# ANACOSTIA

## *The Other River*

*Interstate Commission on the Potomac River Basin*

# CONTENTS



# ACKNOWLEDGEMENTS


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Cover photo: *The mainstem Anacostia in Washington, D.C.* Credit: *U.S. Navy.*

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The Potomac River has been called "beloved," a historic river belonging to the capital city. The Anacostia also flows through the capital city, but it is often referred to as "the other river," a neglected polluted wedge separating about 30 percent of the District of Columbia's population from those on its western side. The facts are undisputable: more than $1 billion has been invested to significantly improve the water quality of the Potomac, and boaters, fishermen, and riverfests have heralded its return; the Anacostia's rich history and potential have remained obscured by grossly high pollutant levels.

Restoring the Anacostia watershed to a biologically productive and socially valuable watershed worthy of the National Capital Region is underway. The signatories to the Anacostia Watershed Restoration Agreement of 1987 include: the District of Columbia, the State of Maryland and its affected counties, Montgomery and Prince George's, have committed themselves to these goals for the Anacostia and its tributaries:

- Achievement of improved water quality and the protection of aquatic life, habitat, and other beneficial ecological relationships;
- Basin-wide management of erosion, sediment, and other sources of pollution;
- Maintenance of the tidal portion of the Anacostia River as a navigable waterway for commercial and recreational activities insofar as this is practical;
- Enhancement of public interest and public participation in restoration activities.

The vision that the "entire Potomac and Anacostia river system should be a constant source of natural enjoyment, urban orientation, and visual delight," should become a reality.

*The ICPRB is an interstate compact commission established by Congress in 1940 that helps the Potomac basin states and the federal government to cooperatively address water quality and related land use problems in the Potomac basin. Represented by appointed commissioners, the ICPRB includes the states of Maryland, Pennsylvania, Virginia, and West Virginia; the District of Columbia, and the federal government.*


*This publication has been prepared by the staff of the Interstate Commission on the Potomac River Basin. Funds for this publication were provided by the United States Government, the U.S. Environmental Protection Agency, and the signatory bodies of the Interstate Commission on the Potomac River Basin. Funds for repirinting this publication were provided by the Chesapeake Bay Trust.*

***Reprinted 1998***

# THE BASIN

The Anacostia watershed the Indians knew was rich with diverse life—on land, in its marshes, and its clean waters. The early explorers of the Potomac basin, of which the Anacostia is a part, documented this diversity.

Dense hardwood forests of tremendous size and variety dominated the watershed. Father Andrew White, in 1634 saw trees "So straight and tall that beams 60 feet long and two and a half feet wide can be made from them." A deep layer of protective cool and moist organic matter covered the forest floor. Henry Fleet (believed to have been the first white man to have trod upon what is now Washington, D.C.) wrote about his 1632 visit and the "exceedingly fertile" soil and woods "swarming with beaver, deer, buffaloes, turkeys..."

Captain John smith had found on his 1608 trip up the Potomac, an abundance of fish "lying so thick with their heads above the water, as for want of nets...we attempted to catch them with a frying pan..." The marshes on which fish and waterfowl depend were extensive in the lowlands of what was to be the Nation's Capital. They dominated the tidal Anacostia, which was about three times wider when the Indians fished and hunted the abundant waterfowl.

However, the watershed of balanced biological communities familiar to the peaceful bands of the Nacotchtank Indians that Captain John Smith met in 1608 has been substantially altered. The Native Americans of the Anacostia basin themselves had pretty much disappeared within 60 years after the colonization of Jamestown. The alterations began in the 17th century and by the mid-18th century were well underway.

With the land needed for crops and timber needed for construction, the virgin forests were felled. Most of the land had been brought under cultivation by 1860. The more efficient cultivating machines that were developed between 1875 and the 1930's accelerated the process. By the early part of this century, only a few scattered areas of virgin timber remained.

The changing land use (from forest to farmland to suburban/urbanization), poor soil management practices, and pollutants introduced by an ever expanding human population have altered the ecology of the entire watershed. The rising temperature trends from urbanization, for example, have alone caused drastic ecological changes. Most biological communities and their habitats are stressed now; many species have completely disappeared.

Bill Clark, NPS

*The Northwest and Northeast branches converge near Bladensburg, Md.*

Although the entire Anacostia basin has been affected, the most significant and detrimental impacts have been on the wetlands of the tidal river. The once extensive aquatic plants (both submerged and emergent) so vital to a healthy and diverse balance of fish and wildlife have been destroyed. The vital wetland terrace was simply removed by man through the dual process of dredging and filling. Kenilworth Marsh is the last remaining segment of tidal marsh along the Anacostia, and while it continues to shelter plant and wildlife species rare or nonexistent in the remainder of the watershed, portions of it appear unhealthy.

Restoring abundant and desirable species, their required habitats, and mending the food chain (of which man himself is a link) so that the Anacostia is again in balance will be no easy task.

## GEOLOGY

The drainage area of the Anacostia River encompasses some 170 square miles and comprises two physiographic provinces, the Piedmont Plateau and the Coastal Plain. Millions of years of geologic history are represented in these two distinctly different provinces. The boundary between the Piedmont and the Coastal Plain is the Fall Line, a zone of descent with riffles and waterfalls.

Undulating low knobs and ridges with numerous steep stream valleys mark the Piedmont. Its topography is highly diversified because of the variety of metamorphic rock types,

which differ in their resistance to erosion and the amount of fractured rock.

The soils from the underlying crystalline parent rocks (some highly weatherable) of this gently rolling province are deep and well-drained loams. Although abundant water is captured through rock fractures and is stored in the deep bedrock below, the Piedmont's surface soil and non-absorbent hard underlying rocks near the surface have limited water storage capacity. The effect of this limitation can be excessive runoff and flooding. Runoff and erosion can be further accelerated by poor land management practices.

The Anacostia's tributaries in this part of the basin cut deep valleys and have relatively steep gradients. Riverscapes of torrents, gorges, and pools and riffles are the result. The beauty of the Piedmont's fast-moving waters is complemented by millponds and by a few remaining wetlands.

Some 70 percent of the Anacostia watershed is in the Coastal Plain, a wedge-shaped mass primarily of unconsolidated sediments, which becomes flatter and thicker as it tilts to the southeast. Its sedimentary deposits are a mixture of loosely cemented and highly erodible materials – gravel, sand, and clay. Some of these materials come from upland erosion, but most are the deposits of successive advances and retreats of the sea over the last 50 to 100-million years.

A belt of soils produced from the Potomac Group of rocks is a distinctive and significant geologic feature of the Anacostia Coastal Plain. Clays, sands and gravels of this band predominate in the corridor between Washington, D.C., and Baltimore, Md. Known as the "badlands," they have provided building materials since the earliest beginnings of the Nation's Capital. Only two of a dozen or so sand and gravel quarries are still active. Suburbanization is slowly but surely claiming them.

The iron-rich red clay in the Potomac Group belt has long contributed nourishment for farming, and formed the basis for a major brick making industry that has endured for over 50 years. These clays have a negative side, however: they are potential landslide hazards because they are unstable. They shrink when dried and expand when wet. These clays also dissolve and "dye" receiving waters, are highly subject to wind erosion, and encourage fast runoff because of their limited absorptive nature.

Natural Costal Plain streams tend to meander slowly, even sluggishly, toward tidal waters. Coastal Plain streams that have been channelized in an effort to minimize flood damage from Piedmont waters have increased flow velocities and channel bank erosion plus habitat loss.

## HYDROLOGY

The climate of the Anacostia basin is temperate and humid. Its average annual precipitation of approximately 40 inches is fairly evenly distributed throughout the year, which means that high flows and floods can occur in any month. Tropical storms or hurricanes occasionally influence the basin.

Streamflow in the watershed is somewhat seasonal in nature, with relatively higher discharges expected during the winter and spring. The combined average annual discharge of the Northwest and Northeast branches, which drain 70 percent of the basin, is 131 cubic feet per second (cfs). The median flow (the flow exceeded more than 50 percent of the time) is about half that.

The Anacostia's tributaries tend to be flashy, causing dramatic rises or falls in flow. Several characteristics explain the flashiness: the relatively steep gradients in the upper Anacostia watershed (Piedmont); and that a large portion of the watershed is impervious because of rocky terrain, nonabsorbent clay soils, or development. (Since 1950, construction increased dramatically. It has been estimated that by the early 1970s, 24 percent of the Maryland portion of the watershed was impervious.)

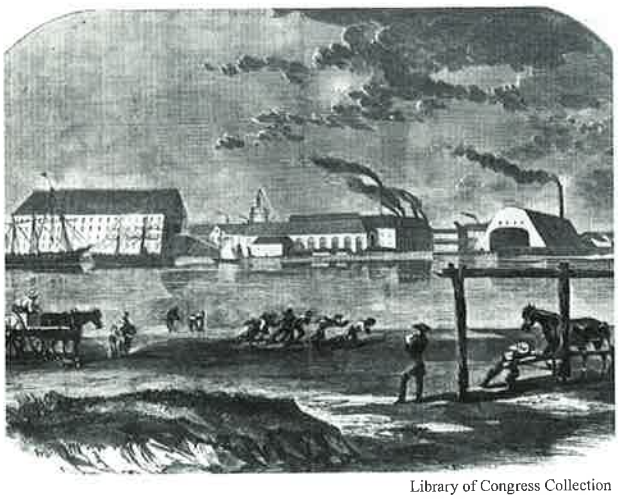
Prince George's County was plagued by floods through the 1950s, and several segments of its upper watershed streams were channelized in an effort to minimize damage. It has been estimated that velocities greater than three feet per second combined with depths of three feet or greater are generally considered to be hazardous. The velocities of the Prince George's flood waters, inherited from the naturally fast-moving waters from the Piedmont, impervious terrain, and poor upstream land management, have ranged up to nine feet per second. The flood of record occurred during Tropical Storm Agnes in 1972. The discharge from the Northwest and Northeast branches reached 18,000 and 12,000 cfs respectively, or about 300 times the median flows. A levee system installed by the Army Corps of Engineers has prevented much damage in the county.

Waters slow as they enter the Coastal Plain. In the tidal Anacostia, these waters become an estuary influenced by a three-foot tide. Here the Anacostia looks like a river, but acts like a lake or a sink, with its movement sluggish. Primarily because of tides, water may reside in the Anacostia for extended periods of time before reaching the Potomac.

Under average conditions, the flushing time is approximately 20 days, but a 40-day residence time is not uncommon during the normally low flows of autumn. Detention can extend to 100 days under prolonged droughts. The result is that the river's burden of sediments, nutrients, and pollutants simply slosh back and forth.

# FISH AND HABITAT

The health of living resources, rather than what is removed or what remains in the water as a pollutant, is an important aspect of the 1987 Chesapeake Bay Agreement. Because the Anacostia watershed is a part of the Bay system, the restoration of its living resources is important to the Bay.



Library of Congress Collection

*The 1861 print of the Washington Navy Yard shows shad fishermen at work on the tidal Anacostia.*

At one time, the Anacostia River Basin was a highly valuable spawning and nursery area for anadromous fish. The 1861 print (above) of the Washington Navy Yard shows shad fishermen at work on the tidal Anacostia. Around the turn of the century, it was reported that the Anacostia River flourished as a fishing center with an abundance of not only American and hickory shad, but white and yellow perch, redbreasted sunfish, catfish, and herring. Today, even though there are hopeful signs, the fishery is meager. Both the numbers and diversity of fish have dropped drastically. Because of the significant change in the upper watershed fishery, much protective concern is expressed over the brown trout of Paint Branch.

Two fish surveys were conducted in the upper Anacostia tributaries in 1948 and 1972. Nineteen species present in the basin before 1929 were not found in either survey, including white perch, rockfish, yellow perch, American and hickory shad, and the sturgeon. Seining at the 25 survey sites of the upper Anacostia tributaries in 1948-49 produced a total of 31 species. The survey results also showed that 12 species made up 96 percent of the fish population.

The 1948 survey was replicated in 1972. Of 25 species found in 1972, only four comprised 96 percent of the population. The surveyors found that 23 of the 25 stations sampled had fewer species than in the earlier study, and that 11 of the 25 stations had fewer than half of the species present in 1948-49. While both the Northwest and Northeast branches and their tributaries experienced heavy species reductions, the greatest were found in the latter.

