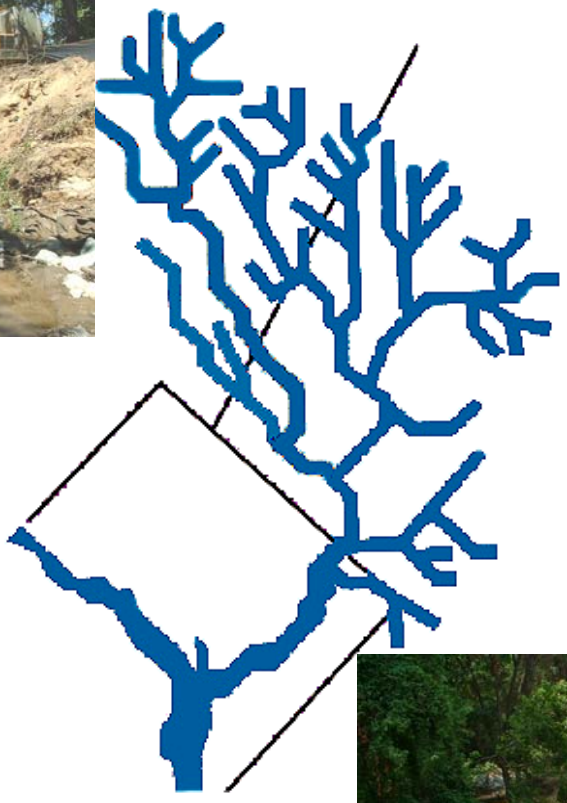
ANACOSTIA WATERSHED RESTORATION HIGHLIGHTS

1987 - PRESENT



I. Purpose

The purpose of this summary report is to provide the reader with a representative overview of the progress being made by the Anacostia Watershed Restoration Committee (AWRC) in each of the three Anacostia jurisdictions (i.e., Montgomery County, Prince George's County and the District of Columbia) to restore aquatic and terrestrial habitat, water quality, and recreational opportunities within the Anacostia watershed. The project sites highlighted in this document are shown in Figure 1. This living document will be periodically updated to include new, recently completed projects. Due to space limitations, only a fraction of the many projects completed, planned or underway in the Anacostia watershed will be highlighted. It should also be recognized that the large number of restoration-related projects being developed and implemented by affiliated agencies and cooperating groups such as the Maryland-National Capital Park and Planning Commission (M-NCPPC), USDA Beltsville Agricultural Research Center (BARC), Maryland State Highway Administration (MSHA), Anacostia Watershed Toxics Alliance, Anacostia Watershed Society, Eyes of Paint Branch, and others are not covered by this report.

II. Watershed Background

The Anacostia River watershed covers 176 square miles within Maryland and the District of Columbia. For over 300 years the land has been extensively logged, farmed, mined and urbanized, resulting in loss of woodlands, wetlands, terrestrial and aquatic habitat, erosion, flooding, toxic pollution and decline of river-based recreation. In the recent past, the shift in watershed densities and increases in impervious areas to accommodate urban and suburban growth was not accompanied by stormwater controls to mitigate the effects of both increased peak runoff flows and non-point source pollution, and reduced replenishment of groundwater to support stream base flows. Accelerated stream channel erosion and resultant sediment damages have, together with channelization for flood control and/or drainage, severely degraded stream habitat formerly able to support higher levels of biological diversity. Furthermore, untreated or partially treated sewage from the District of Columbia's combined sewer overflow (CSO) system together with toxic substances that have settled into the bottom sediments have greatly diminished the water quality of the Anacostia River and made fish consumption of bottom dwelling species unsafe. The result of all of these combined problems has devastated aquatic life, diminished aesthetic quality and reduced both economic vitality and recreational potential.

III. Anacostia Watershed Restoration Committee (AWRC)

In 1987, the Anacostia Watershed Restoration Agreement was signed, resulting in the formation of the Anacostia Watershed Restoration Committee (AWRC). Since that time, local, state, and federal government agencies, as well as environmental organizations and dedicated private citizens have contributed significant resources toward the restoration of the Anacostia ecosystem. From its inception, the AWRC and partners have been working to restore the watershed through the pursuit of stormwater retrofit, wetland creation, stream restoration, riparian restoration, combined sewer overflow abatement, trash and toxics reduction, and other restoration-related projects designed to correct existing environmental problems and enhance overall ecosystem quality. Of the over 700 projects identified since 1987, approximately one-third have been completed or are in progress, and over $150 million has been spent in the process. More recently, the AWRC has taken steps to strengthen both continued support for the restoration effort and its ties to the residents of the watershed by forming the Anacostia Watershed Citizens Advisory Committee (AWCAC).

