

TURN IT OUR ANACOSTIA WATERSHED AROUND

A Vision for Restoring the Anacostia Watershed

This is a short overview of restoration contemplated by the Anacostia Watershed Restoration Plan and other major efforts to clean up the river and watershed. For the complete plan and more information about the restoration initiative, go to www.anacostia.net

TURNING THE RIVER AND WATERSHED AROUND

Remembering the “Forgotten River”

Over the course of more than 200 years, the Anacostia River has been abused and abandoned. But the devastation does not end—or begin—at the river’s shores. The Anacostia’s problems encompass the entire watershed—176 square miles of land in Washington, D.C., and Montgomery and Prince George’s Counties that drains surface water into the river. Throughout the watershed, the river’s tributaries suffer from large quantities of polluted runoff that blight the landscape; lead to flooding, erosion and infrastructure damage; compromise the health of the entire ecosystem; and threaten public health. These tributaries also deposit tons of trash and sediment into the river.

Yet, the Anacostia River and watershed hold enormous potential to provide abundant natural beauty, habitat essential to wildlife, and a wide variety of recreational amenities—all critical components of vibrant, thriving communities. Visitors to the river or the vast network of streams and parkland that surround and feed into it can still catch a glimpse of this promise, from a great blue heron taking flight to cattails lining the shore. What will it take to make this forgotten river—one of our nation’s most polluted—an urban oasis and source of pride for the entire national capital region?

The Anacostia Watershed Restoration Plan holds the solution.

This landmark plan is the product of unprecedented regional, multijurisdictional cooperation—a two-year, \$2.8 million investment in identifying specific projects that can collectively turn the river and its surrounding watershed around. If we can implement this comprehensive approach, our region can enjoy the maximum return in environmental, economic, and social benefits, dramatically improving the health of

the Anacostia River and its tributaries. Implementing the plan will enhance the vitality of communities throughout the watershed in the District of Columbia and Maryland’s Montgomery and Prince George’s Counties. This is a bold and unparalleled initiative. No other restoration plan in the United States has systematically identified the thousands of projects needed to retrofit an entire urban watershed.

The Watershed’s Recreational Value:

26

miles of river and streams surrounded by parks and public lands

160

miles of hiking and biking trails along the river and its tributaries

25

college, high school, and club crew teams that practice on the river

HOW DID WE GET HERE?

Before European settlers arrived in the early 1600s, the Anacostia River watershed was an environment of pristine waters and diverse plants and animals. But for 300 years, waves of colonization cleared more and more land for agriculture, livestock, and development. Particularly after World War II, the region experienced extensive deforestation and growth of major cities and sprawling suburbs.

1600

1700

1800

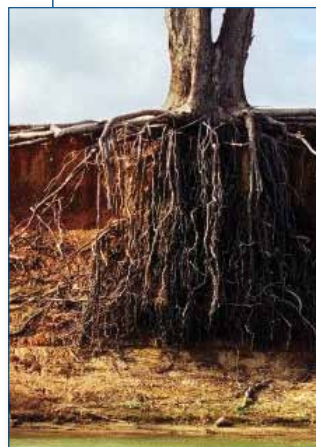
1900

2000



1600s

Unimpaired waters and diverse flora and fauna



1600s-2000s

Deforestation, urbanization, wetland loss, habitat fragmentation, and stream and river erosion and sedimentation