The 1972 researchers were so alarmed by the trends that they feared only minnows and eels would be left in the river by 1985. A comprehensive survey of the upper Anacostia in Maryland has not been conducted since 1972, though a limited 1980-82 survey revealed that, while the fish populations and diversity were still poor, the earlier dire predictions had not come true.

In the tidal Anacostia, as with the upper Potomac estuary, little was known about the fisheries until a few years ago. What was known was general: historical accounts glowed with reference to fish abundance and diversity and the economic importance of fish; there had been a precipitous decline in the metropolitan Washington, D.C., fishery by the 1960s, when species composition and abundance was at its lowest level in the river's history and fish kills were frequent; there had been an equally dramatic return of fish to the Potomac in the late 1970s coinciding with substantial water quality improvements.

In 1981, "The Awakening" on Hains Point heralded the return of sportfishing to the Nation's Capital and the Potomac as a premier bass fishing area. The esteemed striped bass has also been returning in record numbers. Sixty-six fish species have now been identified in District waters.

The District made good its commitment to the 1983 Chesapeake Bay Agreement, and initiated a fisheries management program in 1985. The program includes annual systematic surveys and produces badly needed data for trend assessments, an

C. Dalpra

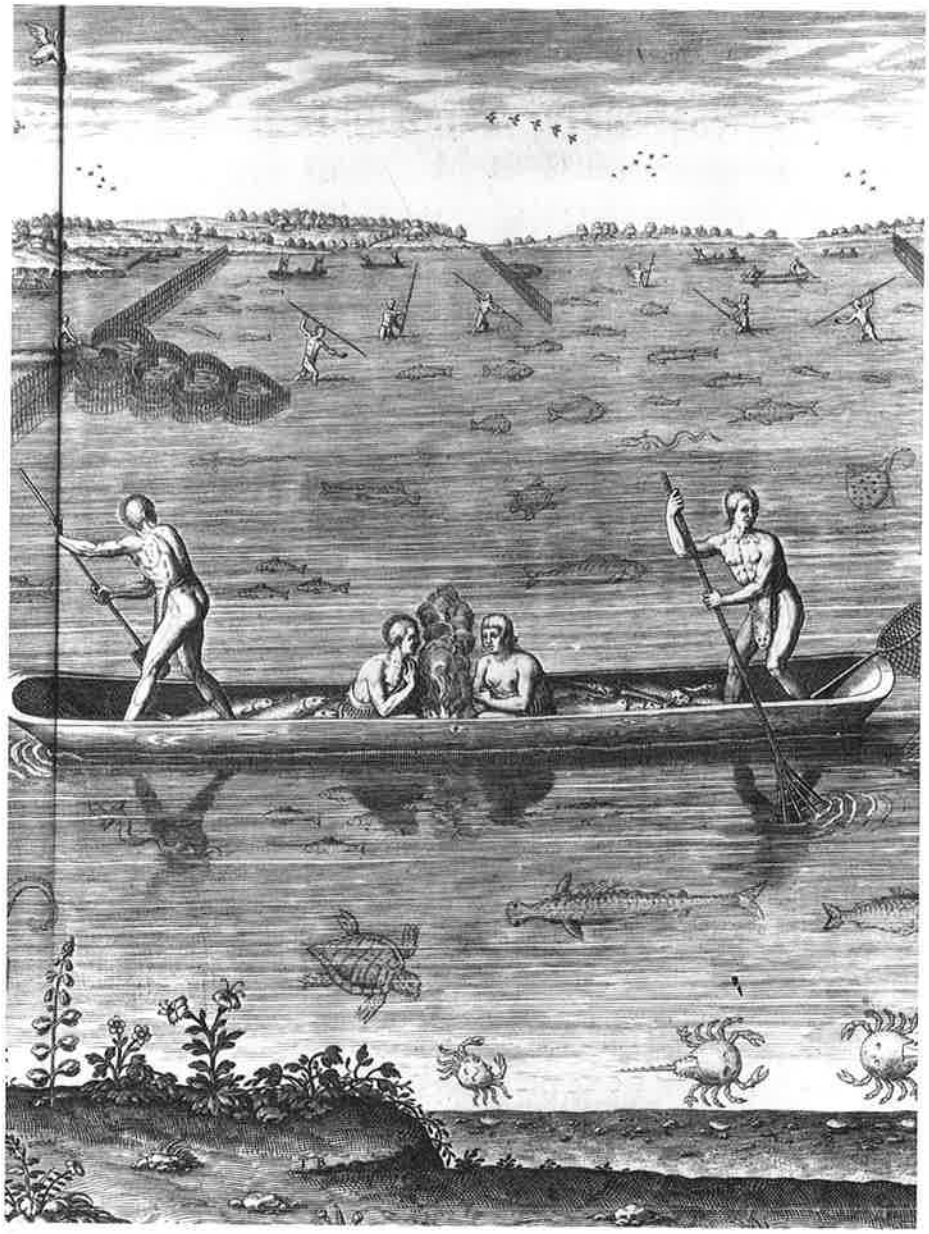
*Ira Palmer of the D.C. Fisheries Program and some enthusiastic youngsters. The aquatic education program is sponsored by the District's Dept. of Consumer and Regulatory Affairs.*

aquatic education program for youngsters, fishing clinics at the annual D.C. Riverfest, size and possession regulations, and a licensing program to produce funding support.

The program's first fishery survey was made in 1984. The results of the annual surveys show a tidal Anacostia fishery with some of the same species as the Potomac (i.e. smallmouth, largemouth, and striped bass juveniles), but the numbers of fish are significantly lower. At the two survey sites the number of species has ranged from 18-23. The most numerous fish have been white perch, and the highest District index of striped bass juveniles has been found at the Navy Yard site.

The Anacostia fishery remains far below its potential because of the persistent poor water quality, in particular, sedimentation. Not only average or median water quality, but single extreme changes in sediment, temperature, dissolved oxygen, and toxics are concerns. Loss of habitat is an issue in both the upper and tidal Anacostia. Increased attention is now being given to both tidal and non-tidal wetlands. The Anacostia's fish have not only had to face pollution, but man-made physical barriers. Drop structures designed to control floods in the Northwest and Northeast branches have had the unfortunate effect of barring major spring spawning runs of yellow perch, shad and herring.

Since 1980, the District has examined fish from its waters for toxic substances (21 organic chemicals and 8 heavy metals). Currently, the waters of the District of Columbia, including the tidal Anacostia, are under a fish consumption advisory for levels of PCBs and other chemical contaminants. Anglers are advised not to eat catfish, carp, or eel, and should limit consumption of other species to a half-pound per month. Younger fish are probably safer to eat. Fish should be cooked properly and fat, where many of the chemicals concentrate, should be trimmed away.



*European colonists found a land of bountiful natural resources.* Library of Congress

A hopeful sign for the lower river is the slow return of submerged aquatic vegetation (SAV). In 1985, wild celery and hydrilla were found growing near the mouth of the Anacostia. ICPRB initiated efforts in late 1987 to further support the restoration of the watershed's biological resources.

*Wild celery* C. Dalpra

# THE WATER

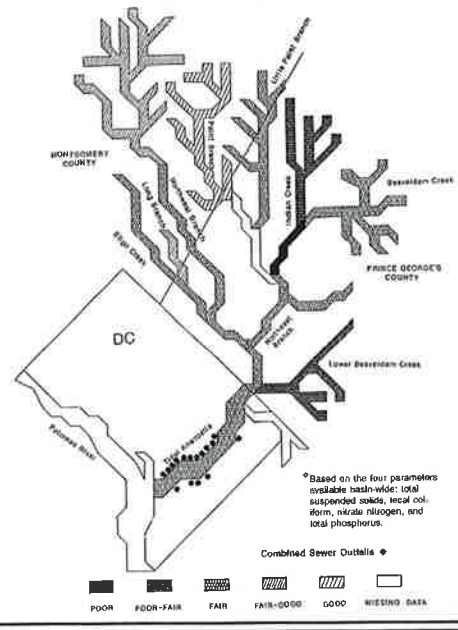
The water quality of the Anacostia basin is generally poor, and the tidal Anacostia River is the most polluted body of water in the National Capital area. The most serious problems: excessively high sediment and bacteria levels, and low dissolved oxygen (DO). Nutrients are plentiful throughout the basin. Some heavy metals and other substances have been found to be in excess of water-quality standards. Anacostia waters are generally at their worst during high flows.

While the upper, free-flowing segment and tidal Anacostia share water quality problems, the conditions are highly variable. Severe sedimentation and high bacteria levels, for example, are common throughout the basin. Low DO does not appear to be a particular problem in the upper watershed, but is a major concern in the tidal river.

The water quality concerns of the Anacostia basin have been persistent and go back to colonial times. Historical literature reveals excessive sediment and high organic levels as old, persistent problems. Bladensburg, for example, had been a leading seaport for some 50 years until its piers became choked by sediment in the early 1800s. There is evidence that the erosion rates have declined over the past 50 years due to conservation efforts initiated in the 1930s, declining agriculture, and the introduction of stormwater controls. The sedimentation rate is still too high, however.

High bacterial levels also have long been a problem. Disposal of human wastes caused serious health problems in the tidal Anacostia at the turn of the century. A hundred years later, high concentrations of fecal coliform bacteria are found throughout the basin. Bacteria levels increase with population, and are the highest in the urbanized tidal Anacostia.

Anacostia Basin Water Quality Ratings, 1985*




*THE COORDINATED ANACOSTIA MONITORING PROGRAM*

*The Coordinated Anacostia Monitoring Program (CAMP) was developed in order to provide a picture of basin-wide water quality under similar flow and weather conditions. Metropolitan Washington Council of Governments (COG) coordinates the sampling activities of the various participating agencies and a laboratory, and maintains a computerized database. The participating agencies are the MD Dept. of the Environment, D.C. Environmental Control Division, M-NCPPC, Montgomery County Dept. of Environmental Protection, an the Prince George's County Health Dept.*

**Current Anacostia River Conditions and Requirements for Fishable / Swimmable Water**

| | | *Requirements* | | |
|---|---|---|---|---|
| | *Anacostia River* | *White Perch* | *Striped Bass* | *Swimming* |
| *Temp. (F)* | *32-81°* | *52-86°*[1] | *40-68°*[1] | ..... |
| | | *54-68°*[2] | *43-54°*[2] | ..... |
| *pH* | *6.5-8.5* | *6.5-8.5* | *7.5-8.5* | ..... |
| *DO (mg/l)* | *Freq. < 4* | *>5* | *4.5-20* | ..... |
| *Chlorine (mg/l)* | [3] | *<0.15* | *0* | ..... |
| *TSS (mg/l)* | *100-400* | *<70* | | ..... |
| *Fecal Coliform (MPN/100 ml)* | *>10,000* | | | *<200* |

[1] *Will tolerate* [2] *Optimum* [3] *Unknown*

**Temperature:** plays a key role in chemical and biological processes. **DO:** necessary for life of fish and other organisms and organic matter breakdown. **pH:** believed critical in algae control and an aquatic life determinant. **Chlorine:** toxic to fish and other aquatic life. **Suspended Solids:** contribute to turbidity, can clog fish gills and kill plants. **Fecal Coliform:** bacteria indicating pollution.

Several trace elements including cadmium, copper, iron, lead, and zinc have been found to be in excess of water quality standards or recommended aquatic life criteria in various parts of the watershed. Little is known about toxic substances in the basin, but there is little doubt that they are there. The ICPRB, in cooperation with the District government and the Chesapeake Bay Program, has worked to identify levels of toxics and their origins. The research will be used to devise a plan to reduce levels of toxics in the watershed.

The lack of adequate data makes comparisons between different sub-basins, or a sub-basin over time, difficult. The historical water quality data is quite extensive in a few cases, but the data is seldom comparable because it has been gathered independently and not always consistently by various government agencies. A coordinated watershed monitoring program (see box) has the objective of providing a comparable set of parameters available for the tidal river and its tributaries. This network has been augmented with some storm flow information. The Metropolitan Washington Council of Governments, with assistance from other agencies, has performed studies that have provided a clearer picture of conditions in the sub-watersheds. Overall, better information on conditions will enhance the restoration.