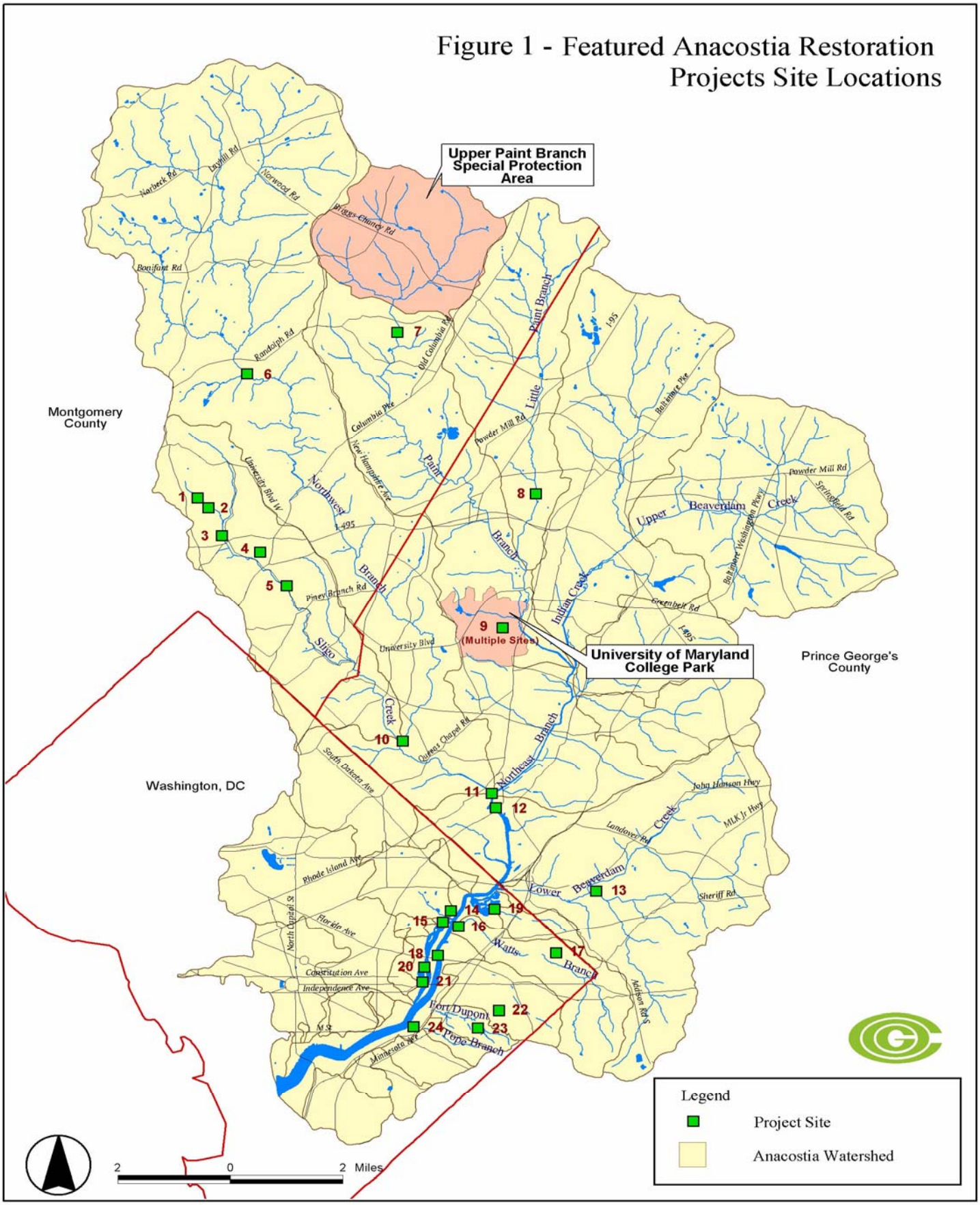


Figure 1 - Featured Anacostia Restoration Projects Site Locations
Upper Paint Branch Special Protection Area
Montgomery County
Prince George's County
Washington, DC
University of Maryland College Park
(Multiple Sites)
Paint Branch
Little Paint Branch
Northwest Branch
Indian Creek
Upper Beaverdam Creek
Lower Beaverdam Creek
Sligo Creek
Northeast Branch
Watts Branch
Hickey Run
Pope Branch
Fort Dupont
Anacostia River
Legend
Project Site
Anacostia Watershed
2 0 2 Miles

IV. Ongoing Anacostia Watershed Restoration Efforts, 1987 - Present

The following descriptions and illustrations provide examples of some of the restoration projects and initiatives implemented thus far in the Anacostia watershed. Some projects have involved partnership efforts in design and construction with the U.S. Army Corps of Engineers (COE), the Metropolitan Washington Council of Governments, and the Maryland-National Capital Park and Planning Commission (M-NCPPC). Many projects have also received cost-share grant assistance from the Maryland Department of the Environment (MDE), Maryland Department of Natural Resources (MDDNR), or the COE. Other key development and implementation partners include: National Park Service (NPS), National Resource Conservation Service (NRCS), U.S. Environmental Protection Agency (USEPA), and U.S. Fish & Wildlife Service (USFWS). Projects outlined herein focus on the restoration of wetlands, streams, water quality, aquatic and terrestrial habitat, and recreation, as well as fish passage construction, low impact development, stormwater management, and water quality monitoring.