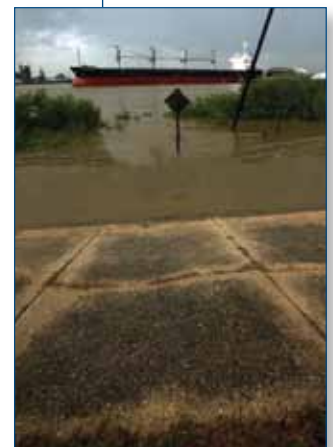


1900-1950

River dredging and wetland destruction

1950s-1970s

Straightening and channeling of the river with levees



1970s-2000s

Rapid urbanization, developing 70 percent of watershed

The Result

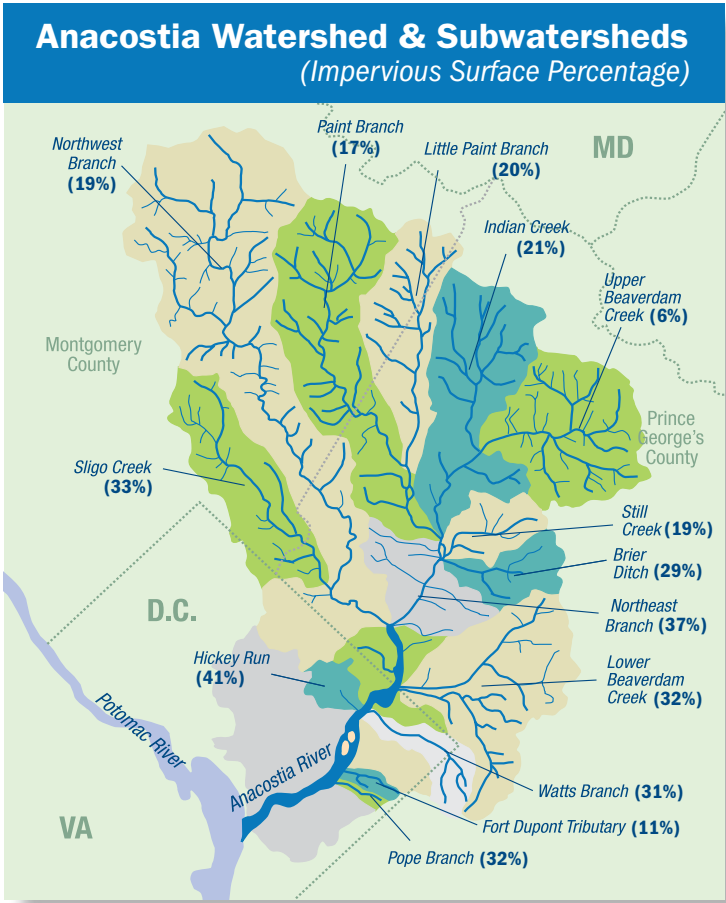
- Loss of 70 percent of forestland and 6,500 acres of wetlands that protect waterways from erosion, filter stormwater, and support diverse wildlife.
- Alteration of natural drainage patterns, which has increased stream bank erosion and fueled sedimentation that chokes waterways.
- Discharges of raw sewage from combined stormwater and sewage pipes that overflow and bypass treatment facilities after heavy rain—accounting for more than 60 percent of the river's bacterial contamination.
- Dumping of toxic industrial waste and trash throughout the watershed, creating persistent toxic “hot spots” that poison fish and threaten human health.
- Expansion of impervious surfaces—now covering about 25 percent of the watershed—that speed the flow of stormwater runoff and funnel sediments, nitrogen, phosphorus, oil, heavy metals, bacteria, trash, and toxic contaminants into waterways.



Today the primary stressor within the Anacostia watershed is pollution from uncontrolled stormwater runoff, which erodes stream banks and washes over impervious—often contaminated—surfaces such as roofs, roads, and parking lots. The runoff carries fertilizers, animal wastes, pollutants from cars and trucks, and other stormwater pollutants that contain phosphorus and nitrogen—nutrients that cause excessive growth of algae and nuisance plants, depleting oxygen that is needed to sustain aquatic life in streams and the river. Stormwater also brings trash into the watershed—about 817 tons each year.

This uncontrolled and untreated stormwater flows through the watershed into the river and its tributaries at volumes and velocities that cause stream-bank erosion and sedimentation. The Anacostia watershed contains 10 times the sediments of any other Chesapeake Bay tributary. About 85 percent of this sediment is trapped because of the river’s sluggish flow, remaining in the water for an average of 23 to 28 days.

Another problem is toxic pollutants and other chemicals trapped in the unhealthy volume of sediment. This contamination affects burrowing organisms that live in the sediment and fish that feed on them. For example, in 2004 up to 68 percent of the river’s brown bullhead catfish studied had liver tumors. Both the District of Columbia and the State of Maryland have advisories to avoid or limit the consumption of fish from the watershed. These advisories are not followed by some subsistence fishermen, creating a public health concern.



