DDOE
DISTRICT DEPARTMENT OF THE ENVIRONMENT

DISTRICT OF COLUMBIA

2009 NONPOINT SOURCE POLLUTION PROGRAM

ANNUAL REPORT

February 2010

District of Columbia
Department of the Environment
Watershed Protection Division

I. Mission and Goals of the District of Columbia's Nonpoint Source Program

The mission of the District of Columbia's Nonpoint Source Program is to prevent and control nonpoint source pollution in the District's watersheds. Employing both regulatory and non-regulatory approaches, the Program works to safeguard the city's water and soil resources as well as the health and welfare of citizens using those resources.

Long-term goals and short-term milestones to mark progress toward those goals are outlined in the *District Nonpoint Source Management Plan II: Addressing Polluted Runoff in an Urban Environment* (2000). The Plan is aimed at reducing nonpoint source pollution from urban runoff, construction, and hydrologic/habitat modification and includes:

- Supporting activities that reduce pollutant loads from urban runoff, construction activity, combined sewer overflows and trash disposal for the purpose of attaining present designated uses by 2015 and future designated uses by 2025.
- Supporting programs and activities that strive to restore and maintain healthy natural habitat, species diversity and necessary base flow to all of the Anacostia River tributaries by 2015 and to all surface waters of the District of Columbia by 2025 by restoring degraded watersheds and preserving healthy ones.
- Coordinating the District Nonpoint Source Program efforts with other District, federal, not-for-profit, environmental advocacy, private sector programs and adjoining jurisdictions to deliver the best possible nonpoint source pollution prevention and control services in the District of Columbia with the resources available.
- Carrying out effective information and education campaigns on nonpoint source pollution prevention to targeted audiences who live, work, teach or visit in the District of Columbia and its watersheds, reaching at least ten thousand (10,000) individuals each year.

II. Executive Summary

This annual report is written in response to *Sections 319 (h)(8) and (11) of the Clean Water Act (33 USC 1329),* for the purpose of documenting progress made in fiscal year 2009 by the District of Columbia in implementing its *Nonpoint Source Management Plan II: Addressing Polluted Runoff in an Urban Environment* (2000).

The District of Columbia's Nonpoint Source Program continues to make significant progress toward achieving its goals. Accomplishments in fiscal year 2009 include the following:

- Regulated construction activities throughout the District by conducting a total of 7,648 inspections. In combination with 154 enforcement actions, this work ensured compliance with the most current stormwater, sedimentation and erosion control laws.

- Expanded the *RiverSmart* Homes program to include all 8 Wards in the District with over 2,000 homes registered and enrolled in the program.
- Identified additional funding for the Broad Branch daylighting project to include a site outside of the project area contributing a significant amount of stormwater and generating high sediment loads in the project area.
- Received an $800,000 grant from the National Fish and Wildlife Foundation to reduce stormwater runoff in the Rock Creek Watershed. The District's low impact development proposal was one of 24 selected for funding to reduce pollution in the Chesapeake Bay and its tributaries.
- Targeted audiences who live work, teach or visit in the District of Columbia with nonpoint source pollution messages, distributing 4,134 Scoop Your Pet's Poop brochures, marking 1110 storm drains, launching a series of IPM gardening workshops, offering teacher trainings, and conducting an environmental education fair for over 300 District school students.
- Enhanced environmental education in the District by providing 10,300 Meaningful Watershed Educational Experiences to thousands of District of Columbia school children.

III. The District of Columbia's Nonpoint Source Program

In 1990, the government of the District of Columbia formed its Nonpoint Source Program to address the control and prevention of nonpoint source pollution impacting the District's surface and ground waters. In January 1998, the nonpoint source regulatory program was transferred to the District of Columbia Department of Health, under the Environmental Health Administration. As part of this programmatic realignment, the District of Columbia established the Watershed Protection Division in October 1998. Watershed Protection Division is the division responsible for the Nonpoint Source Management Program. In November 2005 the District of Columbia City Council voted to create a new District Department of the Environment (DDOE). The Watershed Protection Division now resides under the Office of Natural Resources within the District Department of the Environment (DDOE).

DDOE assesses the health of all significant waterbodies in the District, and prioritizes water quality improvement efforts based on data gathered from water quality monitoring. DDOE then characterizes waterbody impairments and threats; these characterizations are included in the District of Columbia's Section 305(b) reports as required by the federal Clean Water Act. The reports describe many of the District waterbodies as not supporting their swimmable (primary contact recreation) and fishable (fish consumption) designated uses.

Urban stormwater runoff is a prevalent source of pollutants to District of Columbia waterbodies. Primary nonpoint source pollutants of concern include nutrients, sediment, toxicants, pathogens and hydrocarbons. The few waterbodies that partially or fully support a designated use are also threatened by nonpoint source pollutants. A process to rank watersheds for nonpoint source implementation in the District, conducted by the District Nonpoint Source Program in 1995, determined that the Anacostia River and its

tributaries should receive highest priority, followed closely by Rock Creek and its tributaries. For over a decade, the District of Columbia has been using a watershed approach to raise awareness and unite public and private sector resources to tackle the water quality problems of the Anacostia River.