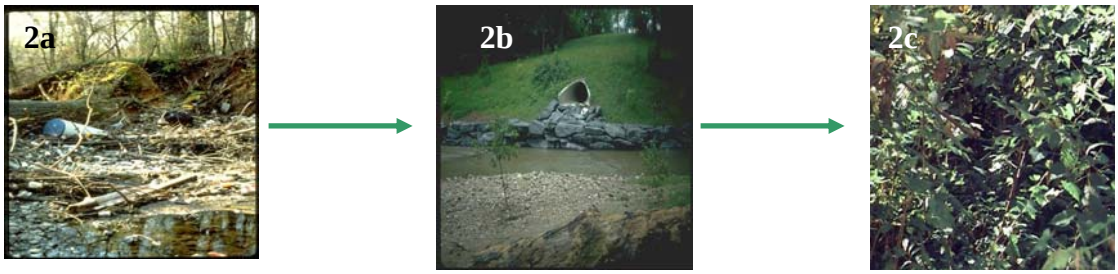
A. Montgomery County, Maryland

For well over a decade, Montgomery County has been the leader in systematically conducting subwatershed stormwater management retrofitting and stream restoration within the Anacostia watershed. To date, most of these projects have been constructed within M-NCPPC's extensive and ever-growing stream valley parkland system.

Wheaton Branch Stormwater Management Retrofit Project

Completed in 1990, the Wheaton Branch stormwater management facility provides stormwater control to over 800 acres of developed drainage in the headwaters of Sligo Creek. It controls runoff from a large shopping mall and commercial complex in the Wheaton Central Business district, and other commercial and residential development between Wheaton and Dennis Avenue along the intensively developed Georgia Avenue corridor. The pond improvements control runoff from small, frequently occurring storms and larger storms that occur every 1-2 years. Runoff from these storms is detained for a period of 24-40 hours and released slowly, to minimize erosion damages downstream in the Wheaton Branch tributary of Sligo Creek. This project contributes substantially to the success of stream restoration measures installed immediately downstream of the facility.

Wheaton Branch Tributary Stream Restoration



Devastation 1989 *Stream Restoration 1991* *Vegetation 1999*

In 1989, prior to the construction of the Wheaton Branch stormwater management facility, the Wheaton Branch tributary of Sligo Creek was highly degraded and suffering from massive volumes of uncontrolled stormwater runoff (Figure 2a). Figure 2b shows the restored stream condition and plantings immediately after completing the stream restoration project in 1991. Regrading and stabilization of the eroded channel restored riffle and pool habitat to the stream channel and reduced stream width. The 1999 picture (Figure 2c) shows the growth of trees and other vegetation now providing additional habitat and shading to help cool the stream. Over the past several years, vegetation has grown dense enough to entirely cover the view of the storm drain outfall.

Sligo Creek Constructed Wetlands

Wetlands have been constructed to intercept, detain, and cleanse runoff carried by storm drain outfalls which previously discharged directly into Sligo Creek. The projects create depressions in existing floodplains to capture stormwater runoff and release the discharges through weir structures which maintain water levels for the support of wetlands habitat. These wetland projects also recreate lost habitat for frogs, salamanders, and turtles, which had been long absent in developed portions of much of the Sligo Creek watershed. Amphibians used this habitat as a refuge during the 1999 and 2002 droughts, when parts of Sligo Creek dried up and became segmented due to a lack of rainfall and supplementing groundwater inflows. The wetlands also provide habitat for ducks and birds.

Sligo Creek Golf Course Stormwater Runoff Control Pond

Efforts to retrofit stormwater controls to areas of the Sligo Creek watershed (which developed before modern stormwater controls were legally required) include improving the control of runoff from upstream areas and reducing the impacts of peak stormwater flow volumes and velocities downstream. This facilitates installation of effective stream habitat restoration improvements in downstream areas of Sligo Creek. The Sligo Golf Course stormwater pond controls runoff from about 70 acres of developed residential drainage upstream of the golf course.

The pond's drainage area also captures and cleanses polluted runoff from a mile-long portion of the heavily trafficked Capital Beltway, which is located immediately upstream.