## THE TRIBUTARIES

In the upper watershed tributaries, conditions are highly variable, but the upper watershed streams share two main problems: high levels of sediment and bacteria. Surface mines (mostly located in the Indian Creek and Little Paint Branch watersheds) were estimated to account for 48 percent of the sediment load to the tidal river in 1981. Streambank erosion also is severe.

The DO levels of the free-flowing portion of the Anacostia watershed generally are not a particular problem. DO levels usually exceed the Maryland 5.0 mg/l standard, suggesting that there are no large sources of oxygen-demanding material continuously affecting the tributary waters.

Limited data suggest the presence of trace elements, and average concentrations of copper, lead, and nickel in Paint Branch below the Navy Surface Weapons Center are of some concern.

## THE TIDAL RIVER

One of the most serious problems of the tidal Anacostia is low DO. Average DO concentrations regularly fall below the District's 5 mg/l water quality standard necessary to protect aquatic life. At times, river DO concentrations approach zero. Bacterial concentrations are very high and fairly uniform throughout the whole tidal reach. In 1985, observed fecal coliform concentrations were rarely under the 200 MPN/100 ml limit that is recognized as safe for swimming.

The District's combined sewer system is believed to be a major contributor to the tidal river's low DO and high bacterial values. Serving 35 percent of the city, the system was built around the turn of the century and carries both sanitary wastes (sewage) and storm drainage in the same sewers. The sewer pipes can transport the flows to the Blue Plains Treatment Plant during normal conditions, but they will overflow into the river during moderate to heavy rains. There are 16 points where overflows enter the Anacostia River. The overflows are weather dependent and a year-round problem. Contributions of organics and bacteria from the tributaries and, particularly, local runoff, significantly compound the problem.

Most of the highly visible sediment in the tidal river originates in the tributaries. TSS measurements are consistently higher in the Anacostia than the Potomac. Water clarity, as determined by Secchi Disk measurements, is usually limited, ranging between 1-2 feet.

Algal blooms have not been a noticeable problem in the tidal Anacostia, probably because the light penetration of the Anacostia severely limits plant growth. Chlorophyll levels indicative of substantial algal populations do occur, however.

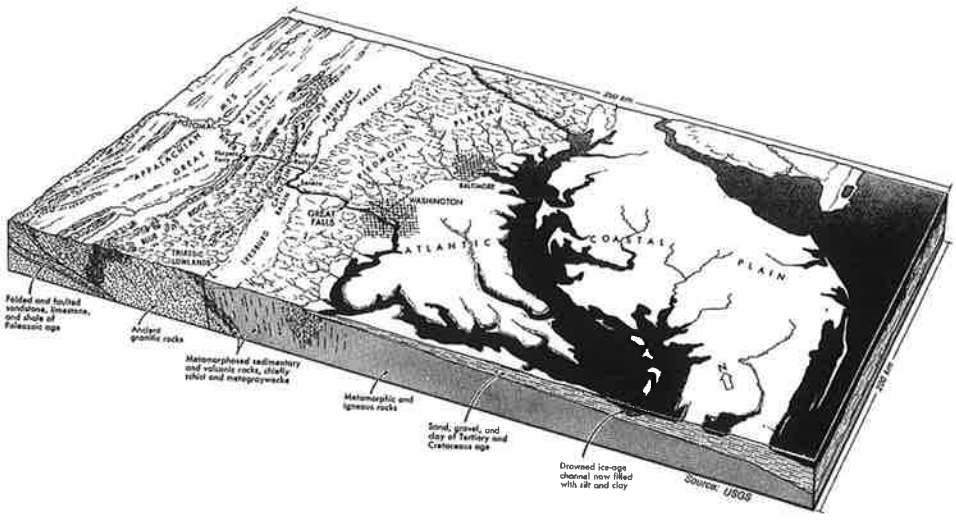
## RESTORATION COMMITMENTS

The nature of this watershed with its variety of land uses makes restoration a challenge. The commitment among the various jurisdictions that share this potentially outstanding watershed has been made, however. The following brief summary provides some of the early and recent dates in the protection and restoration of the Anacostia basin.

An important date for the Anacostia was 1927, when M-NCPPC was created. Its bi-county management of 4,600 acres of the upper watershed's stream valley parks and open spaces continues to be crucial in its conservation.

The serious flooding problems of the 1930s to 1950s made the interrelationship of basin water resources problems evident, even though some of the solutions of that period might not satisfy today's understanding. The concern for sediment and stormwater controls increased in the 1960s, as post-World War II development increased at a rapid pace. Efforts to control sediment and stormwater runoff were initiated by Montgomery and Prince George's counties in the 1970s. The counties continue to cooperate in these areas, and have aggressively expanded their efforts in response to both state and Chesapeake Bay initiatives. Many efforts have been made by the Washington Suburban Sanitary Commission (WSSC), a bi-county agency, especially in the area of erosion and sediment control and sewer system improvements.

The concern about sediment was reflected at the state level when, in 1975, Maryland began exercising control over surface mining. The state is now making progress in reclaiming large abandoned mines.



The local governments that share the Anacostia basin took an important step through COG when, in 1979, its Water Resources Planning Board designated the Anacostia as a critical watershed.

In 1984, recognizing the need for a cooperative and coordinated management approach at high levels, Maryland and the District of Columbia signed the first Anacostia Watershed Restoration Strategy Agreement, targeting Maryland's sediment runoff and erosion and the District's combined sewer overflows into the tidal Anacostia. (An expansion of the agreement, including Montgomery and Prince George's counties, and the U.S. Army Corps of Engineers (USACE) has followed.)

Also in 1984, Maryland's aggressive nonpoint source pollution control program focusing on best management practices (BMPs) for agriculture and new construction was further strengthened. The state initiated a stormwater pollution control cost-share program to enable local governments to install BMPs in existing uncontrolled urban areas. In the same year, Maryland designated its portion of the Anacostia a Scenic River under the state's Wild and Scenic Rivers Program.

A significant step was the creation of the coordinated Anacostia watershed monitoring program in 1985 at COG, followed by the publication of the first basin-wide assessment report in 1986.

A major contribution by the District of Columbia was its multi-million dollar combined sewer overflow abatement program that was designed to lower biological oxygen demand (BOD) levels in the tidal river by as much as 70 percent. To date the results have been mixed, but progress is being made.

Since 1987, the efforts of the many agencies and governments involved under the Anacostia Watershed Restoration Committee (AWRC), coordinated by COG, has been a driving force for improvements over the last decade. The AWRC membership includes the District of Columbia, the State of Maryland, its counties, Montgomery and Prince George's, and USACE. The AWRC now encourages and coordinates the efforts of some 60 federal, state, and local agencies involved in Anacostia restoration. The group's initial efforts involved identification and implementation of restoration projects throughout the watershed. Improvements to stormwater control and other restoration needs were inventoried, and some 450 projects were identified. Currently, approximately 28 percent of the restoration projects have been implemented.

In 1991, the AWRC members developed a vision for a comprehensive, ecologically based restoration of the watershed, culminating in a six-point action plan.

Md. Scenic and Wild Rivers

## URBAN STREAM RESTORATION

*Restoring an urban stream system requires "retrofitting" a developed watershed to try and restore the natural functioning of its waterways. A list of 250 possible retrofit sites was completed by COG staff in 1990. Of that total, 159 stormwater retrofits have been identified to repair 20 percent of the watershed. The total estimated cost of these projects is over $27 million.*

## MARYLAND'S SCENIC AND WILD RIVERS ACT

*The Maryland Scenic and Wild River Act was passed in 1968 in recognition of the need to protect rivers of outstanding value in the state. The Act directs the Secretary of the Department of Natural Resources to "provide for wise management... and preservation" of the land resources as well as the scenic and wild qualities of the designated rivers.*

# SIX-POINT ACTION PLAN

**GOAL NO. 1: Dramatically reduce pollutant loads delivered to the tidal river to measurably improve water quality conditions by the turn of the century.**

**PROBLEM:** The tidal Anacostia River has some of the poorest water quality in the Chesapeake Bay system. It receives a substantial annual load of urban pollutants, sediment and debris; it experiences combined sewer overflow events, and its dissolved oxygen levels frequently violate water quality standards. Its sediments contain toxics (such as PCBs, petroleum hydrocarbons, trace metals, and pesticides) and are enriched with excess nutrients.

**STRATEGY:** Sharply reduce the number of combined sewage overflow events and stormwater pollutant loadings. Effectively control increased stormwater loadings from new development. Remove trash and floatable debris now trapped in the estuary and its tributaries. Prevent future trash and debris deposition. Evaluate and address the problem of toxic sediments in the tidal river.

**PROGRESS:** ★The District of Columbia, Montgomery and Prince George's counties have instituted stringent erosion and sediment and stormwater management controls for all new development (several hundred urban Best Management Practices have been implemented since the mid-1980's). ★The District of Columbia, Montgomery and Prince George's counties, the State of Maryland, the U.S. Army Corps of Engineers and the Environmental Protection Agency have undertaken the installation of stormwater retrofits, to include both new stormwater controls for previously uncontrolled development and the modification of existing stormwater controls to enhance their pollutant removal performance (approximately 159 stormwater retrofits have been proposed, approximately 50 projects are currently in planning, design or construction). ★The D.C. Department of Public Works and the U.S. EPA installed an innovative swirl concentrator facility to reduce the combined sewer overflow from the largest combined sewer system in the Anacostia. ★The D.C. Environmental Regulation Administration and the U.S. EPA, via the Hickey Run Comprehensive Pollution Abatement Program, directed COG to develop the first Sub-watershed Action Plan for the Anacostia and a prototype petroleum hydrocarbon storm drain tracing system for Hickey Run, its most degraded sub-watershed. ★The Washington Suburban Sanitary Commission, a regional water utility, instituted a sanitary sewer rehabilitation program for aging sewer lines in the Anacostia's tributaries. ★The D.C. Environmental Regulation Administration and U.S. EPA directed ICPRB to develop a remedial action plan for the contaminated sediments in the mainstem tidal Anacostia. ★The D.C. Department of Public Works, the Prince George's Department of Environmental Resources, the Prince George's M-NCPPC, U.S. EPA and ICPRB developed floating trash management initiatives for the mainstem and its larger tributaries. ★D.C. and Montgomery and Prince George's counties supported citizen's initiatives to include stream clean-ups and "Don't Dump" stenciling to identify a catch basin's connection to the Anacostia.

## TAKING ACTION

*In 1991, a* ***Six-Point Action Plan*** *was adopted that strengthened the partnership of the four jurisdictions who signed the Anacostia Watershed Restoration Strategy Agreement and relationships among a range of government agencies. The plan, listed here, provides six specific goals and strategies designed to restore the Anacostia's water quality, ecological integrity, anadromous fish spawning habitat, wetlands, and forest cover, and involve the public in the process.*

*An annual work plan is adopted by the Anacostia Watershed Restoration Committee (AWRC). The AWRC is comprised of representatives of signatories to the 1987 agreement; The Army Corps of Engineers, the lead Federal Government agency; the Metropolitan Washington Council of Governments (MWCOG), administrator of the agreement; and the Interstate Commission on the Potomac River Basin. For more information, contact MWCOG, Dept. of Environmental Programs, 777 North Capitol Street, Suite 300, Washington, D.C. 20002-4201; (202)962-3200.*

**GOAL NO. 2: Protect and restore the ecological integrity of Anacostia streams to enhance aquatic diversity and encourage a quality urban fishery.**

**PROBLEM:** Dozens of miles of stream habitat have been severely degraded by poorly controlled stormwater runoff and, in some cases, by engineered channel "improvements." Urbanization has profoundly altered the flow, water quality, geometry, and ecology of these streams; many of which possess only a fraction of their original natural biological diversity.

**STRATEGY:** Apply stormwater retrofits to control runoff and restore a dynamic equilibrium to the receiving streams; protect remaining supporting habitat; apply stream restoration techniques to improve habitat in the most degraded streams; effect land-use controls and stringent stormwater and sediment practices at new development sites, prioritizing the most critical sub-watersheds.