To properly address the water quality problems associated with the District's urban environment, the District amended its approved Nonpoint Source Management Plan (1989) and created the *Nonpoint Source Management Plan II: Addressing Polluted Runoff in an Urban Environment* (2000). This document outlines a comprehensive strategy for managing nonpoint source pollution in an urban environment in an effort to restore beneficial uses by the year 2025. The Plan sets goals and objectives of specific milestones that will be achieved.

IV. Regulatory Programs

The District employs both regulatory and non-regulatory approaches to reach its nonpoint source milestones. DDOE programs that fall under regulation and enforcement include the:

- Stormwater Management Program
- Soil Erosion and Sediment Control Program
- Floodplain Management Program
- Compliance and Enforcement Program

These programs aim to ensure that any development or construction activities occurring within the District properly control potential erosion or runoff from their sites and properly adhere to all federal and city laws relating to floodplains and waterways. In addition, these programs ensure that Best Management Practices (BMPs) are installed correctly and receive appropriate maintenance and upkeep.

A. Sediment, Stormwater, Floodplain Management, and Low Impact Development

Highlights

- Reviewed 1,975 construction plans for compliance with sediment and stormwater pollution control regulations to reduce the amount of untreated stormwater from construction sites. This process led to the approval of 1,706 of these plans.
- Processed 107 requests for floodzone determination.
- Processed 71 requests for soil characteristics information.
- Reviewed and approved 71 geotechnical reports.
- Reviewed 10 floodplain management reports.
- Processed Environmental Impact Screening Forms (EISF) for 10 projects.

- Continued the review of stormwater management regulations. Once this review to strengthen existing regulations is completed, the document will be submitted to the Office of the Attorney General for review and approval.

Regulatory Update

Stormwater regulations are required to implement the legislation guiding stormwater management requirements within the Anacostia Waterfront Development Zone (AWDZ). Among other demands this legislation dictates a stormwater volume on-site retention. DDOE continues to develop a technical record to support the expansion of the AWDZ concept of on-site retention District wide. In July 2009, DDOE hosted public listening sessions to collect comments on the proposed rule making. These meeting notes, along with stakeholder comments and the draft stormwater regulations, have been posted to the website, http://ddoe.dc.gov/stormwater.

DDOE has commissioned an economic analysis to evaluate the cost implications for the proposed regulations changes on various development scenarios. We anticipate the publication of the proposed revisions to the stormwater regulations once this analysis has been incorporated into the technical record.

B. Inspection and Enforcement

Highlights

- Provided excellent customer service by investigating and resolving one-hundred percent of citizen complaints relating to soil erosion control and drainage problems in a timely manner.
- Continued revision of database management systems for improved compliance with District of Columbia soil erosion and sediment control and stormwater management regulations through data management.
- Initiated the development of "in the field" data management and enforcement actions using field laptop computers.
- Continued with the Planning and Restoration Branch the implementation of the *RiverSmart Homes* program.
- Worked to submit revised soil erosion and sediment control, and storm water management regulations to the Office of the Attorney General for review and approval.
- Developed additional training resources and guidance materials that encourage the use of storm water management Low Impact development practices.

Compliance

During fiscal year 2009 Watershed Protection Division improved compliance with District of Columbia soil erosion and sediment control and stormwater management regulations by conducting 7,648 inspections and issuing 105 enforcement actions.

Watershed Protection Division minimized pollution in stormwater runoff to the Anacostia and Potomac rivers and their tributaries by inspection of 267 stormwater management facilities and post-maintenance inspections of the facilities to ensure proper maintenance.

WPD has improved customer satisfaction by investigating and resolving one-hundred percent of the 62 citizen complaints relating to soil erosion control and drainage problems in a timely manner.

V. Non-Regulatory Programs

Through non-regulatory programs, the District educates community members about nonpoint source pollution and how their actions contribute to it, with the ultimate goal of changing personal behavior for an effective long-term solution. Additionally, the District tests and develops innovative approaches to urban nonpoint source pollution reduction, increases acceptance and implementation of Low Impact Development (LID), and provides support and financial incentives for citizens wishing to implement LID and pollution prevention techniques. Some of this non-regulatory work includes:

- Wetland and river habitat creation and restoration programs
- Providing technical advice on the application of Low Impact Development (LID) and innovative Best Management Practices technology
- Administering RFPs to fund LID retrofits
- Education and outreach programs
- Green roof incentive programs
- Pollution prevention programs
- Use of sustainable practices

A. Habitat Restoration, LID Retrofits, and Watershed Planning

In 2009, the Watershed Protection Division continued the stakeholder outreach, planning, design and monitoring required for the habitat restoration projects. Highlights of the year are:

Highlights

- Constructed a large bioretention cell at Brent Elementary School that treats over 20,000 sq. ft.
- Constructed a large bioretention cell at Takoma Park Recreation Center with educational signage.
- Constructed a raingarden and water harvesting system at Lafayette Park.
- Selected a contractor to do design and construction of regenerative stormwater outfalls in Rock Creek Park.
- Worked with capital project managers across many District agencies to offer technical advice and identify incentive funds for “greening” municipal capital projects.

