our partners:



@AnacostiaRrkpr



Anacostia Riverkeeper



@AnacostiaRiverkeeper



## ANACOSTIA RIVERKEEPER®

Monitoring inquiries:  
[monitor@anacostiariverkeeper.org](mailto:monitor@anacostiariverkeeper.org)

General inquiries:  
[info@anacostiariverkeeper.org](mailto:info@anacostiariverkeeper.org)

[www.anacostiariverkeeper.org](http://www.anacostiariverkeeper.org)  
(202) 863 - 0158