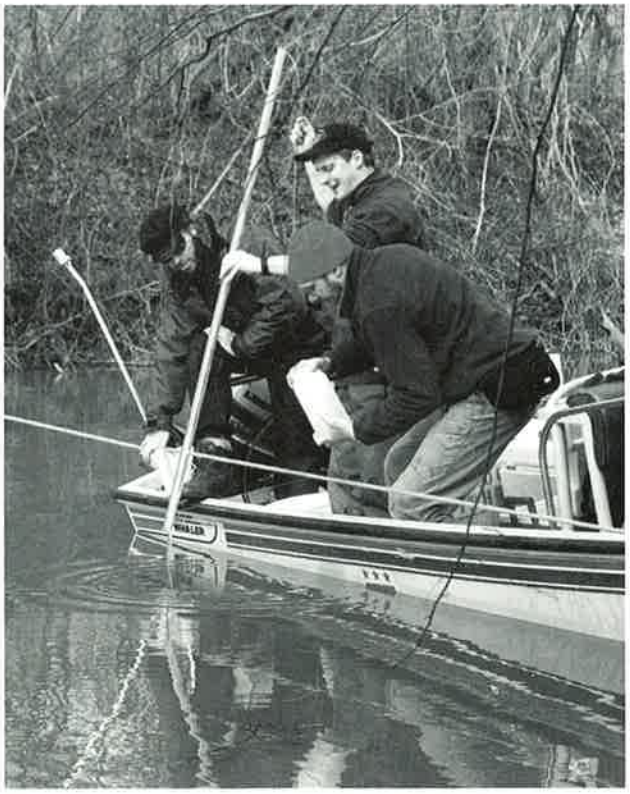
**PROGRESS:** ★The U.S. Army Corps of Engineers, Montgomery Co. Department of Environmental Protection, Prince George's Co. Department of Environmental Resources, the Maryland State Department of the Environment, COG and ICPRB have initiated or completed eight major urban stream restoration projects (improving approximately 15 miles of degraded habitat in Sligo Creek, Northeast Branch, Northwest Branch and Paint Branch). ★In the upper Paint Branch subwatershed, a naturally-reproducing Brown Trout population exists; several efforts have been undertaken to protect this valuable resource. Trout Unlimited, M-NCPPC and the Maryland Department of Natural Resources have worked to expand the pool habitat in a prime spawning tributary and the U.S. Department of Agriculture's Beltsville Agricultural Research Center has initiated stream restoration efforts in the lower portion of Paint Branch. ★A multi-agency task force, including the Montgomery County

Department of Environmental Protection, the M-NCPPC, the Maryland State Department of Natural Resources, ICPRB and COG developed an upper Paint Branch Management Plan which was approved by the Anacostia Watershed Restoration Committee. ★The Montgomery County Council recently voted to adopt the majority of the Plan's recommendations and took steps to purchase 248 acres of critical riparian property and identified another 152 acres of critical buffer and recharge areas for future purchase. ★The M-NCPPC supported the re-introduction of 17 species of freshwater fish into a restored portion of Sligo Creek by ICPRB and COG (all re-introduced species, both pollution-tolerant and intolerant, are surviving). ★The National Park Service, in conjunction with the ICPRB, has initiated efforts to restore streams in Greenbelt National Park draining to the Northeast Branch. ★The Prince George's County Department of Environmental Resources and the Maryland State Department of the Environment have undertaken initiatives to restore Brier Ditch and other Northeast Branch tributaries. ★The D.C. Environmental Regulation Administration, EPA, the U.S. Department of Agriculture and COG have initiated efforts to restore Hickey Run, which flows through the U.S.D.A. National Arboretum. ★The U.S. Army Corps of Engineers is restoring lost pool and riffle habitat within flood control project authorization zones in the Northeast and Northwest branches.

**GOAL NO. 3: Restore the spawning range of anadromous fish to historical limits.**

**PROBLEM:** For centuries, certain fish species (menhaden, yellow perch, herring, shad, and striped bass) have annually migrated from the Atlantic Ocean and Chesapeake Bay up into the freshwater nontidal Anacostia tributaries to spawn. By the 1970s, the historical annual migration of these anadromous fish species had been interrupted by as many as 25 unintentional and man-made fish barriers [primarily along the lower portion of the Anacostia].

**STRATEGY:** Remove key fish barriers to expand the available spawning range for anadromous fish, and improve the quality of the their spawning habitat. Once expanded, assist the anadromous fish community to genetically "imprint" their newly-opened territory to encourage the return of future generations.



*Researchers test nutrient levels at the Kenilworth Marsh* C. Dalpra

**PROGRESS:** ★Fish "imprinting" efforts—manual transportation of fish to upstream habitats in order to imprint unique chemistry—were preformed in 1991 with the aid of students from local schools. As of Fall, 1996, six priority fish barriers have been removed or modified. The first of these was done by private industry, three were accomplished through the U.S. Army Corps of Engineers' Environmental Restoration Project and two fish passages were installed through Maryland's Watershed Habitat Enhancement Initiative. This work has had significant results: for the first time in many decades river herring again migrate up the Northeast Branch to areas beyond the Washington beltway and many stream miles beyond pre-restoration limits.

**GOAL NO. 4: Increase the natural filtering capacity of the watershed by sharply increasing the acreage and quality of tidal and non-tidal wetlands.**

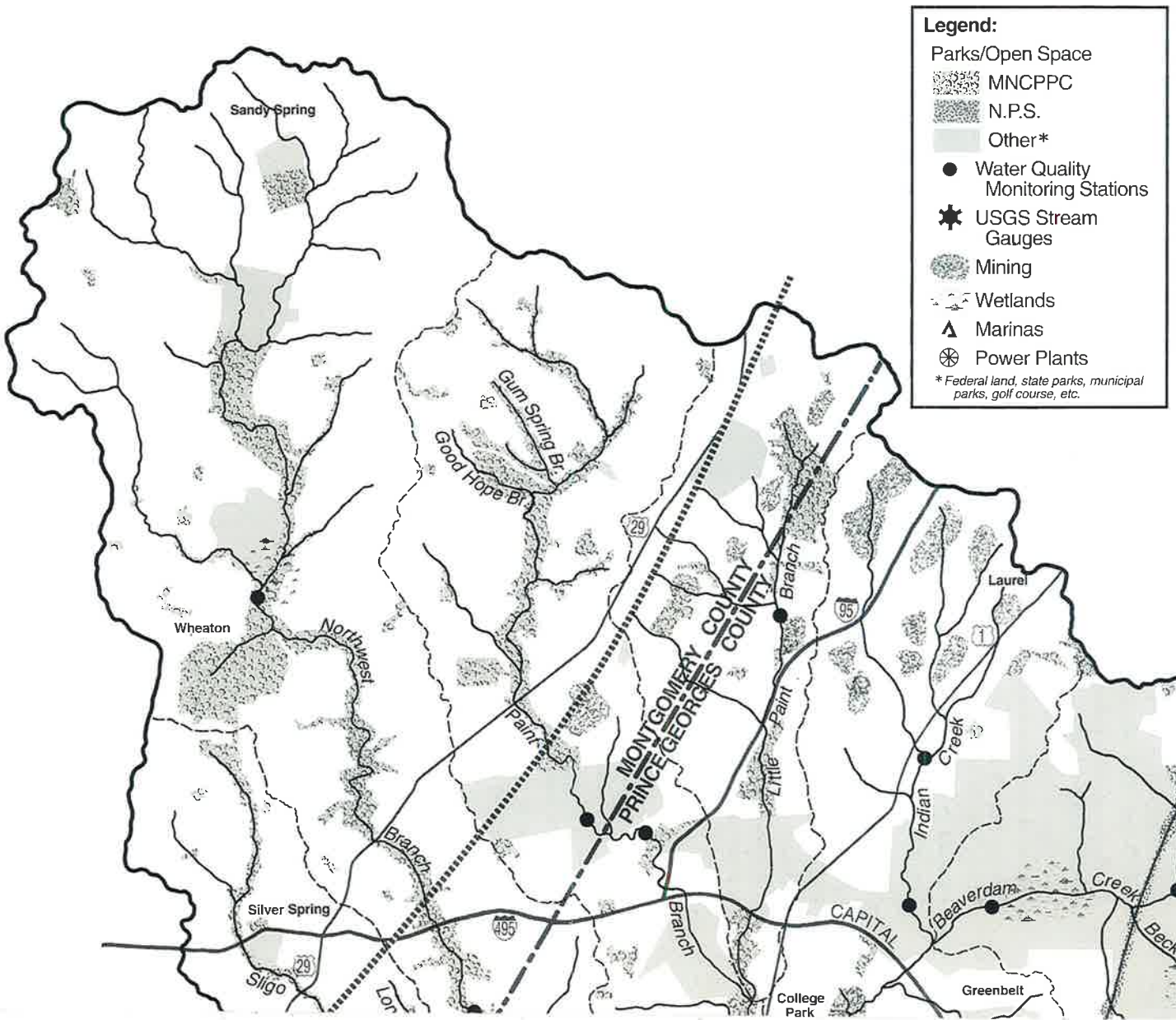
**PROBLEM:** Wetlands historically have been an integral part of the self-cleansing system of the Anacostia watershed, as well as key wildlife and waterfowl habitat. When the restoration began in 1987, over 98 percent of the once extensive tidal wetlands and nearly 75 percent of the watershed's freshwater wetlands had been destroyed.

**STRATEGY:** Accept no further net loss of wetlands in the watershed. Restore the ecological function of the existing degraded wetland areas. Create several hundred acres of new tidal and nontidal wetlands.

**PROGRESS:** ★The D.C. Department of Public Works, the Environmental Protection Agency, the National Park Service and the Metropolitan Washington Council of Governments initiated efforts to restore Kenilworth Marsh, a tidal freshwater system. Their efforts were successfully merged with a nearby ongoing U.S. Army Corps of Engineers Anacostia mainstem dredging project, resulting in the creation of 32 acres of emergent marshlands representing the largest tidal freshwater marsh restoration project in the nation. ★The Maryland State Department of Natural Resources asserted new authority in 1992 to protect non-tidal wetland areas and also is evaluating ways to transfer wetland mitigation requirements to expand watershed-wide restoration efforts. In 1997, the state announced a goal of restoring some 60,000 acres of wetlands throughout the state. The project is beginning with the restoration of 10 acres along the Anacostia. ★The Montgomery County Depart-

# THE ANACOSTIA RIVER WATERSHED

**Water runs downhill.** *This simple but fundamental fact helps us understand watersheds. A watershed is a land area in which all the water that falls drains toward a common point or body of water such as a lake or stream. Wherever you live, you live in one. Watersheds come in different sizes. The Mississippi River drains 1,243,000 sq. mi., the Potomac River drains 14,670 sq. mi., and the Anacostia drains 170 sq. mi. A large watershed is made up of smaller ones. The Anacostia watershed is made up of nine major sub-basins. Floods and sediment-choked stream channels are the result of too much water flowing too fast through a watershed. Appropriate land use and Best Management Practices (BMP's) can help solve these problems.*