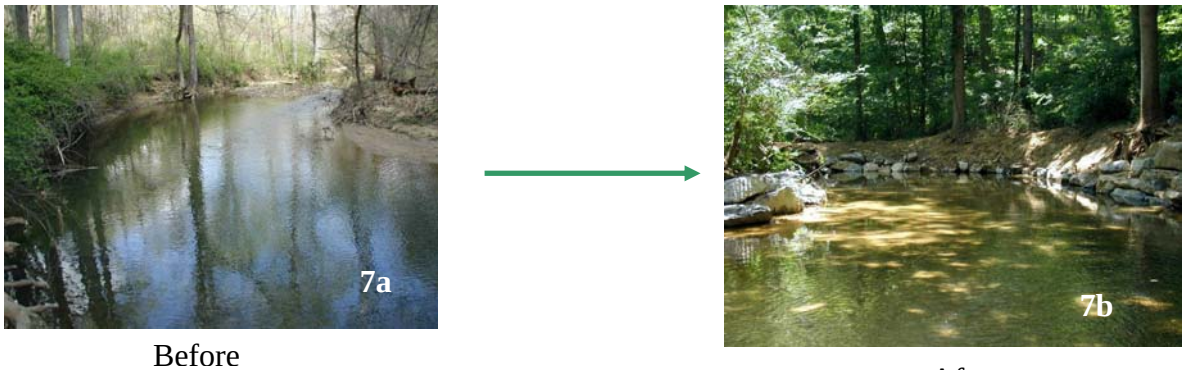
Northwest Branch Stream Restoration

The restoration of a 3/4 mile-long section of the Northwest Branch of the Anacostia south of Randolph Road in 2002 included restoring stream meanders, flow depths, deep pool habitat, and the restoration of access to floodplain areas within the overly widened channel. Stormwater discharges from upstream watershed development in the Glenmont area caused the stream to become highly eroded, overly widened, and deeply downcut.

Before After

Paint Branch Stream Restoration

Restoration of a two-mile-long section of the Paint Branch downstream of Fairland Road was constructed for DEP by the U.S. Army Corps of Engineers in 2001 under a cooperative cost-share agreement. The "before" and "after" pictures illustrate efforts to stabilize and restore habitat within the highly eroded stream channel. Wooden "lunkers" were structures built and installed under the stream bank to provide habitat for the sensitive, naturally propagating brown trout in Paint Branch.



Before

After

Other Projects

In addition to the projects highlighted, Montgomery County continues to undertake other significant steps to address watershed protection, restoration and management needs in the watershed. Some of these are listed below:

- **Upper Paint Branch Special Protection Area:** In 1995, the County established a Special Protection Area to protect the sensitive, naturally propagating brown trout resource residing in the upper portions of the Paint Branch watershed (Figure 1). Protections include specifications

for new development projects; more stringent requirements for stormwater best management practices (BMP's) to mitigate peak flow impacts on stream habitat; monitoring of receiving streams, and required documentation by developers of pre-and post-development conditions.

- **New Stream Buffer Investments:** The County has invested over $15 million to purchase about 300 additional acres of stream valley parkland to protect sensitive headwater streams in the Upper Paint Branch. This investment adds to the substantial M-NCCPC stream valley parkland holding already in place to help protect Montgomery County's tributaries to the Anacostia. Additionally, conservation easements are required to protect non-park streamside areas as new developments in the watershed are approved.

- **Colesville Maintenance Yard Improvements:** About $230,000 in stormwater retrofits and other improvements were completed at the County's Colesville Maintenance Yard and Depot to measurably reduce storrnwater pollutants discharged into the upper Paint Branch. Depot staff have also begun to implement an enhanced pollution prevention program, to further control pollutants from all routine operations at the site.

- **Stormwater Facility Maintenance:** The County recently passed a stormwater charge to enable phasing in of public maintenance of privately owned residential stormwater management facilities and for those on county-owned parkland. The County will provide routine and consistent maintenance to ensure that these facilities continue to function as designed and constructed for stormwater runoff quantity control and pollutant reductions.

- **Toxics Management:** The County continues to work with Prince George's County and other members of the Anacostia Watershed Toxics Alliance to reduce toxics in the watershed. The County recently received an EPA grant to build and monitor four pilot Low Impact Development projects at County-owned sites located within its Anacostia tributaries.

- **Illicit Discharges:** The County has expanded its illicit discharge detection and enforcement program to identify and eliminate this source of contaminants to county waterways. Although the exact extent of pollutants from these sources is unknown, they represent potentially controllable sources. Recent investigations have resulted in enforcement actions on illegal discharges of cooking grease from several restaurants located in the Sligo Creek and Northwest Branch watersheds. Four leaking underground fuel storage tanks were detected and removed in the Paint Branch watershed.

- **Public Outreach:** Montgomery County's public outreach programs address watershed management issues and their linkages between stream quality, groundwater, air quality, and other environmental interfaces. DEP's website, www.askDEP.com, has a wealth of valuable information on water quality issues, and the important stewardship roles that citizens and businesses can play to help protect local streams. DEP's staff also works with community associations, local schools, watershed groups, and businesses to educate and involve their members in volunteer opportunities, including tree plantings to improve stream buffers, removal of invasive species, storm drain stenciling, stream cleanups, and various other initiatives. DEP's website regularly contains information about volunteer participation in environmental protection and improvement activities within and outside of the County.

B. Prince George's County, Maryland

The approach that Prince George's County has taken toward restoring the Anacostia watershed has included, but not been limited to Low Impact Development (LID) strategies, restoration of fish

passages, flood control through environmentally friendlier levee enhancements, conventional stormwater management, wetland creation, revitalization of its three Port Towns (i.e. Bladensburg, Colmar Manor, and Cottage City), water quality monitoring and citizen participation through its Stream Teams program.