TIMELINE OF EVENTS THAT LED TO THE PLAN

Since 1987 members of the Anacostia Watershed Restoration Partnership, community-based organizations, and countless volunteers have worked to clean up the Anacostia River and watershed. We have collected trash, curbed the dumping of toxic chemicals, restored wetlands, and begun tackling combined sewer overflows that spew thousands of gallons of raw sewage into the river after heavy rains. But more is needed. **What makes this plan different?**

Regional cooperation. This plan was made possible by the cooperation of the leaders and stakeholders of the watershed's four jurisdictions: the State of Maryland, the District of Columbia, and Montgomery and Prince George's Counties. Their commitment has spurred additional federal government support.

Increased accountability. This plan comes at a time when political leaders and the public recognize that voluntary efforts are not enough. Montgomery and Prince George's Counties have agreed to be bound by permits that require that they retrofit a portion of their stormwater systems, and the plan identifies the specific projects that can meet these requirements. The Anacostia watershed has been designated as one of three areas in the Chesapeake Bay that are "regions of concern," and President Barack Obama has issued an executive order requiring that the federal government focus its resources on restoring the Bay.

Stakeholder engagement. The plan outlines the actions needed by a complex network of stakeholders. This includes watershed "owners"—the public and private landowners and residents that contribute both actively and passively to polluting the Anacostia River and watershed and who will reap the many benefits of restoration—in addition to plan "implementers" at the local, county, state, and federal levels who will lead the plan's execution.

Federal investment. Federal property comprises 13 percent of the watershed and the federal government has a major role in its restoration. The U.S. Army Corps of Engineers led the development of the plan, and the U.S. Environmental Protection Agency (U.S. EPA), Department of Interior, National Park Service, Department of Commerce, and National Oceanic and Atmospheric Administration are full partners in its development and implementation. Buoyed by the cooperation of the watershed's local government leaders and stakeholders, these federal agencies are prepared to lend technical and financial assistance to help execute the plan.

The Anacostia Watershed Restoration Partnership forges consensus and drives action among all of the Anacostia watershed's government and community stakeholders. The partnership's diverse participants play distinct and essential roles in advancing watershed restoration solutions.

With this new plan and the commitment to see it through, we can seize this opportunity to reclaim a magnificent and irreplaceable resource—creating a destination for play, relaxation, and reconnecting with nature.

1987

Anacostia Watershed Restoration Agreement is signed by the District of Columbia, Montgomery and Prince George's Counties, State of Maryland, U.S. Army Corps of Engineers, U.S. EPA, and National Park Service. They form the Anacostia Watershed Restoration Committee.

1991

Anacostia Watershed Restoration Committee establishes six restoration goals.

2006

Committee creates the Anacostia Watershed Restoration Partnership.

2007

Congress passes Water Resources Development Act of 2007 directing the U.S. Army Corps of Engineers to develop a comprehensive restoration plan. Corps forms the Project Delivery Team—including the District of Columbia, State of Maryland, Montgomery County, and Prince George's County—to conduct Anacostia Watershed Restoration Plan Study.

2009

U.S. Army Corps of Engineers and local sponsors issue interim watershed restoration plan.

2010

Partnership releases Anacostia Watershed Restoration Plan.



EIGHT RESTORATION STRATEGIES

Six Goals for Restoration

The Anacostia Watershed Restoration Plan is built on six fundamental goals:

1. Dramatically reduce the amount of pollution flowing into the Anacostia River and watershed.
2. Protect and restore the watershed's ecological integrity—improving water quality and supporting wildlife habitat and recreational amenities.
3. Improve fish passage to enable fish to migrate and spawn in the river and its tributaries.
4. Increase wetland acreage to support water filtration and the proliferation of plants and animals.
5. Expand forest cover.
6. Increase public and private participation in understanding and advocating for the health of the watershed and river.

To achieve the goals, the plan identifies eight restoration strategies:

1. Stormwater retrofits. More than half of the plan's projects—1,781 of 3,018—involve stormwater retrofits, which offer the greatest opportunity to restore the health of the watershed. Because stormwater management controls have been required for new development only since 1971, historic urban and industrial areas in the District and most of Maryland have inadequate stormwater controls. In fact, 64 percent of the impervious area in the watershed has no stormwater controls.