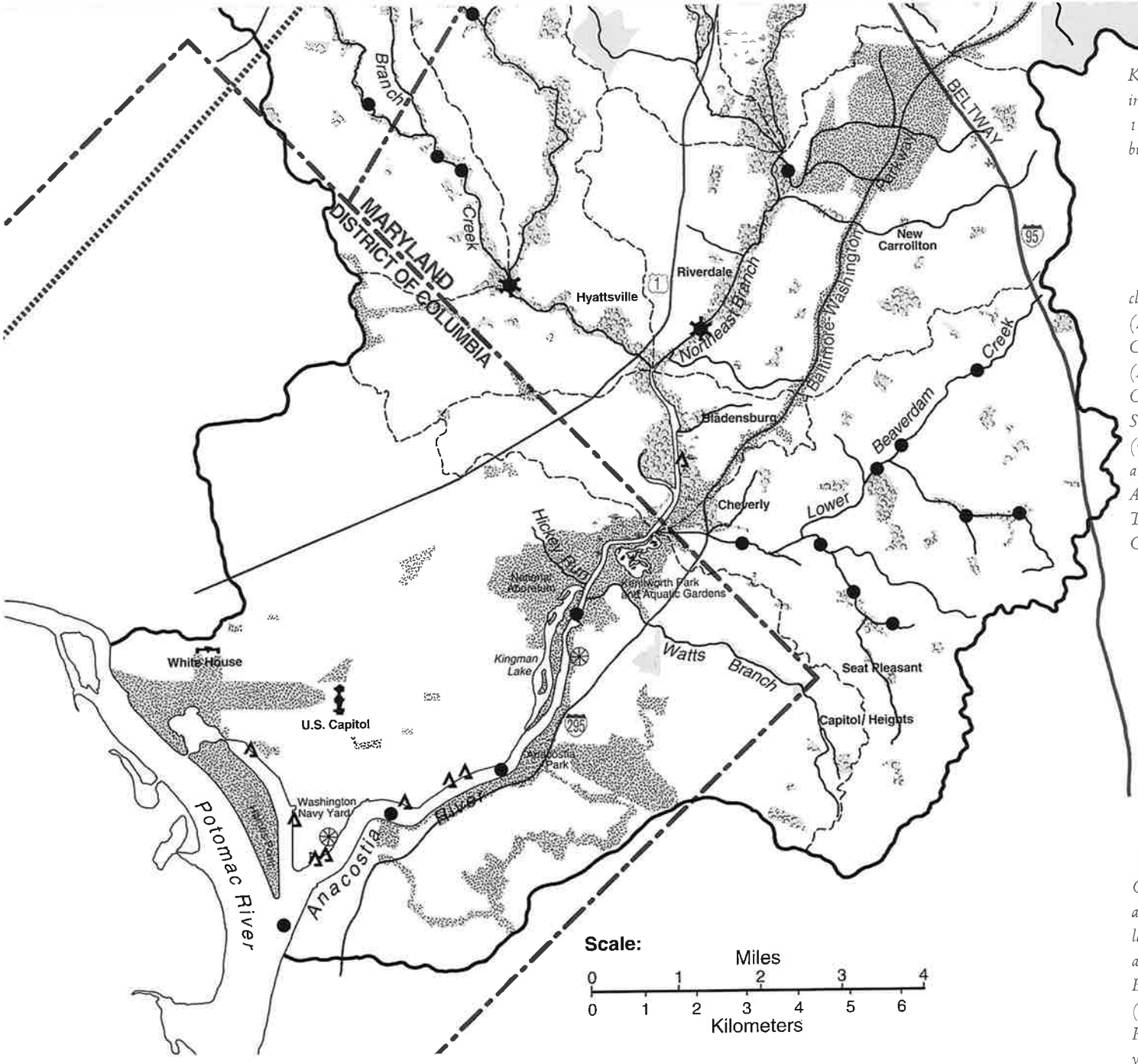



| *Watershed Area (sq. mi.)* | |
|---|---|
| *58.3* | *Montgomery County* |
| *86.7* | *Prince George's County* |
| *24.9* | *District of Columbia* |
| *169.9* | *Total Anacostia Drainage* |

## *ORIGIN OF THE ANACOSTIA*

*When the European settlers arrived, they found Indians known as the Nacotchtanks (also known as the Nascostines and Anacostines) living along the river known today as the Anacostia. The Nacotchtanks were a sedentary, semi-agricultural people who preferred the lands on the eastern bank of the river, a site that had been occupied continuously for more than 3,000 years prior to Captain John Smith's arrival in 1608. The Nacotchtanks were members of a tribal subdivision of Algonquian linguistic stock, and inhabited the most important trading village in the entire tidewater potomac region. (An Indian word, Anaquab(a)-tan(l)k, means a town of traders.)*

*On a map drawn by Smith and published in 1612, the village was called "Nacothank." It was Thomas Jefferson who is responsible for the river's being called Anacostia today. At the time the site for the new federal district was chosen, the river was called the Eastern Branch by the new Americans. Secretary of State Jefferson had been told by a friend about the old Indian name. Major Andrew Ellicott, commissioned to survey a 10-mile square*




*responded to a query from Jefferson. Ellicott found the name "Anna Kastia" on old surveys. It was too late to make a change in a 1792 map, but the Indian name was added to the 1793 topographical map of the "Territory of Columbia."*

## *DISTRICT OF COLUMBIA*

*The waters of the District are grouped into seven classes for the protection of specific uses: Class A (Primary Contact Recreation), Class B (Secondary Contact Recreation and Aesthetic Enjoyment), Class C (Aquatic Life, Waterfowl, Shore Birds, and Water Oriented Wildlife), Class E (Raw Water for Industrial Supply), Class F (Navigational Uses), Class G (Groundwaters for Multiple Uses). The classifications and their standards that currently apply to the tidal Anacostia within the District are Classes B,C,E, and F. The classification goals for the future Anacostia are Classes A,B,C,E, and F.*

## *MARYLAND*

*The state has established four water-use classes for surface waters, with specific water-quality standards assigned to each class to protect the prescribed use. There are four classes, with the standards for Class IV the most stringent: Class I (Water Contact Recreation and Aquatic Life), Class II (Shellfish Harvesting), Class III (Natural Trout), Class IV (Recreational Trout). The state requires that all its waters be protected by Class I standards at the least. Within Montgomery County, Anacostia streams assigned as Class I waters are Sligo Creek, Long Branch, and Little Paint Branch: Northwest Branch (upper portion) is designated a Class IV stream and Paint Branch is a Class III stream. The Anacostia waters within Prince George's County are classified Class I streams with the exception of that portion of Paint Branch within the county up to the beltway, which is Class III.*

ment of Environmental Protection has retrofitted several of their stormwater management ponds with fringe wetland plantings; both emergent and submerged species have been successfully incorporated. ★Through the U.S. Army Corps of Engineers' Anacostia Feasibility Study, designs have been undertaken to restore Kingman Lake, a similar system to the Kenilworth Marsh, located in the same river reach. Lessons learned from the Kenilworth experience will be transferred to this project (approximately 46 acres of emergent wetland are planned). ★Also identified in the Corps of Engineers' Anacostia Feasibility Study is the creation of an additional 30 acres of emergent river fringe wetlands. They are located on the Anacostia mainstem, near Kingman Lake. Though originally part of the Anacostia Feasibility Study project scope for the District of Columbia, due to funding considerations, this element will probably be phased to be a part of future initiatives. ★The Prince George's County Department of Environmental Resources, in cooperation with the U.S. Department of Agriculture's Beltsville Agricultural Research Center and the Washington Metropolitan Area Transit Authority constructed 19 acres of nontidal wetlands. ★The National Park Service and the Interstate Commission on the Potomac River Basin teamed to develop a one-half acre freshwater wetland in Greenbelt National Park. ★Overall, approximately 138 acres of constructed wetlands have either been completed, or are currently in progress, within the Anacostia watershed.

**GOAL NO. 5: Expand the range of forest cover throughout the watershed and create a contiguous corridor of forest along the margins of its streams and river.**

**PROBLEM:** Nearly 50 percent of the forest cover in the Anacostia basin has been lost due to agriculture and later, urbanization. The extensive losses have occurred in the forest cover along the stream and river banks, where they play a critical role in maintaining stream temperature and water quality, preventing streambank, erosion and providing aquatic and terrestrial habitat.

**STRATEGY:** Reduce the loss of forest cover associated with new development and other activities by local implementation of the 1991 State Union Forest Conservation Act. Extensively reforest suitable sites throughout the basin. Reforest ten linear riparian miles over the next three years with the ultimate goal of an unbroken forest corridor from the tidal river to the uppermost headwater streams.

**PROGRESS:** ★Local and regional agencies, to include the D.C. Forest Council, Montgomery County Department of Environmental Protection, Maryland-National Capitol Park and Planning Commission, Prince George's County Department of Environmental Resources and the Metropolitan Washington Council of Governments, have completed reforestation projects affecting an estimated 50 acres. Much of the impetus has come from forest mitigation requirements created by county tree ordinances, buffer criteria and the Chesapeake Bay Critical Area program. ★The District of Columbia, through its urban forester (hired in 1991), is exploring options with federal landowners to reforest approximately 2.7 miles of riparian zone along the Anacostia mainstem. ★The National Park Service has supported several citizen-based local planting efforts within its Anacostia Park system. ★The U.S. Department of Agriculture's Beltsville Agricultural Research Center has initiated efforts to plant approximately 4 acres of riparian areas within their jurisdiction. ★The U.S. Army Corps of Engineers plans to improve riparian habitat along several miles of their Northeast Branch floodway authorization zone. ★The Maryland Department of Natural Resources assigned a forester to the Anacostia watershed in 1993 and has coordinated the planting of more than 2,000 trees. The forester is also active in public outreach activities. ★The Metropolitan Washington Council of Governments, in conjunction with D.C. Cares, has organized eight tree maintenance events in the watershed. ★The Environmental Protection Agency's Chesapeake Bay Program, in coordination with the Anacostia Watershed Restoration Committee, the U.S. Fish and Wildlife Service, and the D.C. Department of Consumer and Regulatory Affairs is committed to funding another eight acres of watershed riparian reforestation. ★The Metropolitan Washington Council of Governments has worked with the Earth Conservation Corps to collect native seeds from local trees. They were propagated for use in the watershed through a National Tree Trust program. ★The U.S. Department of Agriculture's National Arboretum has modified their mowing policy to promote the regrowth of a natural buffer along a major tributary to Hickey Run. ★The National Park Service has modified its mowing policy to promote a natural buffer along portions of the tidal river in the District of Columbia. ★Many civic associations and environmental groups have enthusiastically been planting trees throughout the District of Columbia and Montgomery and Prince George's counties.

*Beck Branch flows through the Beltsville Agricultural Research Center.* Md. Scenic and Wild Rivers

C. Dalpra

**GOAL NO. 6: Make the public aware of its key role in the Anacostia cleanup, and increase citizen participation in restoration activities.**

**PROBLEM:** Watershed residents generally are unaware of the stream system where they live. They do not understand their connection to their streams and the relevant ecosystems. For the Anacostia, a better and sustained appreciation of the watershed by its roughly 600,000 residents is crucial to the success of long-term restoration and protection efforts.

**STRATEGY:** Raise public awareness about the problems of the Anacostia River and associated ongoing restoration efforts. Seek active public support and sustained commitment and involvement. Educate the public about the watershed system, and the citizen's role in reducing urban pollution. Encourage a grassroots network of citizens to participate in a variety of restoration initiatives.

**PROGRESS:** ★The ICPRB developed a strong public outreach program. Its public education and participation program reached more than 60,000 people since its inception in 1988. The program reached the public through the efforts of five sub-basin coordinators, publications focusing on sub-basin problems, newsletters, and Anacostia information packets in conjunction with the Chesapeake Bay Trust. Sub-basin coordinators have been instrumental in the formation of several citizens watershed groups and have enlisted others in Stream Teams programs run by Montgomery and Prince George's counties, Md. They give presentations, organize cleanups, and work on various restoration projects related to stream stewardship. They have worked closely with the Metropolitan Washington Council of Governments in setting up a Citizen's Advisory Council. In addition, many of the more than 60 agencies involved in the cleanup effort also have instituted public outreach programs. ★The Washington Metropolitan Council of Governments developed a Small Habitat Improvement Program designed to enlist volunteers to implement small-scale restoration projects. ★The Maryland National Capital Park and Planning Commission committed to public education through its nature centers and Anacostia Visitors Center at the Port of Bladensburg. ★The Anacostia Watershed Society, the major private non-profit organization devoted to restoring the Anacostia River, has effectively mobilized many of the local communities. Volunteers have removed hundreds of tons of debris from the river and its tributaries, sending a very positive message of caring to those who simply observe the activity. The Society organizes river sojourns, community action days and a variety of other events that have brought national attention to the plight of the Anacostia River.

## Future Direction

Ultimately, restoration of a watershed requires making implementation decisions while balancing the environmental, technical, financial, and political issues unique to each individual project. Then, each individual project should be viewed within the larger context of its sub-watershed's needs. In an urban watershed, these decisions become amplified by the greater number of people potentially affected by each project. While this can be beneficial in budgetary arguments in favor of a project, involving necessary stakeholders in the decision process may increase the complexity and time required for any project-related decision. Another reality in urban watershed restoration is that the costs of a project's design, construction, and, particularly, any required real estate, are typically much greater in urban settings.

As the Anacostia Watershed Restoration Effort concludes its first decade, many new challenges have accompanied its early successes. The following listing identifies major areas requiring additional effort to ensure the restoration's continued success. Each new area of challenge will be followed by a brief discussion of ongoing initiatives which have been undertaken by the Anacostia Watershed Restoration Committee to address each area, respectively.