Little Paint Branch Fish Passage Restoration

For over 30 years, a one-foot high concrete weir located below North Drive at the Beltsville Agricultural Research Center (BARC), has blocked the passage of both resident and migratory fishes such as river herring. In 2002, as part of the Woodrow Wilson Bridge Replacement Project mitigation, the weir was replaced with a "riffle grade control" structure designed to mimic the normal riffle/pool sequence present in streams. As part of the restoration, existing scour pools were filled with boulders of sufficient size and weight to remain stationary during peak flow events, and fallen trees downstream of the weir were removed. Restoration of the site provided aesthetic enhancement and returned the stream reach to a more natural condition.

Anacostia River LID Demonstration Project

Through the U. S. Environmental Protection Agency (USEPA) and the Anacostia Watershed Toxics Alliance (AWTA), the County received (in 2001) a $1 million grant specifically appropriated by the United States Congress to begin a Low Impact Development (LID) urban retrofit demonstration program for the Anacostia watershed restoration efforts. Goals of the project are to:

- Foster partnerships between public and private entities in active Anacostia River watershed restoration projects
- Implement an urban retrofit program to reduce toxics in urban runoff for several of the most impaired sub-watersheds using LID techniques (i.e. filtering contaminated stormwater runoff through urban streetscape landscaping, thus increasing and improving the quality and aesthetics of the urban environment as well as increasing property values)

Each jurisdiction (Prince George's County, Montgomery County, and the District of Columbia) will have several LID projects constructed with the program funds. Members of the multi-jurisdictional committee that will oversee the entire project include representatives from the USEPA, Department of the Navy, General Services Administration, Maryland Department of the Environment, University of Maryland, COG, District of Columbia, Montgomery County and Prince George's County.

Based on its national leadership role in LID technologies, Prince George's County has been selected to administer the effort and distribute the grant funding. In addition, the USEPA has recently informed the County that the United States Congress has approved an additional $900,000 grant that will be provided to the County in order to continue this effort. The program will include many facets of environmental issues:

- Regulatory constraints
- Education and training
- Enforcement/inspection issues/needs
- Total Maximum Daily Loads (TMDL)
- National Pollutant Discharge Elimination System (NPDES)
- Combined Sewer Overflows (CSOs)
- Redevelopment and revitalization efforts
- Reducing urban infrastructure maintenance costs

The program involves the treatment of urban runoff from various land use types such as residential, commercial, industrial and institutional areas in all three jurisdictions. The project sites include Capitol Hill, General Services Administration, University of Maryland, public libraries, fire stations, senior centers, town halls, ball fields, transportation facilities and roads. LID retrofit techniques apply small-scale source control practices to reduce runoff peak discharge, volume and frequency, and significantly improve the water quality of the receiving streams. LID designs include a wide range of techniques to retain, detain, filter and eliminate pollutants and can easily be integrated into the urban landscape to address critical watershed issues. A detailed monitoring program has been developed to evaluate the effectiveness of the LID technologies.

In addition, a national LID Conference scheduled to be held in the Washington metropolitan area in spring 2004 is included as part of this project.

Northwest Branch/Sligo Creek Fish Passage Restoration

The presence of multiple blockages in the Northwest Branch and Sligo Creek ranging in height from 1.5 to 4 feet have either precluded or greatly restricted movement of both resident and migratory fishes. Many of these structures were originally installed to protect both underground sewer and utility lines and bridge abutments from scouring damage. As part of the Woodrow Wilson Bridge Replacement Project mitigation, these blockages are in the process of being modified or removed to restore a semblance of the natural stream channel, and to allow for fish passage. Design work for each blockage typically entails concentrating flows and increasing water depths, placing boulder fields in the stream, constructing a riffle downstream of the obstruction to increase water levels, and extending a U-shaped channel through the riffle grade control structure to aid in fish passage. The restoration of these blockages will re-establish approximately 6.5 miles of stream habitat in the Northwest Branch and one mile in Sligo Creek. Project completion is expected in late 2003, at a cost of roughly $1.7 million.

Anacostia River Levee Enhancement Project

In 1993, the Maryland Department of Natural Resources, Water Management Administration completed a watershed study for the Prince George's County portion of the Anacostia. The study identified approximately 2,500 flood-prone structures located behind the existing levee system constructed by the U. S. Army Corps of Engineers (COE) in the late 1950's and 60's. According to the study, the existing levee system does not meet current safety criteria required by the Federal Emergency Management Agency (FEMA). In addition, the COE, Prince George's County and the Maryland Department of the Environment are interested in several environmental enhancement projects within the levee system.

Levee enhancement

Levee enhancement analyses and measures include:

- The levee system must be raised approximately 2 to 5 feet in order to meet the FEMA levee safety criteria
- The Hydrologic Engineering Center of COE is conducting Hydrologic and Hydraulic Analysis, with oversight by the Technical Advisory Committee (members include: FEMA, COE, USGS, NRCS, MDE and Prince George's County).