- Organized a series of meetings with several District agencies to explore the impediments to installing Low Impact Development on District lands and work to overcome those impediments.
- The District Department of the Environment (DDOE) was awarded an $800,000 grant from the National Fish and Wildlife Foundation to reduce stormwater runoff in the Rock Creek watershed.
- Developed a green roof webpage with general information on green roofs including a Green Roof Toolkit to assist District property owners with practical information required for green roof design and installation.
- Continued to move forward the Watts Branch and Pope Branch stream restoration projects though design and permitting.

Broad Branch Daylighting

DDOE and its partner organizations, the National Park Service (USNPS), and the District Department of Transportation (DDOT), worked with their contractor as they performed site reconnaissance and analysis to develop designs for the daylighting of Broad Branch in the Rock Creek watershed. During the reconnaissance phase of the project, the contractor found an area outside of the project area that was contributing a significant amount of stormwater and generating high sediment loads in the project area. The site was brought to DDOE's attention and it was determined that without including the pollutants from this area in the project the daylighting effort would be less successful.

Bridge where tributary is piped

Recognizing that the project would be in jeopardy without including this site, DDOE identified additional funding and added the area to the overall project. There were delays in completing the draft designs for the project because it took some time to identify funds and amend the contract, but the effort is moving forward and draft designs are scheduled to be completed by March of 2010.

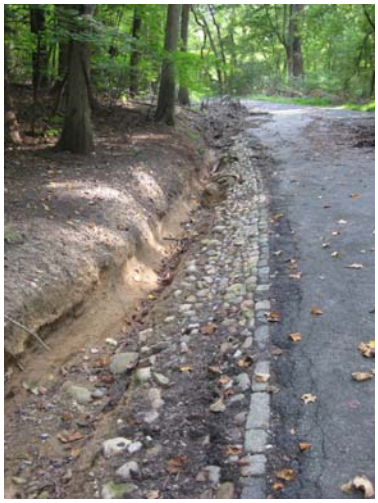
Watts Branch Restoration Project

During FY 2009 DDOE worked closely with US Fish and Wildlife Service (USFWS) and US Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS) to get the Watts Branch stream restoration project to a point where the restoration work would begin. Over the period, USFWS altered the stream designs in order not to increase the proposed 2007 floodplain boundaries. The design work was held up due to the delay in the adoption of the 2007 Preliminary Floodplain Map. It is anticipated that the designs will be permit-ready and ready to submit to FEMA for Conditional Letter of Map Revision (CLOMR) approval in time for the project construction to commence during the summer of 2010.

DDOE will also be utilizing American Recovery and Reinvestment Act (ARRA) funds to install a large bioretention cell to capture and filter street run-off on Jay St. NE.

Regenerative Outfalls in Rock Creek Park

DDOE, working with the USNPS, has selected a contractor to design and construct a regenerative stormwater conveyance in a small ephemeral stream that is currently severely eroded due to concentrated runoff from Oregon Avenue, NW. A second regenerative stormwater conveyance will be designed and installed in the same area concurrently to this project using ARRA funds. The 319 funded project has been put on hold so that both projects can be installed simultaneously – making their installation more cost effective. It is expected that the design phase will be completed in the spring of 2010 and installation will be completed by the summer of 2010.



Erosion to be corrected by Regenerative Stormwater Convevance

Pope Branch Stream Restoration

In FY 2009, DDOE, DC Department of Parks and Recreation (DPR), and DC Water and Sewer Authority (WASA) worked through design changes which led to revisions in the scope of work and changes in the contractors. The previous stream design contractor failed to fully embrace natural stream channel design principles and integrate them into the stream designs, thus a new task order was issued by WASA to contract a design team suited for the assignment. With the new design team (BioHabitats) on board, the final stream designs will be completed and ready for permitting by mid-2010.

DDOE staff also indentified key locations in the Pope Branch subwatershed where LID projects and/or large scale tree plantings can be installed on public space and is coordinating efforts with other District government agencies to implement some of these projects. Additionally, DDOE determined that a key part of the Pope Branch stream restoration project would be best implemented as part of the American Reinvestment and Recovery Act. DDOE will be installing three regenerative stormwater conveyances down hillside slopes that lead into the valley to help capture and filter stormwater run-off that enters the stream.

Over the past 7 years, DDOE has engaged community residents, civic associations, and local non-profits in an effort to invigorate the Pope Branch Park Restoration Alliance. This outreach work is intended to engage citizens in a collaborative effort to restore the park and stream as well as keep them involved in long-term park maintenance.

As a way of furthering the public involvement in the restoration of Pope Branch, WPD organized the 4th annual MLK day of service cleanup. Held on January 18th, 2010, the event saw over 250 volunteers who gathered over three tons of trash. This was the largest public participation in the four years of this event. Residents from nearby and further afield learned about the stream, the District projects currently being designed, and how they could continue to stay involved. EPA and WASA were represented and over 15 DDOE staff participated in the event.