**1. Effectively integrate the citizens into the Anacostia Watershed Restoration Committee process.**

As mentioned previously, the Anacostia Watershed Restoration effort is somewhat unusual in that the initial impetus for the effort stemmed directly from local, regional and state government, not from the grassroots citizenry as is more typically the norm. As such, citizens were not directly "on-board" the Anacostia Watershed

Restoration Committee from the outset. Recognizing this important missing segment of the restoration effort, the Anacostia Watershed Restoration Committee charged COG with structuring the Anacostia Watershed Citizens Advisory Committee and providing administrative assistance to the committee, once established. In spring 1996, supported by the Anacostia Watershed Restoration Committee, the Anacostia Watershed Citizens Advisory Committee held their first meeting. Their purpose is to provide citizens residing within the watershed a direct line of communication to and from the Anacostia Watershed Restoration Committee regarding restoration issues. Each of the three local governmental entities (District of Columbia, Montgomery and Prince George's counties) selected 3 individuals, each, to serve as committee members for the first term (the chair is handled on a rotating basis from jurisdiction to jurisdiction).

### 2. Identify and develop private / public partnerships.

While over 450 restoration projects have been identified for the Anacostia Watershed, to date, approximately 28% have been either completed or, are in progress. The remainder will require substantial financial resources. In the spring of 1996, the Anacostia Watershed Restoration Committee realized that sustaining the restoration effort would require new public-private partnerships. The Anacostia Watershed Restoration Committee members signed a memorandum of agreement for the purpose of establishing a "Blue Ribbon Panel" on "Resources for Continued Restoration." The Panel's mission was to produce a report that identifies potential public and private partnership opportunities to help meet and financially support achievement the goals of the Anacostia restoration.

### 3. Develop specific and quantifiable ecologically-based restoration goals and associated targets with which to measure restoration progress.

The restoration goals of the Six Point Action Plan represent broad restoration concepts. Now that the restoration is underway with major financial resources committed to projects, a mechanism for quantitatively assessing progress is needed. In an effort to gauge restoration progress toward those broad goals, a series of measurable ecological indicators and associated restoration targets, specific to each indicator, was needed. To fulfill this requirement, the District of Columbia's Environmental Regulation Administration, EPA's Chesapeake Bay Program Office, and the Anacostia Watershed Restoration Committee charged the Metropolitan Washington Council of Governments staff with developing a system of ecological indicators and restoration targets for the Anacostia restoration. This effort will be conducted in concert with the local jurisdictions and with other agencies involved with the Anacostia restoration. The vehicle for this cooperative effort is the Anacostia Watershed Technical Oversight Subcommittee. This initiative is currently being undertaken as a part of a larger ongoing Anacostia Special Study.

### 4. Develop and maintain a viable, balanced monitoring network to provide data for the ecological indicators and restoration targets.

As mentioned above, ecological indicators and associated restoration targets will be developed for the purpose of quantitatively assessing restoration progress. In order to use this system of indicators and targets, a watershed-wide system of monitoring will be required. As a part of the Anacostia Watershed Special Study, a long-term monitoring program is being developed in conjunction with the member jurisdictions and many other involved agencies via the Technical Oversight Subcommittee. It is anticipated that this program will consist of a scientifically-balanced approach including physical, chemical and biological components.

### 5. Close major gaps in the existing scope of the restoration effort.

While the restoration effort currently focuses on many aspects of the restoration, two major gaps remain: combined sewer overflows and toxic sediments. Both of these issues represent major impediments to restoration of the tidal river in the District of Columbia. Combined sewers in the Anacostia contribute approximately 6% of the total watershed annual pollutant load (5.5 million pounds per year of total

C. Dalpra

*Children learn an appreciation for streams through fishing clinics and other activities.*

nitrogen, total phosphorus, lead, zinc, biological oxygen demand, and total suspended solids) from 4 major source areas. The District of Columbia Water and Sewer Administration is pursuing a comprehensive combined sewer overflow abatement program for all of the combined sewer areas within the District. This initiative will require additional monitoring and computer modeling to guide water resource managers toward the optimal approach for solving this major issue. The other major gap in the ongoing restoration effort consists of contaminated sediments in the tidal portion of the river. The Anacostia watershed has been designated as a Region of Concern for toxic contamination by EPA's Chesapeake Bay Program. Elevated levels of contaminants including total hydrocarbons, Chlordane, DDT and its metabolites, lead, and PCBs have been consistently observed in various monitoring surveys throughout the tidal river in the District of Columbia. A Regional Action Plan for managing toxics in the sediments has recently been developed by the Interstate Commission on the Potomac River Basin for the District of Columbia Environmental Regulation Administration. The Plan represents a first step in managing this problem. It features an overview of the problem, volumetric estimates of contamination, a discussion of potential remediation options, and associated cost estimates. Management efforts are currently hampered by the absence of information regarding the existing sources of contaminants, both within the District of Columbia and upstream, from Montgomery and Prince George's counties, Md. Efforts are currently underway to identify the existence of any pertinent data in the upstream jurisdictions. Similar to the previously-discussed combined sewer issue, sufficient monitoring to adequately characterize the input of toxicants into the system must first be collected, then modeling efforts to define the active fate and transport mechanisms for these compounds must be developed *prior* to undertaking any large-scale comprehensive management initiatives. In the shorter term, small-scale pilot measures, such as capping, may be undertaken to determine the potential feasibility of physically isolating contaminants.


C. Dalpra

**6. Explore, identify and create pathways for cost-effective integration of federal programs and initiatives with relevance to the Anacostia Watershed Restoration.**

As a part of the long-term funding strategy to be developed by Metropolitan Washington Council of Governments as a component of the Anacostia Special Study, various avenues to optimize federal involvement and financial support will be investigated. The Metropolitan Washington Council of Governments staff is currently working in partnership with the U.S. Army Corps of Engineers to identify problems and recommend solutions for federal facilities within the watershed (comprising approximately 15% of the total watershed area). This effort is a part of a congressionally-mandated Anacostia Federal Facilities Impact Assessment project. In addition to working with the individual federal land owners in the watershed, efforts are underway to integrate ongoing programs, currently existing within various natural resource management agencies, to optimize the use of federal human and financial resources toward achieving the restoration of the watershed.

**7. Pursue and maintain a closer working relationship with the local Congressional delegation.**

Discussions are ongoing with U.S. Army Corps of Engineers and the Environmental Protection Agency staff to identify existing legislative authorization that could be helpful in directing resources to the long-term restoration of the Anacostia watershed. Once a comprehensive review of existing authorities is conducted and compiled, the Anacostia Watershed Restoration Committee will initiate a series of discussions with the local congressional delegation to solicit their ideas, legislative support, and assistance for the many remaining restoration initiatives.

**8. Develop a Comprehensive Restoration Plan featuring authorship and input from all elements of the stakeholders in the Anacostia Watershed Restoration.**

As a final component of the Anacostia Special Study, the Metropolitan Washington Council of Governments is charged with the development of a Comprehensive Restoration Plan for the Anacostia Watershed. Input from the local jurisdictions and various stakeholders will be solicited to obtain widespread authorship and endorsement of the plan. Existing problems and needs will be prioritized to guide implementation strategies. It should function as a working document to guide the focus and priorities of the restoration effort.

It is expected that, over time and as changing situations in the watershed dictate, the plan will be revised to reflect the dynamic nature of the restoration effort.

As the restoration effort enters its second decade, it has experienced success and associated growing pains. It has outgrown its "infancy," and currently exists as a maturing effort. In many areas, with the notable exceptions of the combined sewer overflow and toxics problems, we not only understand the problems, but have developed over 450 individual solutions in the form of retrofit and restoration projects. Even in the areas representing the current major gaps of the restoration effort, we understand the general parameters of those gaps in our current knowledge regarding combined sewer overflow and toxics problems.

A huge early revelation in this process has been an appreciation of not only the *scope* of the problems, but also an appreciation of the *time* required to bring about the changes needed for a meaningful restoration of the watershed. Fortunately, time is relatively plentiful, whereas the financial resources required to implement the identified projects, to undertake the basic research needed to define the unknown areas and to devise and implement solutions for those areas are in increasingly short supply. The major "bottleneck" in the pace and momentum of the restoration, now in its "middle years," is funding. With shrinking government budgets implementation has slowed.

The twin pillars critical to ensuring the long-term success of the restoration are human and financial resources. If we can build and maintain a broadly-based coalition of citizens, environmental groups, all levels of government, and the private sector, we should be able to translate that energy into support and action. The Anacostia Watershed Restoration effort has been designated as a National Ecosystem Management Model on the strength of its success to date. It is critical that sufficient federal, state, and local resources are directed and applied in a planned, scientifically-based, sequence to sustain the effort and maintain and expand this unique example of urban watershed restoration—not only for the Anacostia, but for other similar urban watersheds throughout the nation.

## SUB-BASINS

### Sligo Creek

**Length:** 8.2 mi.
**Drainage Area:** 13.3 sq. mi.
**Water Quality:** Fair
**Land Use:** Mostly medium to high density residential with small areas of commercial and light industrial complexes.
**Problems:** Severe stream-bank erosion, some sediment deposition, periodic flooding, little aquatic life, high bacterial levels.

Sligo Creek has considerable public appeal for most of its length. It is easily accessible and gets high recreational use. The stream is bordered by a narrow greenbelt of parkland managed by M-NCPPC. Sligo Creek Parkway runs along its length.

While Sligo Creek has attractive riverscapes of natural channels and pool and riffle areas, it has all the problems associated with urbanization. Leaking sewers have recently been extensively renovated by WSSC, but stormwater runoff and overflowing sewers continue to be concerns. Litter and trash also are problems.

TORRENT

The parkway has been undermined by severe streambank erosion in several locations. While most of the Sligo's sediment is carried downstream, heavy siltation has been observed and some sediment deposits exist, particularly around roadway drainage outfalls. In the 1970's massive stormwater runoff in the upper watershed resulted in the construction of an impoundment below the Wheaton Plaza Shopping Center, and the Sligo's lower reaches were channelized.

Although the water is fairly cool and clear, with stretches of gravel bottom, there is little aquatic life. The results of restocking of native fish after sewer line improvements have been encouraging and the number of resident species has increased. While temperature, turbidity, and DO levels have not exceeded water quality standards, fecal coliform bacteria counts have been consistently high, particularly during high flows.

Long Branch is the sole remaining major tributary of Sligo Creek that is not enclosed. It has natural channels and pool and riffle areas, plus a narrow greenbelt along its entire length that is frequently used by the public. Long Branch also suffers from bank erosion and moderate to heavy siltation. The stream supports little aquatic life.

WETLAND

## Northwest Branch

**Length:** 17.5 mi.
**Drainage Area:** 53.2 sq. mi.
**Water Quality:** Fair-Good (upper); Fair (lower)
**Land Use:** Varies from agricultural to dense urbanization. Woodland is the major land use. Has extensive stream valley park system.
**Problems:** Sedimentation, some unstable banks, some high bacterial levels, litter and trash.

The Northwest Branch is one of the two major Anacostia tributaries, and has the highest riverscape diversity and some of the most scenic spots in the Anacostia watershed. Its scenic segments are primarily in the upper portion, where the stream has a combination of pools and riffles, torrents, mill ponds and natural channels. Downstream of Route 29, the Northwest Branch travels through the most dramatic and rugged stretch of the Anacostia watershed. Here it descends through the fall zone and cuts through a steep and narrow gorge, dropping some 40-50 feet.

An extensive stream valley park system managed by M-NCPPC provides some stream protection as well as ample recreational opportunities. The Northwest Branch has more rock and mineral outcrops than the other Anacostia tributaries, and its cave mines (now sealed for safety) once yielded large quantities of industrial grade garnets.

In the upper portion of the watershed, the stream travels through extensive stretches of undeveloped woods as well as agricultural and low density residential areas. As it approaches the Capital Beltway, the land bordering the stream valley becomes increasingly suburban in nature, and downstream from East-West Highway the stream is highly urbanized. The lower Northwest Branch is unattractive, largely due to the extensive channelized segments necessitated by major flooding.

Water quality varies in this long tributary, but it is generally better in the upper, less-stressed watershed. Here a healthy variety of aquatic life is supported in clear streams well-shaded by vegetation. Higher oxygen levels are possible in the faster moving upstream waters. Little high-quality aquatic life is possible in the lower, slower, and unshaded man-made channels where streambank vegetation has been removed. Algae occasionally develops here. The lower Northwest Branch historically has been an important spawning area for anadromous fish (shad, herring, and yellow perch), but is now constrained by flood control barriers. Existing data on the Northwest Branch indicate that water quality criteria for temperature and DO are seldom violated, but fecal coliform bacteria counts have exceeded state standards in the past.