Environmental enhancement

Environmental enhancement features include:

- Wetland creations
- Tree and shrub planting
- Fish passage
- Minor stream stabilization and restoration

Cabin Branch Stream Restoration

This calendar year 2002 project was created as part of the Woodrow Wilson Bridge Replacement mitigation effort, and included stream bank stabilization of approximately 800 feet of this badly eroding tributary to Lower Beaverdam Creek. Trash was removed, the stream's steep eroding banks were graded, and trees were planted to provide shade and long-term stabilization.

Anacostia River Flood Warning System

As previously stated, approximately 2,500 flood-prone structures lie within close proximity of the Anacostia floodway levee system. Uncertainty over when construction to eliminate the flooding risk will proceed has led to funding from the Maryland Department of the Environment (MDE) for Prince George's County to install an automatic flood warning system for the lower half of the watershed. The total cost is approximately $300,000 and 75 percent will be paid for through the MDE grant. The system features 18 remote gauges (rain gauges, stream gauges and combinations thereof) which are tied directly into the County's computerized warning system. Project completion is expected by the end of 2003.

Anacostia River Water Quality Monitoring Program

Currently, with cost sharing assistance from the County, the U. S. Geologic Survey (USGS) is operating two Anacostia watershed stream monitoring gauges (i.e., one in the lower Northeast Branch, the other in the lower Northwest Branch). For well over 60 years, these two gauges have been employed for stream flow monitoring only. However, with the growing need to additionally monitor water quality conditions, USGS, MDE and Prince George's County have recently developed a cooperative effort to address this need. The annual cost for comprehensively analyzing water quality at the two previously described sites is estimated at $300,000. In future years, it is expected that EPA

will fund the entire project. Monitoring, sampling and associated parameters include: 1) both baseflow and stormflow samplings, 2) nutrients, 3) sediments, 4) heavy metals, 5) bacteria, 6) toxics, 7) dissolved oxygen, 8) pH, 9) conductivity, and 10) temperature.

C. District of Columbia

Over the past five years, Mayor Anthony William's administration has dedicated over $5 million dollars toward habitat restoration and water quality improvements in the District of Columbia's portion of the Anacostia. Thus far, the Department of Health, Environmental Health Administration, Bureau of Environmental Quality, Watershed Protection Division (DC-DOH/EHA) has been successful in leveraging over 12 million federal dollars to achieve its restoration goals. The following is a brief summary and status of each project completed or currently planned for implementation by the DC-DOH/EHA and the District of Columbia Water and Sewer Authority (DC-WASA). Projects focus on the restoration of wetlands, streams, water quality, habitats, and recreation, as well as on CSO abatement.

Hickey Run Restoration

The objective of this project is to improve water quality and habitat conditions of Hickey Run, much of which runs through The US National Arboretum. Improvements include installation of a stormwater management facility to filter pollutants such as oil and grease, trash traps to capture floatables, in-stream restoration to rebuild channelized portions of the stream as well as community and business outreach in the highly urbanized upper reach of the stream in order to reduce pollutant loading. Partners on this project include US National Arboretum, the US Fish and Wildlife Service, DC, and the USEPA, Chesapeake Bay Program.

Kingman Lake

The goal of this project was to restore over 40 acres of freshwater tidal wetlands in the Kingman Lake area in order to increase plant and animal diversity and improve the filtering capacity of the Anacostia. This project was completed in 2000. Monitoring efforts are continuing in connection with other wetlands that have been restored in Kenilworth Park. Funding for this project was cost shared by the COE and USEPA.

River Fringe Wetlands

The goal of this project is to restore 18 acres of tidal wetlands along the shores of the Anacostia River adjacent to Kingman Island. As with the Kingman Lake wetlands, these wetlands will increase the number of beneficial plants and fish in the river and will improve water quality of the Anacostia River. Construction is currently underway. Funding for this project is cost shared by the COE and DC-DOH/EHA.

Watts Branch Restoration

The goal of this project is to restore the in-stream habitat and improve the water quality of Watts Branch. Restoration will be achieved through stabilizing eroded stream banks, reconstructing stream sections to better accommodate stormwater flows, and addressing source control of runoff through implementation of Low Impact Development projects. Phase I, which was funded by EPA, was completed by NRCS in August 2001. The US Fish and Wildlife Service (USFWS) has performed a thorough assessment of the stream. The COE will be a partner in construction of the overall watershed restoration.

Kingman Island

The goal of this project is to restore the southern half of the island as a natural recreational area. Habitat restoration efforts will focus on enhancement of amphibian vernal pool habitat on Heritage Island, the creation of varied habitat niches, the removal of trash, and the creation of a meadow on Kingman Island. Construction is scheduled for summer of 2003. US Navy completed reconstruction of the pedestrian bridges in August 2001. Funding for this project is cost shared by COE, DC-DOH/EHA and USEPA.