MLK Service Day Cleanup in Pope Branch

Anacostia River Restoration and the Anacostia 2032 Plan

In response to a request from Mayor Adrian Fenty, DDOE developed the "Plan for a Fishable and Swimmable Anacostia River by 2032," which lays out a realistic timeline for cleaning the river and delineates over one hundred clear tasks that act as indicators to our overall progress. Since completing the report, the Mayor and DDOE have held periodic meetings, called "Anacostia CapStats," to judge our progress, add and change projects, and make other mid-course corrections. Additionally DDOE staff holds meetings every other month to update progress on the various projects identified in the plan.

DDOE progress towards a clean Anacostia can be broken up into five key areas:

1) *Reducing trash flowing into the Anacostia:*

- DDOE completed an Anacostia Trash Survey that looked at the types and sources of trash flowing to the River and has contracted to create Anacostia Trash Total Maximum Daily Load.
- We have also started work on creating three trash-free tributaries:
    - Watts Branch – With funding from DDOE, the Earth Conservation Corps installed a floating trash trap called a "Bandalong".
    - Ft. Dupont – DDOE has installed 100 storm drain inserts/screens to capture trash before it hits the Anacostia River.

- Nash Run – With DDOE funding, the Anacostia Watershed Society installed an innovative trash fence with the cooperation of the National Park Service.

2) *Reducing pollution through reducing stormwater flows:*

- DDOE is coordinating with other agencies to install LID on District lands including:
  - OPEFM – Woodson S.H.S.
  - FEMS – 2 green roofs on engine houses.
  - OPM – municipal building green roofs.

3) *Reducing Anacostia pollution through regulations and their enforcement:*

- DDOE has revised stormwater regulations that are soon to be promulgated which put an emphasis on the installation of LID.
- DDOE is helping craft changes in stormwater fee structure which will help the City better address stormwater pollution into the future.
- DDOE has developed and issued Pollution Prevention (P2) plan standards for District agencies. These plans will help standardize the prevention of, and response to pollutant spills from District operations.

4) *Seeking additional funding to support Anacostia restoration efforts:*

- DDOE helped seek and is overseeing the use of $1,000,000 federal funds for Anacostia Restoration Efforts. These efforts include:
  - The maintenance of currently installed LID as a green jobs initiative.
  - The creation of "Community Greening Center" in Marvin Gaye Park that provides trees and native plants to nearby residents at a reduced cost.
  - The demonstration and maintenance of trash technologies (mentioned above).
- DDOE is helping oversee the use of the $500,000 CSX Settlement for restoration efforts.
- DDOE is utilizing approximately $13 million dollars for LID and other green infrastructure as part of the Clean Water State Revolving Program funds (AKA ARRA Stimulus Funding).

5) *Monitoring the District's progress towards a cleaner Anacostia River:*

- We have installed continuous water quality monitoring stations (http://ddoe.dc.gov/ddoe/cwp/view,a,1209,q,497570.asp) on the Anacostia River.
- We are developing an Environmental Management System to better track the efforts of DDOE and its sister agencies.
- We are developing EPA "data node" for better tracking and reporting.

Low Impact Development (LID)

"Innovative LID" refers to practices and technologies to manage stormwater runoff as close to the rainfall as possible. These practices prevent runoff by encouraging evapo-transpiration, infiltration and the capture and use of stormwater in the landscape and the buildings. They include site conservation and tree planting as well as green roofs and green walls, rain gardens, porous pavement, rain barrels and cisterns, and treatment trains or all of the above.

Retrofitting with LID

Three retrofit projects were completed in FY09, demonstrating innovative LID practices:

Brent Elementary Bioretention

Brent PTA was the number one ranked applicant out of 32 applicants to a unique LID grant program intended to develop a District/Federal partnership program between DDOE and USDA-NRCS to advance LID installation in the District. This project removed over 1200 square feet of asphalt around part of the perimeter of Brent School's playground and installed a rain garden to manage stormwater runoff from the surrounding 20,000 square feet of remaining asphalt. DDOE funded this project 100%; USDA-NRCS acted as the contracting/project management: Office of Public Education and Facilities Modernization (OPEFM) and DDOT are the landowners.

Bioretention at Brent Elementary

Lafayette Park Harvest & Reuse for Drip Irrigation

DPR, in partnership with DDOE, installed a French drain system around a hilltop children's sprinkler area at Lafayette Park to collect both sprinkler runoff and stormwater runoff and retain it in underground cisterns to utilize for drip irrigation of nearby native plantings. This project captures runoff from approximately one third of an acre and can retain up to 4,000 gallons of water. Phase 1 was completed in early summer of 2009. Phase 2 is under way and will expand the system to allow drip irrigation to plantings further away.

Lafayette Park harvest and reuse system

Takoma Recreation Bioretention (DPR)

Friends of Takoma Park Recreation was awarded a competitive grant to install raingardens to treat stormwater from six tennis courts at the District Takoma Recreation Center. DPR provided a partnership agreement to allow the *Friends of Takoma Park Recreation* and their agents to perform the work on DPR lands. This agreement now provides a contract template for future efforts. The installation was completed early in September 2009 and the final planting ceremony was held on October 31, 2009. These gardens were incorporated into the existing hill slope to create a cascading, three-tiered system that captures stormwater runoff from approximately 50,000 square feet of impervious surface.