The soils in the Northwest Branch watershed are moderately erodible (with some spots of highly erodible soils). It has been calculated that the Northwest Branch contributes 19 percent of the sediment entering the Bladensburg Marina area.

## Paint Branch

**Length:** About 17 mi.
**Drainage Area:** 31.5 sq. mi.
**Water Quality:** Good (upper); Fair (lower)
**Land Use:** Agricultural (27%); Woodland (14%); Urban (57%); Surface Mines (2%).
**Problems:** Unique resource, brown trout, threatened by urbanization; localized channel erosion and sediment deposition.

Like Sligo Creek and the Northwest Branch, Paint Branch begins in Montgomery County and ends in Prince George's County. Both Little Paint Branch and Indian Creek meet it before Paint Branch joins the Northeast Branch near Riverdale.

Paint Branch is the only Anacostia tributary that has good water quality and a unique resource, a naturally reproducing population of brown trout. Its designation as a Class III (natural trout) stream above the Capital Beltway imposes particular requirements for preservation. The upper Paint Branch watershed is the last self-sustaining trout stream in the metropolitan Washington area. The Good Hope Branch (accounts for at least 75 percent of the total annual trout reproduction), Gum Springs Branch, and the Right Fork are the headwaters home for this member of the salmonid family. Montgomery County has legislated additional protection from development for the headwaters area. The long-planned Intercounty Connector roadway, which would create a major east-west highway link, represents a potential direct threat to the stream and its trout population.

It begins as a series of cool, well shaded pools and riffles, and boasts very scenic areas, one of which is the torrential portion upstream of Power Mill Road. This watershed is fairly well buffered by wooded parklands, most of which are owned by M-NCPPC. Because of serious flooding, an overflow cutoff channel was added in its lower portion in the early 1970's.

The soils of this watershed are moderately erodible and the banks generally stable above Colesville Road

(Route 29), but below, and all the way to the county boundary, they are highly erodible. Below the county boundary, a majority of soils have either high or moderate erodibilities. Sedimentation also is a problem below Colesville Road. Bank erosion tends to occur in its meandering reaches. There is one active surface mine in this watershed that produces large quantities of sediment delivered by a tributary flowing through the site. One calculation has put the delivery of sediment by Paint Branch at its

GORGE

confluence with Indian Creek at 27,400 tons annually. Sand and gravel quarries are the major producers of the sediment. It has been estimated that this stream contributes 20 percent of the sediment that reaches the Bladensburg Marina.

The cool and clear waters, and consistently acceptable DO levels (above 5.0 mg/l) give the upper half of the Paint Branch its good water quality status. As in all Anacostia watershed streams, however, fecal coliform counts can be high from nonpoint runoff, and there is occasional turbidity.

## Little Paint Branch

**Length:** 6.4 mi.
**Drainage Area:** 10.8 sq. mi.
**Water Quality:** Fair
**Land Use:** Agricultural (25%); Woodland (38%); Urban (32%); Surface Mines (5%)
**Problems:** Severe streambank erosion; sediment deposits.

Although the headwaters of the Little Paint Branch originate in Montgomery County, it primarily flows through Prince George's County. Its waters cut through steep slopes in its upper reaches, but by the time the stream reaches its confluence with the Paint Branch, the slopes are gentle. Most of its watershed is sparsely developed–the Beltsville Agricultural Research Center and the Fairland Regional Park occupy a large portion of its drainage area. Woodlands form the largest land cover, even though Little Paint Branch has very little parkland. The stream has been channelized between I-95 and Briggs Chaney Road.

Over half of the Little Paint Branch watershed has very highly erodible soil. The Little Paint Branch drainage basin produces an estimated 25,300 tons of sediment annually. Of the sediment reaching the Bladensburg Marina, it has been calculated that Little Paint Branch delivers 18.4 percent. Little erosion is taking place along the banks, but some problems of sedimentation and stream bank erosion are apparent near abandoned surface mines and in stretches of the stream in the vicinity of and below I-95. Severe erosion has occurred during high stormwater flows, particularly in the Beltsville Community Park. Gabions have been constructed to halt erosion there.

## Indian Creek

**Length:** 8 mi.
**Drainage Area:** 29.1 sq. mi.
Water Quality: Poor-Fair (upper); Poor (lower)
**Land Use:** Varies from large tracts of woodland in the north, agricultural areas in the central region, and urban-industrial areas to the southeast. From the headwaters to where Beaverdam Creek meets Indian Creek: Agricultural (28%), Woodland (29%), Urban (27%), Surface Mines (16%).
**Problems:** Severe sedimentation; lack of streambank vegetation; unsightly dump sites and trash; lack of floodplain buffers.

Going from west to east in the Anacostia watershed "fan," Indian Creek is the first watershed entirely within the Coastal Plain province and Prince George's County. Typical of a Coastal Plain Stream, Indian Creek has generally shallower slopes than those basins in the western part of the watershed, and it tends to meander with stretches of pools and riffles through relatively wide valleys. Its soils are very susceptible to erosion, ranging from very highly erodible in the northern portion, to highly in the eastern section, and moderately erodible in the central portion.

Its land use changes radically between its headwaters and its confluence with the Paint Branch. The Indian Creek watershed is significantly influenced by the commercial corridor of Route 1 which passes through it. The uppermost reach above Route 1 is a rural, low-density area of large woods marked with many mostly abandoned sand and gravel surface mines. Between

MILLPOND

Route 1 and Powder Mill Road there is a commercial/industrial/residential mix, and then Indian Creek is briefly scenic as it flows through the relatively undeveloped Agricultural Research Center and an area near the Beltway. Abruptly, inside the Beltway, the creek waters enter a highly urbanized area, flowing through an industrial corridor and then an urban parkland. Greenbelt Park, a large wooded area, is a prominent feature in the lower portion of

POOL AND RIFFLE

the watershed.

While the sand and gravel quarry acreage is expected to diminish, the industrial corridor is expected to be developed at a rapid pace. Lengthy portions of lower Indian Creek have been channelized as a result of flooding problems in the Beltsville and Ammendale areas (in the vicinity of East-West Highway) and from Greenbelt Road to its confluence with Paint Branch.

Sedimentation is the most serious water-quality problem within this watershed. The largest concentrations of sediment in the basin have been found in Indian Creek. Sediment deposition occurs along the whole creek length, but it is especially bad between Route 1 and its confluence with Beaverdam Creek. Its stream banks are generally stable except downstream of East-West Highway; the sediment problem results from the abandoned and active sand and gravel operations. Sand and gravel quarries occupy a broad area of 1.5 sq. miles and a significant part of the northern portion of the watershed. It has been estimated that the Indian Creek drainage basin generates 36,600 tons of sediment a year, 88 percent of it from mining operations. This basin is believed to contribute 26.6 percent of the sediment that reaches the tidal river at Bladensburg. While sediment loadings from the sand and gravel mines are expected to diminish, those from expansion of the industrial areas will increase.

The water quality of the Indian Creek watershed is (along with that of Lower Beaverdam Creek) the worst in the Anacostia drainage area. The best water quality in the Indian Creek drainage is found near the Beltway, where the water is very clear and biologically productive (several species of fish and eelgrass exist there). The poorest water quality of the Indian Creek drainage (and, in effect, in the Anacostia watershed) is in its lower segment, particularly in the Greenbelt Road vicinity. Here the water is turbid and exceptionally unsightly, with sediment, oil, grease, and debris components of the stream.

## Beaverdam Creek

**Length:** 5 mi.
**Drainage Area:** 13.7 sq. mi.
**Water Quality:** Fair
**Land Use:** Primarily undeveloped, and most within Beltsville Agricultural Research Center; Agricultural (29%), Woodland (64%), Urban (7%).
**Problems:** fine sediment from cultivated land and dirt roads.

MEANDER

Beaverdam Creek and its tributary Beck Branch are pool and riffle streams with gentle slopes draining water that eventually flows into Indian Creek.

Woodlands and agriculture are the dominant land use in the Beaverdam Creek watershed. Most of the land is the property of the Beltsville Agricultural Research Center. There are two pockets of privately owned land, one in the northeast part of the basin, and the other in the southwest near Greenbelt. There are no large urban areas in this watershed, and little change in land use is expected since the area consists of primarily public-owned lands. The Beaverdam Creek wetlands are unique in the Anacostia basin, and important to fish spawning as a mature flood plain ecosystem.

Throughout most of the Beaverdam Creek watershed, the soils are moderately erodible, but there are highly and very highly erodible soils in scattered areas along the watershed's eastern edge.

This watershed delivers an estimated 1.8 percent of the total sediment load that reaches the Bladensburg Marina. The present sources of sediment are mainly restricted to agricultural areas and stream channel contributions. Most of the agricultural areas are either moderate or low sediment sources, but because large areas are under constant cultivation and are adjacent to dirt roads, there is need for concern about the aggregate export of fine-grained sediment. Future sediment loads are projected to remain at current levels since land use is expected to remain stable.

## Northeast Branch

**Length:** 4.8 mi.
**Drainage Area:** 75.6 sq. mi.
**Water Quality:** Poor
**Land Use:** Urban dominates, particularly in eastern and southern portions; including lower Indian Creek (where it meets Beaverdam Creek) to Northeast Branch confluence with Northwest Branch: Agricultural (12%), Woodland (31%), Urban (56%), Surface Mines (1%).
**Problems:** Severe bank erosion; in-channel sediment accumulation; little aquatic life.

The Northeast Branch begins at the confluence of Indian Creek and Paint Branch in Prince George's

County. This portion of the Anacostia watershed receives the flows from Paint Branch, Little Paint Branch, Indian Creek, and Beaverdam Creek. The flows from these sub-watersheds caused serious flooding in the past, and the entire length of the Northeast Branch has been channelized in some form or another as a result. The stream channel is wide–up to 200 feet, so that it can convey the flows from its tributaries during low-frequency storms.

CHANNELIZATION

The Northeast Branch sub-watershed is highly urbanized, with a mixture of residential, commercial and industrial land use. The highly developed areas of College Park, Riverdale and Lanham. are all within this drainage area. In spite of the large woodland section of Greenbelt National Park and the fact that the stream is bordered by heavily used M-NCPPC parkland, the Northeast Branch is not particularly scenic.

Highly and moderately erodible soils dominate in this sub-basin. Highly erodible soils are found in a stretch along the Capital Beltway and Kenilworth Avenue. Projections of future sediment yields indicate that loads from the basin will remain constant since no changes are expected in land use.

Although the mainstem of the Northeast Branch is protected or channelized, significant in-channel accumulations of sediment are common. Much of this sediment, dominated by clay, can be remobilized during storm events, and is considered a potential sediment source. Sediment delivery of the Northeast Branch basin is normally added to that of lower Indian Creek, and totals 13,100 tons per year. The latter represents 9.5% of the estimated sediment loads entering the Bladensburg Marina.

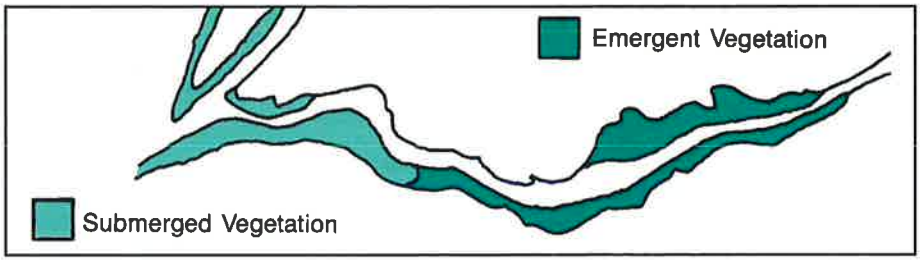
The Northeast Branch has poor water quality. Aquatic life is generally meager. With the hope that the Anacostia watershed could enjoy a return to prominence as an important spawning area for anadromous fish, a fish passage was installed a decade ago at the urging of the Izaak Walton League, Maryland state fisheries and Washington Suburban Sanitary Commission (WSSC) staff. It is the only barrier in the watershed that anadromous fish can pass.