In these developed areas, there is not enough space for traditional management practices such as retention ponds. As a result, the plan relies heavily on low impact development (LID) and environmental site design technologies, such as bioretention gardens, green roofs, and downspout disconnection.

2. Stream restoration. The Anacostia's tributaries have been eroded, degraded, and in some places lined with concrete. Once damaging stormwater flows have been reduced, these streams may be restored to provide more ecological and aesthetic value.

3. Wetland creation and restoration. The watershed has lost 6,500 acres of wetlands, including 93 percent of the original 2,500 acres of tidal wetlands. The remaining wetlands are degraded and fragmented, thereby diminishing essential functions such as reducing flooding, protecting water quality, and providing habitat for plants

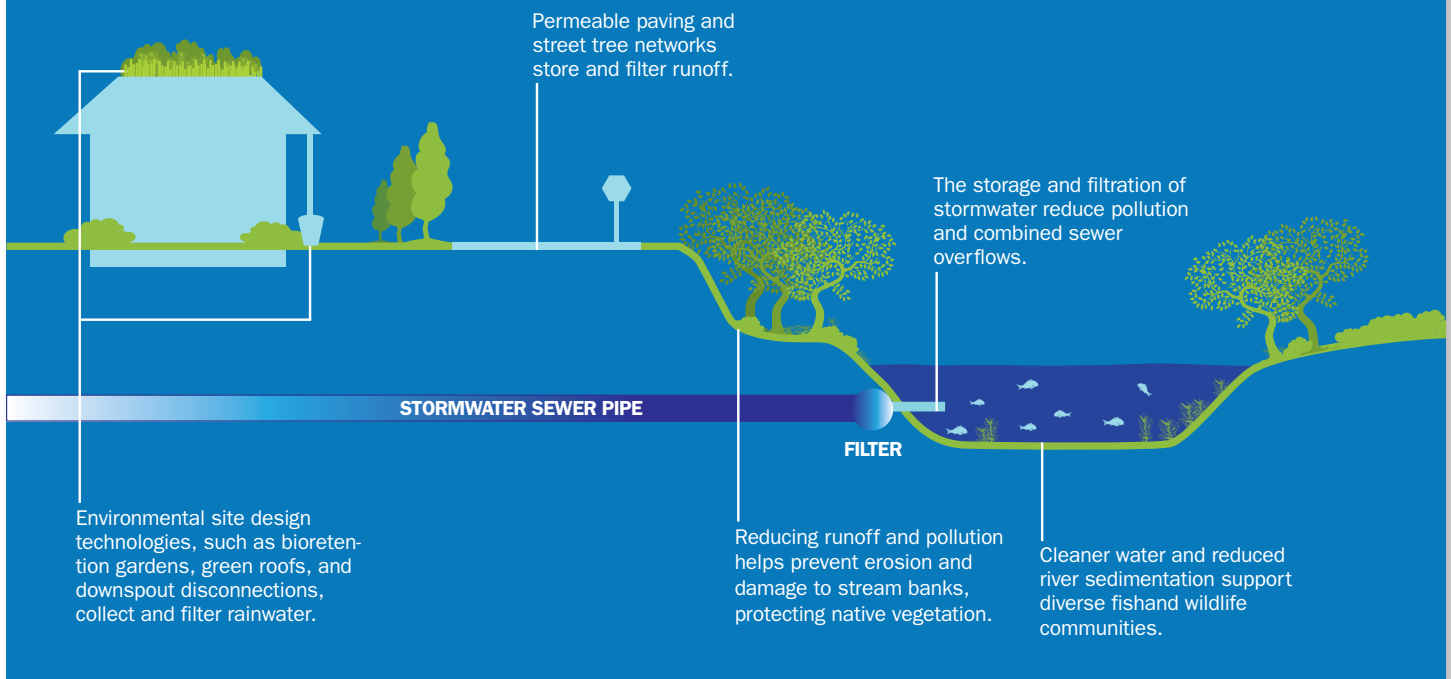
and animals. The plan's projects will restore and recreate wetlands to move filtered water to the river in an ecologically sound manner.