"Friends" install raingardens

"Greening" Capital Projects

The Watershed Protection Division worked with capital project managers across many District agencies to offer technical advice and identify incentive funds for "greening" municipal capital projects. Partner locations included schools (OPEFM), libraries (DCPL), fire stations (FFEMS), and parks (DPR). Green roofs and several innovative harvest/reuse projects were identified. Cost share funding was provided through the green reserve of the American Recovery and Reinvestment Act (ARRA).

This effort will create an additional 100,000 square feet of new municipal green roofs across seven different District municipal locations. Construction will begin in FY2010 and continue through FY2015. Construction on the District's first public school rooftop stormwater runoff harvest for toilet flushing project will begin in FY2010. The system will provide for the site's monthly water closet needs of approximately 50,000 gallons. Construction on the District's first fire station rooftop stormwater runoff harvest for fire engine priming and washing project will begin in FY2010. The system will set up a stormwater management treatment train providing storage, reuse and overflow infiltration capacity at two District fire engine houses. This project will also form the platform for a long term research site to monitor water quality and quantity benefits of these low impact development strategies.

LID in the Public Right of Ways

The Watershed Protection Division organized a series of meetings with several District agencies to explore the impediments to installing Low Impact Development on District lands and work to overcome those impediments. The outcome was an inter-agency commitment to demonstrate LID technologies in the public right of ways (PROW). The techniques to be demonstrated include green alleys, bioretention in triangle parks, tree box bioretention, and bioretention in curb bump-outs. District of Columbia Department of Transportation (DDOT) is in various stages of design and implementation of these practices across multiple projects.

LID in the public right of way at Constitution Square, NOMA

Bioretention will be included in three *Green Street* projects to capture, retain and treat stormwater runoff from sidewalks and roadways, in triangle parks and along the curb line within the tree-box areas at Georgia Ave. NW; southern Pennsylvania Ave. SE; and Minnesota Ave. NE. Funds from the green reserve of the American Recovery and Reinvestment Act (ARRA) will be shared with DDOT to construct green alleys. A Memorandum of Understanding (MOU) between DDOE and DDOT has been executed and funds have been transferred to install a minimum of 20,000 square feet of permeable alley cross-section. DDOT contracts with construction firms for the installation of green alleys are in place. Construction will begin in FY2010.

LID Research Project

The District Department of the Environment (DDOE) was awarded an $800,000 grant from the National Fish and Wildlife Foundation to reduce stormwater runoff in the Rock Creek watershed. The District's low impact development proposal was one of 24 selected for funding to reduce pollution in the Chesapeake Bay and its tributaries.

The DDOE pilot project, "RiverSmart DC – A Community Based LID Retrofit Campaign," will cover approximately 14 acres surrounding Rock Creek, half draining to the combined sewer system (CSS) and the other half draining to the municipal separated storm sewer system (MS4). The project will monitor in-pipe stormwater runoff volumes before and after the installation of green infrastructure such as green roofs, curbside bioretention and porous pavement to absorb stormwater at the source. The project aims to provide validation and calibration for the predictions of the Green Build-Out Model (GBOM) suggesting this type of work can reduce runoff and the resulting pollution to

waterways in the District.

Green Roofs

The District recognized the technical and economic benefits of green roofs in the early 2000s, and began supporting their development through cost share incentives to public and private owners. In 2007, DDOE initiated a $3 per square foot green roof subsidy program with a building maximum of $12,000. In 2009, that subsidy was increased to $5 per square foot, with a per-project maximum of $20,000. To date, the green roof rebate has resulted in funding for 16 green roof projects throughout the District, providing vegetated coverage of just over 113,000 square feet. Over 60 percent of the awards went to green roofs covering less than 3,000 square feet. All of the large individual green roof awards were for new construction projects. Funding remains in FY2010 to support the installation of an additional 15,000 square feet of green roof with this cost share.

DDOE has put together a green roof webpage with general information on green roofs including a Green Roof Toolkit to assist District property owners with practical information required for green roof design and installation. On the green roof webpage DDOE also identifies a small group of Showcase Green Roof Projects – each of which provides practical green roof data and contact information for site visits or further investigations. An inventory of over 75 green roofs in the District, each over 1,000 square feet, with total area coverage of approximately 350,000 square feet can also be viewed on the DDOE green roof web page.
http://ddoe.dc.gov/greenroofs

Low Impact Development Charrettes

In 2008 the Watershed Protection Division organized a series of meetings with several District agencies to explore the impediments to installing Low Impact Development on District lands and work to overcome those impediments. DDOE applied for grant funds along with a partnership of the District Department of Transportation (DDOT), the District of Columbia Water and Sewer Authority (WASA), the Friends of Rock Creek, Casey Trees and LimnoTech to blanket three targeted sewersheds with LID techniques identified through the charrettes. This grant was funded and DDOT, WASA, and DDOE have agreed to provide match funding for this grant.

The grant will monitor the three sewersheds to determine stormwater loads before and after implementation in an effort to examine the effectiveness of LID retrofits on a large scale. In FY 2010 DDOE will establish grants, MOUs and contracts with its partners, begin outreach to the community, and start and complete pre-monitoring of the sewersheds.