Kenilworth Marsh Restoration

The D.C. Department of Public Works, USEPA, 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 in late 1992 with a nearby ongoing U.S. Army Corps of Engineers Anacostia River dredging project which placed 130,000 cubic yards of dredge spoil material from the river into the marsh, resulting in the creation of 32 acres of emergent marshland. This effort represents one of the largest tidal freshwater marsh restoration project in the nation to date. An interpretive boardwalk was later constructed by the NPS in 2000 to provide a recreational link to the Anacostia watershed for the public. The final section of the Kenilworth Marsh Interpretive Boardwalk is expected to open in the summer of 2003, and will overlook an area of approximately 16-acres of emergent tidal marsh reconstructed in 1993. This section of the boardwalk was part of the original design and its alignment was developed to minimized fragmentation of the islands and other habitats and to provide views of the various marsh zones, remnant marsh, and reconstructed marsh areas.

Heritage Island Wetlands

This project will create an additional 6 acres of emergent wetlands in Kingman Lake adjacent to the RFK stadium parking lot. These wetlands will complement the existing Kingman Lake wetlands and provide additional habitat and water quality treatment. An additional goal of this project is to create a deeper tidal channel that will allow for canoe and fish passage though the lake at low tide. This project will be constructed by the fall of 2003 and will be cost shared by COE and DC-DOH/EHA.

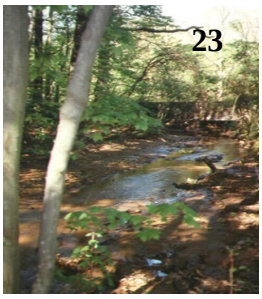
RFK Stormwater Retrofits

The goal of this project is to filter pollutants and decrease peak storm water flow draining the Stadium and its surrounding neighborhood, which then discharge into the Anacostia River. The two outfalls are located along the RFK Stadium parking lot within the River Terrace community. The COE recently completed a feasibility study to determine different best management practice (BMP) design options. DC-DOH/EHA is working with the DC Sports & Entertainment Commission to install these BMPs in 2003. Funding for these projects is cost shared by the COE and USEPA.

Fort Chaplin Stream Restoration

The goal of this project is to completely restore the Fort Chaplin tributary by stabilizing the stream banks and reducing amount of sediment entering the stream and the Anacostia. This project is also examining the possibility of reforming the stream to better accommodate stormwater flows. The COE is currently conducting a feasibility study of the stream to determine design options.

Fort Dupont Stream Restoration



The goal of this project is to restore habitat and flow conditions of the Fort Dupont stream. Restoration efforts include managing stormwater flows in the headwaters, creating in-stream habitat, and daylighting tidal portions of the stream as it enters the Anacostia River. The COE is responsible for final restoration designs and implementation. Funding for this project is cost shared with the COE, USEPA, and DC-DOH/EHA. Feasibility studies will be completed by the end of 2003, with construction slated for 2004.

Lower Anacostia Park Enhancements/ Pope Branch Restoration

The goal of this project is to restore habitat and improve water quality in lower Anacostia Park. Restoration efforts will include planting of native trees, restoring tidal and non-tidal wetlands, and opening a portion of Pope Branch that is currently piped under the Park. The COE is responsible for final restoration designs and implementation. Funding for this project is cost shared by the COE and DC-DOH/EHA. DC-DOH/EHA is working with DC-WASA to bring additional funds for a sewer line replacement next to upper Pope Branch. Preliminary designs are finished and construction is anticipated in 2004.

Combined Sewer Overflow Abatement- Long Term Control Plan Implementation

The current sewer system in approximately one-third of the District of Columbia dates from the 1880's. Unfortunately, this combined sewer system (CSS) combines stormwater runoff and sewage within the same pipe network which, during most storm events, results in the release of untreated or partially treated wastewater being discharged directly into the Anacostia River, the Potomac River and lower Rock Creek. In 2002, the District of Columbia Water and Sewer Authority (DC-WASA) finalized its CSO Long Term Control Plan (LTCP). The LTCP includes recommendations for LID

retrofit projects, as well as the rehabilitation of pumping stations, floatable trash interception and removal and excavation of four large CSO storage tunnels with combined capacity of approximately 127 million gallons which capture CSOs during rain events and hold it underground for diversion to the Blue Plains advanced wastewater treatment facility. At a cost of over $600 million for the Anacostia portion alone, the LTCP meets or exceeds EPA guidelines for both the number of flow events and the percentage of combined sewage captured for treatment, with 98% of annual storm events captured, thereby significantly improving water quality of the Anacostia River. Pump station improvements, trash reduction system installation and pipe network fabric-dam upgrades are already underway. However, due to the enormity of the costs involved and project complexity, full LTCP implementation may require an additional 10-15 years.

D. Watershed-wide Projects

University of Maryland College Park Restoration Efforts

Paint Branch, a major Anacostia River tributary, runs through the 1,500 acre College Park campus of the University of Maryland (UM-CP). Over the past several decades campus-related environmental problems, including but not limited to uncontrolled stormwater runoff from the more than 70 acres of parking lots and 30 acres of roofs, fish blockages, loss of forest, wetlands and riparian buffers, have all negatively impacted Paint Branch and its tributaries. Increasing environmental awareness and activism both on the part of the student body and campus administration, coupled with growing watershed restoration needs and opportunities led to a partnership agreement between the AWRC and UM-CP in March 2002. The agreement has positively influenced the University's facilities master plan by calling for watershed-friendly practices including various LID demonstration projects, construction of bioretention rain garden systems, and seeks to protect, enhance and restore natural areas on campus.