4. Fish blockage removal. The Anacostia River and its tributaries provide an important habitat for the migration of a very diverse array of fish in the watershed, but this migration is hampered by fish passage barriers. These obstructions include formerly buried utilities lines that become uncovered through stream channel erosion, road culverts, and previous stream channelization projects. The plan will remove about 125 major fish barriers remaining in the watershed.

5. Riparian reforestation, meadow creation, street trees, and invasive management. Seventy percent of the watershed has been deforested, resulting in the loss and fragmentation of riparian habitats that protect streams and filter stormwater. The plan will create, restore, and treat riparian forests and meadows, and manage invasive species in strategically selected areas to maximize their benefit to the river's tributaries.

6. Trash reduction. More than 800 tons of trash and debris enter the Anacostia River annually, interfering with the establishment of aquatic plants and creating hazards to wildlife that ingest or become entangled in debris. The plan will employ trash reduction projects and street sweeping activities to dramatically reduce the flow of trash and debris into the river's tributaries throughout the watershed.

Sustainable Stormwater Management



7. Toxic remediation. Historic or legacy deposits of toxic contamination in the Anacostia watershed continue to degrade the river's ecosystem, and additional toxic chemicals enter the river through wastewater, stormwater, and even deposition from the air. Two main approaches are being used to evaluate options for reducing toxics:

- Evaluating the opportunity to remove or put temporary “caps” of clean sediment on areas of river sediment that are extremely toxic. Because these areas have concentrated amounts of toxic contamination, there is a possibility that addressing these toxic “hot spots” could benefit the entire tidal river.
- Using enforcement authority to address the sources of contamination.

8. Parkland acquisition. Although the watershed includes extensive parkland, much of it is fragmented, diminishing its value to the health of the watershed in providing riparian cover and wildlife corridors. The plan calls for acquiring strategically located parcels of land to increase the connectivity of this parkland.

For each of the Anacostia watershed's 14 subwatersheds and the tidal river, eight types of projects corresponding with the eight restoration strategies were identified through thorough field work. For stormwater projects, the partnership used the Watershed Treatment Model, developed by the Center for Watershed Protection, to evaluate the likely pollution reduction associated with each project. Each project was then categorized into three tiers using a scoring process that evaluated its likely pollution reduction, the amount of impervious surface controlled, and the amount of runoff reduction to be achieved. The process also considered the potential negative impacts of the project, its feasibility, and the cost.



Proposed Projects by Restoration Strategy	Number of Projects	Results
1. Stormwater Retrofit	1,892	10,600 acres of controlled impervious surface
2. Stream Restoration	342	72.5 miles of streams restored
3. Wetlands Restoration	116	137.4 acres of wetlands restored, created, or acquired
4. Fish Blockage Removal/Modification	146	41.7 miles of streams reopened for fish to migrate and spawn
5. Riparian Reforestation, Meadow Creation, Street Trees, and Invasive Management	152	347 acres restored, created, or acquired
6. Trash Reduction	181	124.7 miles of stream cleaned or roads swept
7. Toxic Remediation	0	Remediation efforts occurring as noted above
8. Parkland Acquisition	189	2,512.1 acres acquired

The most efficient way to restore the Anacostia is to cluster complementary actions in targeted geographic areas where they can produce the greatest benefit—creating a whole that is greater than the sum of its parts. This means combining:

- Retrofits of paved surfaces that accelerate the movement of unfiltered, polluted runoff into the Anacostia’s tributaries, reducing the quantity of runoff that reaches the rivers tributaries.
- The restoration of stream banks, wetlands, forests, and meadows to slow and filter stormwater and provide wildlife habitat.

Therefore the plan recommends implementing strategically combined restoration actions in targeted geographic areas. These “clusters of projects” are in areas with concentrations of important stormwater retrofit activities. The clustering of complementary restoration projects not only increases the potential to maximize environmental benefits, but also increases the projects’ visibility and potential for educating

the public, facilitates monitoring of their impact, and provides economies of scale.

Comprehensive restoration also requires protecting the watershed from additional stressors, particularly development projects that will increase (or in the case of redevelopment, not reduce) stormwater flows and pollutant loadings. Successful restoration will also depend on environmentally sensitive development and redevelopment that integrates environmental site design (ESD). ESD offers an opportunity to reduce stormwater impacts by reducing the amount of paved areas in the watershed.