B. Environmental Education and Outreach

Highlights

- Provided 10,300 Meaningful Watershed Educational Experiences to thousands of District of Columbia school children.
- Developed four new schoolyard conservation sites at District schools through the *RiverSmart* Schools Program.
- Held the 12th annual Anacostia River Environmental Fair in Anacostia Park.
- Organized the second DC School Garden Week showcasing five DC Public Schools.
- Completed the second year of the B-Wet, National Oceanic and Atmospheric Administration (NOAA) grant with District of Columbia Environmental Education Consortium (DCEEC) partners, providing training to 45 teachers and Meaningful Watershed Education Experiences to 1,346 DC Public School fourth graders.
- Formed partnerships with US Botanic Gardens and the National Aquarium and conducted two Teachers' Nights at those facilities. 110 teachers and 40 exhibitors attended the February 2009 event, and 125 teachers and 40 exhibitors attended the October event.
- Created an environmental education camp at Bancroft Elementary for 38 students and trained 8 teachers to support the project through the summer school.
- Trained 8 group leaders in watershed education for the District's Summer Youth Green Jobs Program

RiverSmart Schools

Teachers are provided with curricula geared towards nonpoint source water pollution education and schoolyard habitats and they are encouraged to utilize watershed-friendly design techniques for their created habitats. Students, teachers and the community participate in the installation and maintenance of the sites—becoming stewards of the land and helping to protect the Anacostia and Potomac Rivers and the Chesapeake Bay from nonpoint source pollution.

DDOE completed four *RiverSmart* Schools greening projects in FY 2009:

Ann Beers Elementary

Journey to the Center! The Anne Beers' "Garden of Discovery" installed a 24 foot by 24 foot butterfly-design labyrinth and planted some 100 milkweed and nectar plants funded by Rotary Club and DDOE. By walking among the turnings, teachers and students lose track of direction and of the outside world, and thus quiet their minds into a form of meditation. Every spring the plants attract Monarch butterflies on their journey north. Students get to witness firsthand how the Monarch lays its eggs on milkweed and the transformation that follows from caterpillar to butterfly. Teachers and students are currently working towards improving the accessibility of the garden and adding benches to make it more suitable as an outdoor learning space.

Anne Beers plans to expand the existing garden by adding composting sites and installing wildflower gardens. Furthermore, the school would like to solve the erosion problem along the hillsides of the garden.

Ann Beers before labyrinth installation

24 ft. by 24 ft. butterfly design

Two Rivers Public Charter School

Two Rivers PCS is located on 4th Street, NE. The site is very complex and challenging because the schoolground is very small and is approximately 98% impervious with only a very small strip of grass between the street and the sidewalk. The initial work focused on coming up with a landscape plan and finding additional funding to complete the project. In order to secure the funding necessary to overcome the challenges presented by the site, DDOE and Potomac Conservancy worked with Two Rivers to submit a grant to the Chesapeake Bay Trust and Lowe's Inc. Subsequently, Two Rivers was awarded a grant for $30,000.

Impervious asphalt at Two Rivers

Pervious pavers at Two Rivers

In order to create a substantial project, with the assistance of DDOE staff, Two Rivers applied for DDOT's public space permit and DDOE's soil and sediment control permit. 3,000 square ft. of asphalt and concrete were removed pro bono by D.C. Rock and

Washington Gas over a two-day period in coordination with DDOE staff. Permeable pavers were installed by contractors to capture stormwater and runoff from 4th Street, NE. Reforestation and tree pits were installed along 4th Street, NE walkways. Raised planter boxes were built for edible gardening; a rain barrel was installed to take rooftop runoff for watering trees. Native plants were used at the site.

John Tyler Elementary School

John Tyler Elementary School installed an urban outdoor classroom, including design and installation of 3,000 sq. ft. of raingardens, on school grounds in Southeast Washington, DC to help reduce stormwater runoff into the combined sewer system. This reduced the impervious surface area by 8,887 sq. ft. They planted 19 trees and 325 grasses and perennials, increasing shade, water uptake and habitat value on the school grounds. An installation of 25 more trees will take place in March 2010 in collaboration with Casey Trees.

Brent Elementary School

The playground at Brent was a flat, lifeless, asphalt-covered chain link yard, typical of those at many schools built in the 1960s. To improve the site area, Brent has implemented a densely planted bio-retention swale around the perimeter – approximately 6'9" wide, along with strategically located trees throughout the site. Plans include new poured-in-place surfacing over most of the remaining asphalt, new safer and age-appropriate playground equipment, raised beds for student gardening, and a living trellis fence system to replace the existing chain link fence.

District of Columbia Environmental Education Consortium (DCEEC)

Watershed Protection Division provides leadership to the DC Environmental Education Consortium. DCEEC continues its capacity building and promotion of Meaningful Watershed Education Experiences and schoolyard greening in the District. The following activities and tasks were accomplished in FY2009 to strengthen organizational networking, training and knowledge for District of Columbia environmental organizations and teachers:

Ways & Means Committee:

- Became registered as a District of Columbia non-profit.
- Developed a tracking database for memberships/dues.
- Opened a DCEEC PNC Savings/Debit account. Opened a DCEEC PayPal account.
- Updated the membership list.