## Lower Beaverdam Creek

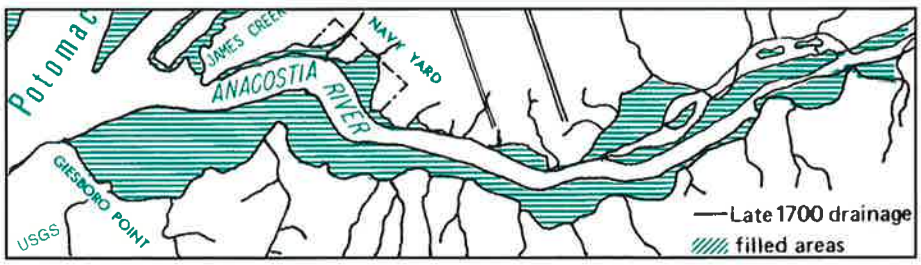
**Length:** 5.1 mi.
**Drainage Area:** 15.7 sq. mi.
**Water Quality:** Poor-Fair
**Problems:** High sedimentation and fecal coliform counts.
**Land Use:** Residential (44%); Forest(22%); Industrial (17%).

Lower Beaverdam Creek originates in the vicinity of New Carrollton and Landover, Md. It flows westward toward the Anacostia river, roughly paralleling U.S. Route 50. The creek joins the main stem of the Anacostia near New York Ave. and the District of Columbia boundary line.

Suburban development is the dominant land use in this watershed. Its valley bottom has been developed as a major rail and highway transportation corridor. This development has encouraged a considerable amount of industrial and commercial land use within the creek valley, often adjacent to the stream. Urban runoff, particularly from large parking lots, is a major concern. The most recent research indicates that Lower Beaverdam Creek is one of the most degraded streams in the watershed. Sediment levels in the last decade seem to have worsened. Elevated bacterial levels have been linked to deteriorating sewer lines. Nutrient levels are some of the Anacostia watershed's highest.




*Historically, the freshwater tidal portions of both the Potomac and Anacostia contained numerous species of aquatic vegetation. The drawing above is based on a 1916 map of the tidal Anacostia at low tide. It shows a narrow channel bordered by shallow margins and flats densely crowded with submerged aquatic vegetation (SAV) during summer and autumn in the lower portion, and emergent plants, predominately wild rice, in the upper portion. Surveys since the 1950's have shown dramatic declines in this important vegetation.*




*The shoreline of the tidal Anacostia has changed significantly since the late 1700's. In 1791, when the first plan of Washington was devised by Charles Pierre L'Enfant, the river was intended to serve as a deep-water port. In the early 1800's, a channel was dredged up to Bladensburg, creating an outlet for upper Maryland farmers but also draining the tidal flats and exposing the raw sewage disposed by the city in the river's mud and grasses. The resulting health threat from malaria-laden mosquitos was a catalyst for its dredging and filling.*

TIDEWATER

## TIDAL ANACOSTIA

**Length:** 8.75 mi. (from confluence of Northeast and Northwest branches to Hains Point in the District).
**Drainage Area:** Within the District of Columbia, 24.9 sq. mi.
**Water Quality:** Fair
**Land Use:** Almost completely developed, woodlands and open space limited to scattered parklands. Within the Maryland portion: Agricultural (24%), Woodland (6%), Urban (68%), Surface Mines (2%). Within the District: Developed (77%), Parks and undeveloped land (23%).
**Problems:** Low DO, sedimentation, high fecal coliform counts.

The Northeast and Northwest branches converge near Bladensburg in Prince George's County, Md. to form the Anacostia River. Less than a mile below the confluence of the two branches, the Anacostia reaches sea level and changes from a free-flowing to a tidal river. The average tidal range is about 3 feet. The Anacostia River proper is approximately nine miles in length from the confluence of the Northwest and Northeast branches to its confluence with the Potomac at Hains Point. Most of the tributaries of the tidal Anacostia now flow through culverts or storm sewer pipes. However, Watts and Popes branches and Hickey Run remain close to their original state. Watts Branch, the longest tributary of the tidal Anacostia begins in Maryland.

The Anacostia River flows through the most intensely urbanized portion of the watershed. Woodlands and open space are limited to scattered parklands in the upper reach of the stream, but the lower portion of the river is buffered by extensive stretches of parkland on both sides of the river. In spite of the intensely urban character of the Anacostia River, there are a few unexpected remaining pockets of natural areas with tidal wetlands and uninhabited islands that still provide some habitat for aquatic life and waterfowl. The National Arboretum and Kenilworth Aquatic Gardens provide notable counterpoints to the heavy development on either side of the river.

Many of the soils along the shoreline are fill, which was used to replace extensive tidal flats and swamps over the past one hundred years. The soils are moderate to highly erodible in this part of the basin, the later being prevalent in the northeast quadrant of the tidal river drainage. Riprap and seawalls have been installed along the banks to control soil erosion.

Low DO, sedimentation, and high fecal coliform counts are the major problems in the tidal Anacostia. Suspended sediment is its oldest and most severe water-quality problem. Sediments from the upper watershed have been pouring into the tidal river since the mid-18th century. The sand bars and shoals that line the lower segment are obvious evidence. Turbid water is particularly evident in the area of the Bladensburg Marina, which must consistently face reduced depths and the need to dredge. These sediments do not get flushed out of the river, they are either suspended, seriously limiting the river's ability to support game fish and other aquatic life, or sink to the bottom. Because the dominant characteristic of the tidal Anacostia is sluggish, what gets in the Anacostia tends to stay in.

High levels of fecal coliform bacteria are a major concern in the tidal Anacostia as they are in the upper watershed. Levels greater than 100,000 MPN/100 ml in the tidal river have been recorded after storms.

These bacteria are not only from runoff, but particularly from the overflows of the combined sewer system that serves the District of Columbia. Overflows occur frequently throughout the year. The high levels of organics have resulted in low DO and high BOD levels, and if conditions are severe enough, anoxia (no DO) results. Low DO levels result in fishkills. Excessive amounts of trace elements such as iron, lead, and zinc are also of concern. The extent to which toxics have contaminated the bottom sediments is a subject of continuing research.

### *KEY AGENCIES AND ORGANIZATIONS*

***PUBLIC***

****Alliance for Chesapeake Bay.***
*Research and Education on Chesapeake Bay watershed issues.* Bay Journal *newsletter, Chesapeake Regional Information service (CRIS). 6600 York Rd., Suite 100,Baltimore, MD 21212; (410) 377-6270; E-mail acb@ari.net*
*CRIS: 1 (800) 662-CRIS; E-mail cris@igc.apc.org*

****Metropolitan Washington Council of Governments***
*Coordinates* ***Anacostia Watershed Restoration Committee*** *and* ***Anacostia Citizens Advisory Committee****; Research and Design of best management practices, retrofits; Anacostia water quality and ecosystem assessments.*
*777 North Capitol St., Suite 300, Washington, DC 20002; (202) 962-3200; E-mail: info@mwcog.org ; Internet: http://www.mwcog.org/dep/anacost.html*

****Chesapeake Bay Trust***
*Funds and supports restoration activities through grants. Application forms are available by mail or online.*
*60 West St., Suite 200-A, Annapolis, MD 21401; (410) 974-2941; E-mail: cbt@ari.net; Internet: http://www2.ari.net/home/cbt*

****District of Columbia, Department of Health, Environmental Health Administration***
*Environmental regulation, water quality and other monitoring, fisheries, public eduction and information.*
*2100 Martin Luther King, Jr., Ave., SE, Washington, DC 20020; (202) 645-6617*

***Interstate Commission on the Potomac River Basin***
*Technical studies and public information and outreach efforts toward Anacostia restoration. 6110 Executive Blvd., Suite 300, Rockville, MD 20852; (301) 984-1908; E-mail: info@potomac-commission.org; Internet: http://www.gmu.edu/bios/potomac*

***Maryland Department of Natural Resources***
*Conservation and management of state lands and waters, wildlife management, Little Paint Branch Task Force, watershed preservation assistance. Tawes State Office Building, 580 Taylor Ave., Annapolis, MD 21401; (410) 260-8795; E-mail: fdawson@dnr.state.md.us; Internet: http://www.gacc.com/dnr*

***Maryland Department of the Environment***
*Monitoring and regulation of the environment and public health.*
*2500 Broening Hwy., Baltimore, MD 21224; (410) 631-3000; Internet: http://www.mde.state.md.us*

***Maryland-National Capital Park and Planning Commission***
*Maintains extensive park system in the watershed; conservation, planning, land-use responsibilities.*
*Montgomery County: 8787 Georgia Ave., Silver Spring, MD 20910; (301) 495-4600; Internet: http://www.mncppc.org*
*Prince George's County: Public Affairs Office, 6600 Kenilworth Ave., Riverdale, MD 20737; (301) 699-2407*

***Montgomery County Department of Environmental Protection***
*Environmental protection, regulation (pollution problems), stream and watershed monitoring.*
*250 Hungerford Dr., Rockville, MD 20850; (301) 217-2355; E-mail: dep.environ@co.mo.md.us Internet: http://www.co.mo.md.us/dep*

***National Park Service***
*Manages National Park lands in the watershed. National Capital Parks East, 1900 Anacostia Dr., SE Washington, DC 20020; (202) 690-5185*

***Prince George's County Department of Environmental Resources***
*Environmental protection, regulation (pollution problems), watershed and stream monitoring. 9400 Peppercorn Pl., Suite 610, Largo, MD 20774; (301) 883-5834*

***U.S. Army Corps of Engineers, Baltimore District***
*Primary water related missions include environmental restoration and protection, construction and maintenance of navigation channels and flood control facilities, and regulation of activities in U.S. waters. Planning Division, P.O. Box 1715, Baltimore, MD 21203; (410) 962-4900.*

***U.S. Environmental Protection Agency Chesapeake Bay Program Office***
*Member of the Anacostia Watershed Restoration Committee. Research and program support for a variety of Anacostia initiatives.*
*410 Severn Ave., Suite 109, Annapolis, MD 21403; 1 (800) YOURBAY; Internet: http://www.chesapeakebay.net/bayprogram also, http://www.epa.gov/surf/hucinfo/02070010*

***Private Groups***

***Anacostia Watershed Society***
*Public education and outreach through tree plantings, canoe trips, newsletter.*
*George Washington House, 4302 Baltimore Ave., Bladensburg, MD 20710; (301) 699-6204; E-mail: robert@anacostiaws.org; Internet: http://www.anacostiaws.org*

***Audubon Naturalist Society of the Central Atlantic States, Inc.***
*Public outreach and education on environmental issues.*
*8940 Jones Mill Rd., Chevy Chase, MD 20815; (301) 652-9188; Internet: http://www.audubonnaturalist.org*

***Chesapeake Bay Foundation***
*Restoration, conservation, and education initiatives throughout the bay watershed.*
*162 Prince George St., Annapolis, MD 21401; (301) 261-1680; E-mail: chesapeake@savethebay.cbf.org; Internet: http://www.savethebay.cbf.org*

***Eyes of Paint Branch***
*Restoration and preservation of the Paint Branch watershed.*
*P.O. Box 4464, Silver Spring, MD 20914; (301) 989-8749; Internet: http://www.gmu.edu/bios/anacosti/eopb*

***Friends of Sligo Creek***
*Restoration and preservation of the Sligo Creek watershed.*
*P.O. Box 1787, Silver Spring, MD 20915; (301) 681-5442*

***College Park Committee for a Better Environment***
*Restoration, preservation of Paint Branch, Little Paint Branch, Indian Creek, and Northeast Branch watersheds.*
*4500 Knox Rd., College Park, MD 20740; (301) 864-8666*

***Hyattsville Organization for a Positive Environment (HOPE)***
*Encourages and invites Hyattsville residents to protect the environment and promote a higher quality of life.*
*4904 40th Pl., Hyattsville, MD 20781; (301) 779-1426; E-mail: HOPE@rtk.net*

*These are just a few of the more-established private groups at work on Anacostia tributaries and issues. Many more church, social, and neighborhood organizations currently are involved in the restoration of the Anacostia River and its neighborhood streams. These groups may be helpful for those interested in starting groups in their own neighborhoods.*

The Interstate Commission on the Potomac River Basin
6110 Executive Blvd., Suite 300
Rockville, MD 20852-3903