Environmental site design uses small-scale stormwater management practices, nonstructural techniques, and enhanced site planning to mimic natural hydrologic runoff characteristics—including filtration through soil and vegetation—to minimize the impact of land development on water resources. ESD essentially uses opportunities to store, drain, and filter the rain in ways that can green and beautify our communities.

ESD methods include:

- Clustering development to conserve natural vegetation that can filter polluted runoff and recharge the groundwater
- Installing green roofs that can absorb and evaporate rainfall
- Minimizing paved surfaces
- Narrowing streets that are unnecessarily wide and using other “green street” techniques that limit soil disturbance, mass grading, and soil compaction
- Conserving natural drainage patterns
- Installing permeable pavement and other alternative surfaces
- Creating gardens
- Harvesting rainwater for use in watering trees and plants or for toilet water
- Disconnecting rooftop and non-rooftop runoff
- Improving sheet flow—the smooth, broad, overland flow of water—to conservation areas
- Building swales and other landscaped features that allow rain to soak into the ground
- Preserving existing trees and planting new vegetation



RECOMMENDED POLICIES AND PROGRAMS

Comprehensive restoration requires protecting the watershed from future stressors, bringing the resources and authorities of the partnership and its participating jurisdictions to bear. Innovative policies and programs can advance restoration efforts and prevent additional pollution and ecological damage. Several programs underway—some of them initially spurred by federal regulations—demonstrate the willingness and capacity of the watershed’s state and local governments, as well as volunteer organizations, to rise to the most demanding ecological challenges.

D.C. Long-Term Control Plan (LTCP). The D.C. Water and Sewer Authority (DC WASA) has launched a \$3 billion LTCP to significantly reduce combined sewer overflows (CSOs) that dump raw sewage into the Anacostia River after heavy rains. The LTCP is constructing increased storage capacity for mixed sewage and stormwater during heavy rains so that it may be treated at the Blue Plains Advanced Wastewater Treatment Plant before discharge into the river. To fund this work, the District has implemented an impervious surface fee for property owners.

The LTCP will reduce the number of CSOs from 82 to two events per year, dramatically reducing concentrations of bacteria and oxygen-depleting substances in the river. The implementation of the plan is critical for restoring the river’s recreational potential and reducing fish kills. To date the plan has achieved a 40 percent reduction in CSOs, and it aims to construct more than 13 miles of storage tunnels to achieve a 98 percent reduction by 2025.

Washington Suburban Sanitary Commission (WSSC) Program. The WSSC is implementing a \$350 million program to reduce sanitary sewer overflows (SSOs) which discharge untreated sewage into the watershed. WSSC is inspecting more than 1,745 miles of aging, leaking, and undersized sewer lines and addressing those that need repair or replacement.

In addition to implementing these two important sewer retrofit programs, the Partnership specifically recommends implementing the following policies and programs:

- Environmental site design requirements for both new development and redevelopment

- Homeowner incentives for rain gardens, rain barrels, tree planting, and downspout disconnection
- Incentives for ESD, such as expedited permitting and tax credits for commercial, institutional, and multifamily construction
- Use of National Pollutant Discharge Elimination System “MS4” permits to advance stormwater management through requirements such as systematic retrofits and reviews of local policies
- Use of stormwater utility fees and taxes to raise funds and accelerate implementation of the plan
- Green street programs to implement systematic retrofits of streets and alleys
- Better housekeeping at industrial parks and other locations that may introduce toxic contamination into the watershed
- Bans on the sale and use of coal tar sealants
- Fees on disposable plastic bags, which comprise a large percentage of watershed trash
- Litter and pet cleanup laws and enforcement, as well as education of local police about its importance
- Preservation of trees and stream buffers
- Addressing climate change through methods such as environmental site design, which improve stormwater management while reducing the urban “heat island” effect
- Federal evaluation of policies for funding watershed restoration and cleanup to ensure ample resources for the Anacostia and other polluted rivers

BENEFITS OF THE PLAN

Because cleaning up the Anacostia River depends on rehabilitating the entire watershed, the restoration plan's projects will produce benefits in communities, forests, parks, and streams.