Education Committee:

- Attended two DC Public Schools science teachers' meetings, distributing the Meaningful Watershed Education Experience DVD and talking about watershed education programs.
- Conducted a DCPS Standards Alignment workshop for 11 members on July 22, 2009.

- Provided a half day of hands-on environmental education for 90 youth at Bancroft Elementary on composting, storm drain marking, air pollution, trees and watersheds.

Outreach Committee:

- Maintained and updated the DCEEC website, www.dcnaturally.org.
- Opened Google Analytics account.
- Updated Point of Contact (POC) list and compiled three POC mailings.
- Hosted two DC Teachers' Nights in partnership with the US Botanic Garden. 110 teachers and 40 exhibitors attended the February 2009 event, and 125 teachers and 40 exhibitors attended the October event.
- Increased the DCEEC_Teacher listservs to 450 and DCEEC_Principal listservs to 40.
- Created a monthly on-line newsletter for teachers and principals, distributing four (4) in FY2009.
- Strengthened relationships with DCPS Office of Community Partnerships, Office of Out of School Time and the Professional Development Office.

Schoolyard Greening Committee:

- Organized the 2nd DC School Garden Week (now an annual event!) which included photo contest, schoolyard tours, and more. Created a Flickr photo site of schoolyard projects.
- Compiled a list of garden books available through the DC Public Library. Expanded national network, meeting with people from REAL Gardens, Earth Partnership for Schools, and others.
- Maintained listserv with 194 members.
- Conducted a teacher workshop, March 31 and April 4 in partnership with Washington Youth Garden entitled, *Get Out & Garden! Cultivating Readers through Gardening* for 30 teachers.
- Planned the 3rd School Garden Week scheduled for October 12-17, 2009.

National Oceanic and Atmospheric Administration (NOAA) Grant

- Continued management of the Watershed Wise DC Fellowship (WWDC) program. Trained 45 teachers and provided 1,346 students with MWEE's through this program.
- Held the second Watershed Wise DC Fellowship Teacher Exchange with the five partners at the Josephine Butler Building. There were 30 teachers in attendance from 18 schools, showcasing their work through a video, student work, a slideshow presentation, posters and lesson plans.
- Made 11 site visits to teachers and partners participating in the program. Suggestions were made for improving the teaching and fieldwork experiences.
- Conducted a teacher evaluation that showed teachers had improved their knowledge about the watershed and were more comfortable teaching about the Bay.

- Held the kick-off and training event for Year 3 of the program at Rock Creek Nature Center. 23 teachers representing 13 schools participated in hands-on lessons after receiving a guided tour though the nature center.

Meaningful Watershed Educational Experiences

Hard Bargain Farm

In 2009 Watershed Protection Division sponsored eight two-day overnight Meaningful Watershed Education Experiences at Hard Bargain Farm in Accokeek, Maryland, for a total of 175 fourth and fifth grade students from Orr, Leckie, Garfield, J.O. Wilson, Tubman, Langdon and Bancroft Elementary Schools.

Aquatics Watershed Education Camp

WPD conducted two week-long day camp sessions for a total of 38 Bancroft Elementary School students. The students participated in field studies, environmental games and gardening. The field studies included a watershed walk in Rock Creek Park, water quality testing aboard the Living Classroom boat, planting a native habitat alphabet school garden, a scavenger habitat hunt at the Aquatic Resources Center, and a wetland investigation at Aquatic Gardens. Eight teachers were trained to use summer school lessons to teach the above environmental concepts.

Anacostia River Environmental Education Fair

WPD conducted the 12th annual Anacostia River Environmental Education Fair on Friday, May 8, 2009. Approximately 300 school children and 33 teachers from eight District of Columbia schools attended the fair in Anacostia Park as a way to learn more about the care and protection of their watershed, their neighboring rivers and the Chesapeake Bay.

Exhibitors from 18 District and Federal government agencies and private environmental organizations engaged the students in hands-on activities, dealing with pollution prevention, aquatic life, recycling, collecting information about the conditions in the Bay and its rivers through the NOAA buoy system, and a variety of watershed topics.

Students participated in educational excursions on the Anacostia. Teachers received numerous environmental education materials for the classroom.

C. Pollution Prevention

Highlights

- Continued the WPD's efforts to restore the Anacostia River, working with other District agencies and taking on its own departmental initiatives.

- Expanded the DC Integrated Pest Management Program for District residents.
- Expanded the *RiverSmart* Homes program to include all 8 Wards in the District with over 2,000 homes registered and enrolled in the program.
- Installed approximately 1110 stormdrain markers throughout the city along with citizen volunteers.

RiverSmart Homes

RiverSmart Homes is an incentive-based program that encourages homeowners to install low-cost residential Best Management Practices (BMPs) and institute green landscape management practices that help improve local water quality. The specific landscape enhancements offered through *RiverSmart Homes* include:

1. Disconnecting downspouts and installing rain barrels;
2. Disconnecting downspouts and installing rain gardens;
3. Planting large shade trees;
4. Removing impervious areas and replacing them with pervious surfaces; and
5. Instituting native landscaping and integrated pest management programs.