V. On-going Efforts

Projects to carry out the restoration effort in the Anacostia watershed will continue to be planned and implemented by the AWRC and its affiliates with the oversight of both various environmental and community groups and AWCAC, ensuring citizen involvement in the restoration process. The restoration process will continue to act toward achieving the 2010 target to "eliminate public health concerns and achieve the living resource, water quality and habitat goals of this [2001 Anacostia Restoration Agreement] and past Agreements," by monitoring the progress made toward achieving each of the fifty restoration targets set forth in the 2001 Agreement. Importantly, restoration progress will remain high only as long as local, state and federal resource and supporting grant funding remains high.

VI. Points of Contact

For additional and project-specific, jurisdictional restoration-related information, the reader is directed as follows:

I. Montgomery County
Montgomery County Department of Environmental Protection
Watershed Management Division, 255 Rockville Pike, Suite 120, Rockville, MD 20850
http://www.montgomerycountymd.gov
help@askDEP.com

II. Prince George's County
Prince George's County Department of Environmental Resources
9400 Peppercorn Place, 6th floor, Largo, MD 20744-5359
http://www.goprincegeorgescounty.com
DERcares@co.pg.md.us

III. District of Columbia
District of Columbia Department of Health/Environmental Health Administration
51 N Street, 5th Floor, Washington, DC 20002
http://dchealth.dc.gov
(202) 727-1000

District of Columbia Water and Sewer Authority
5000 Overlook Avenue, SW, Washington, DC 20032
http://www.dcwasa.com
202-787-2000

IV. State of Maryland
Department of the Environment
1800 Washington Blvd, Baltimore, MD 21230
http://www.mde.state.md.us
410-537-3000

Department of Natural Resources
580 Taylor Avenue, Tawes State Office Building, Annapolis, MD 21401
http://www.dnr.state.md.us
877-620-8367

V. U.S. Army Corps of Engineers
Baltimore District
10 S Howard Street, Baltimore, MD 21203
http://www.nab.usace.army.mil
410-962-7608

VI. U.S. Environmental Protection Agency
Region III, 1650 Arch Street, Philadelphia, PA 19103
http://www.epa.gov/region03
800-438-2474

VII. National Park Service
National Capital Parks – East
1900 Anacostia Drive, SE, Washington, DC 20020
http://www.nps.gov/anac
202-690-5185

General information may also be obtained by either visiting the AWRC's web site at www.Anacostia.net or by contacting the Metropolitan Washington Council of Governments at 202-962-3200.

This document was prepared with direct assistance from MCDEP, PGDER, and DC-DOH/EHA.

VIII. Glossary of Terms

Combined Sewer Overflow – Separate sewer systems are comprised of two independent piping systems: one system for "sanitary" sewage (i.e. sewage from homes and businesses) and one system for storm water. A combined sewer system (CSS) conveys both sanitary sewage and stormwater in one piping system. During periods of significant rainfall, the capacity of a combined sewer may be exceeded, thereby releasing the Combined Sewer Overflow (CSO) directly into a receiving stream or waterbody.

Fish Blockage – An obstacle within a stream that prevents resident and/or migratory fish from moving upstream. A complete blockage prevents upstream migration year-round, a partial blockage prevents migration at certain times of the year, usually during periods of low-flow. Blockage structures include exposed sewer casings, and road culverts.

Flood Control Levee – A man-made embankment constructed to prevent a stream or river from rising out of its channel during periods of extremely high flow, thereby preventing flooding of nearby residences, businesses or properties.

Low Impact Development – An environmentally friendlier approach to managing stormwater runoff in areas with a large proportion of land area covered by impervious surfaces. Low Impact Development (LID) techniques can create a more functional landscape by, for example, diverting run-off stormwater to vegetated areas where groundwater can be filtered and recharged through a made-soil stratum, rather than sending the uncontrolled water directly into streams.

Non-tidal Wetland – A wetland area, not influenced by tidal fluctuations, which is characteristically saturated by surface or groundwater at a frequency and duration sufficient to support vegetation typically adapted for life in saturated soil conditions.

Stormwater Management Retrofit – Upgrading an existing stormwater management system to generally include a wet pool and/ or slow release feature.

Stream Restoration – Returning a stream and its physical aquatic habitat and morphology to a close approximation of its condition prior to disturbance.

Tidal Freshwater System – Wetlands that are influenced by tidal water level fluctuations, but are far enough upstream as to not be influenced by salinity.

Vernal Pool – A contained basin depression, usually in a woodland area, that contains water for part of the year (usually spring), and dries out over the course of the summer. Many amphibian species, such as the spotted salamander and wood frog, utilize vernal pool habitat to lay their eggs.

Watershed – The encompassing land area that provides the water, sediment and dissolved substances to a small stream, and eventually a river.