These benefits include:

Reduced flash flooding. Flooding occurs when stormwater has nowhere to go. Projects that include storage and ESD will help reduce the backups that flood streets, homes, and businesses.

Savings on infrastructure repairs. Uncontrolled stormwater damages sewer lines and undermines streets and bridges as well. For example, WSSC spends up to \$45 million a year for repairs. Improved stormwater management will reduce these maintenance costs.

Cleaner water. Stormwater management controls will improve water quality by reducing the pollutants in streams coursing through the watershed near homes and businesses.

Green jobs. Most of the plan's projects require hiring local contractors for design, construction, and maintenance, reinvesting tax dollars in the watershed's economies.

Recreational amenities. The plan's projects will expand and restore parkland, forests, streams, and other areas for hiking, boating, and enjoying the natural world.

Aesthetic enhancements. Environmental site design creates appealing streetscapes, rain gardens, and other attractive features in urban and suburban landscapes that increase property values and the quality of life.

Heat island mitigation. The addition of shade trees, green roofs, and other features serves to insulate buildings, reducing energy use, mitigating climate change, and providing health benefits through cooling.

Reduced trash. The plan identifies opportunities to eliminate debris through trash traps, street sweeping, and outreach and education.

Enhanced wildlife habitat. The plan will benefit wildlife and fish in the watershed by improving water quality and preserving native vegetation.



NEXT STEPS

Without the Anacostia Watershed Restoration Plan, state and local governments and volunteer organizations would continue attempting—in a limited and uncoordinated fashion—to manage stormwater, combined sewer overflows, trash, and toxics, while working to restore aquatic and terrestrial habitats. However, they would face an uphill battle against the impacts of continuously expanding development. With the advent of this collaborative plan, these partners have a critical opportunity to coordinate and leverage their efforts in a systematic, watershed-wide, long-term strategy that can serve as a model for other jurisdictions across the country.

The subwatershed plans were developed based on a vision of government agencies implementing restoration projects in concert with nonprofit groups, watershed stewardship groups, and community volunteers, which undertake activities such as cleaning up trash, creating vernal pools, modifying fish blockages, and installing rain gardens. Many habitat and stream restoration efforts also require the cooperation of the subwatersheds' private landowners to accelerate projects and provide access.

This plan is more than a blueprint. It is the central rallying point for an extensive and committed partnership to step up to the enormous challenge that watershed restoration represents. Implementation of the plan may require up to \$2.7 billion, in addition to the costs of completing the DC WASA Combined Sewer Overflow Long-Term Control Plan and other ongoing programs. Immediate funding for feasibility studies, engineering and design, and construction is crucial to the plan's success.

The Partnership is determined to enlist the necessary public and private support to Turn Our Anacostia Watershed Around by raising widespread awareness of the watershed's value, our collective responsibility to restore and save it, and the unique opportunity for leveraged collaboration that this plan presents. The commitment and resources this endeavor demands are great, but the rewards will live on in a priceless legacy for generations to come.

THE ANACOSTIA WATERSHED RESTORATION PARTNERSHIP

Akridge

Audubon Naturalist Society

Cohen Companies

District of Columbia

District of Columbia Water
and Sewer Authority

Maryland Department of Natural Resources

Maryland Department of the Environment

Mayor of College Park, Maryland

Metropolitan Washington Council of
Governments

Montgomery County

National Oceanic and Atmospheric
Administration

Department of the Interior,
National Park Service

Prince George's County

Summit Fund of Washington

U.S. Army Corps of Engineers

U.S. Environmental Protection Agency

**And the Anacostia Watershed
Citizens' Advisory Committee
and the 10 subwatershed citizen
stewardship groups that also
work to restore the watershed:**

Beaverdam Creek Watershed
Watch Group

Citizens to Conserve and
Restore Indian Creek

Eyes of Paint Branch

Friends of Little Paint Branch

Friends of Lower Beaverdam Creek

Friends of Sligo Creek

Friends of Still Creek

Neighbors of Northwest Branch

Pope Branch Park Restoration Alliance

Watts Branch Community Alliance

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