The *RiverSmart* Homes program has continued to grow in the past fiscal year. There is increasing popularity and interest in the program from DC homeowners in all 8 Wards of DC with over 2,000 homes registered and enrolled in the program. An open house was held for all enrolled homeowners in July of 2009 to view the demonstration sites throughout the city. Many neighborhood community based organizations, garden clubs, and ANC commissioners have requested presentations on *RiverSmart* Homes which has been a main source of continued interest in the program. Because of the popularity of the program and the backlog of enrolled homeowners, the program has relied on word of mouth advertising and continues to enroll additional homeowners.

130 gall130 gallon Rain barrel at a *RiverSmart* Home

Throughout the winter of 2008 and into the spring of 2009, the *RiverSmart* Homes program conducted 120 stormwater site audits for homes within the Pope Branch Watershed pilot area. All the homes that received an installation were surveyed on their satisfaction. Of the 40% that returned the survey – 33% were either satisfied or very satisfied with their experience of the entire process and installation. The majority surveyed felt they were "knowledgeable" about stormwater runoff issues after the

stormwater site audit. The remaining homeowners were "undecided" or felt "somewhat" knowledgeable with just a few feeling "very knowledgeable." The top three motivations for becoming a *RiverSmart* home were to:

1. "beautify your yard,"
2. "help the environment and rivers," and
3. "reduce erosion on your property."

After the pilot phase, *RiverSmart* Homes expanded the program city wide in late spring of 2009 and accomplished the following:

- Audited an additional 300 homes.
- Installed 400 rain barrels.
- Installed 87 rain garden/BayScaping/permeable pavement sites.
- Installed 287 trees.

DC Integrated Pest Management Program

The District Department of the Environment (DDOE) and the Department of Parks and Recreation (DPR) partnered in the early fall of 2008 to host a pilot garden IPM workshop aimed at reducing chemical use and improper fertilization on gardens and lawns. The workshop informed gardeners about the judicious use of pesticides, herbicides and fertilizers. Based on the success of that workshop, DDOE launched the "Organic Gardening and Lawn Care Workshop Series 2009." The series of five workshops for District of Columbia residents was offered free of charge and covered garden IPM, stormwater management, and sustainability topics.

Urban Tree Canopy Goal

In May 2009 Mayor Adrian Fenty announced an Urban Tree Canopy Goal for the city. This goal is to increase tree canopy to 40 percent in the next 25 years. DDOE Watershed Protection Division facilitated the effort to set this goal, working with the District Department of Transportation, the Urban Forestry Administration, the Metropolitan Washington Council of Governments, Casey Trees and other interested parties. In the upcoming year the partnership will hold an Urban Tree Canopy summit (scheduled for March 2010) and develop an implementation plan for the goal.

Clean Marina Program

The Clean Marina program, a partnership among the Watershed Protection Division, the USNPS/National Capital Region, and marinas in the District, is a voluntary program through which marina operations become more environmentally responsible and marina managers educate the boating public on environmentally responsible boating practices. The program encourages marina, boatyard, and boat club operators, as well as the boating public to take further steps to reduce pollution and protect and improve environmental quality. Because marinas abut and are actually in the District's waters, almost everything that takes place there has the potential to affect water quality. Actions by individual boaters, through maintenance, operation, and storage of recreational

vessels, can affect air and water quality. Marinas have the potential to reduce pollution to the District's environment by adopting practices that reduce the amount of waste produced as well as the way waste is handled.

In 2009, the DC Clean Marina Program conducted the following outreach activities:

- Hosted a boater education workshop focused on the effects of an Anacostia River bridge construction project on boating and the river; water quality regulations and permits; rain barrels and landscaping that can reduce the quantity and increase the quality of storm water reaching the river; a plan to use filters, booms, screens, and combined sewer outfall tunnels to improve water quality; and a discussion with the local riverkeeper.
- Had a booth at the Cherry Blossom Festival event held in April on the waterfront of the Washington Channel. The information passed out and visible on display complemented information provided by the U.S. Coast Guard and the DC Harbor Patrol.

Belle Haven Marina a facility located in Virginia just downstream of District waters and owned by the National Park Service, joined the DC Clean Marina program. It was certified as a DC Clean Marina in 2009. Washington Sailing Marina was certified in 2009, and Capital Cove Marina was recertified in 2009.

WPD Storm Drain Marker Program

In 2009, the DDOE Watershed Protection Division installed approximately 1,110 storm drain markers throughout the District of Columbia with individuals from various volunteer groups, including the DC Green Jobs Summer Youth Program.

Scoop Your Pet's Poop

Scoop your Pet's Poop is a DDOE/WPD education and information campaign designed to reach citizens in the District with the importance of properly disposing of pet waste. In FY2009, 4,135 Scoop Your Pet's Poop brochures were distributed at various civic association meetings, libraries, veterinary facilities, and environmental events where DDOE presented educational and informational displays.

D. Future Challenges and Actions for Nonpoint Source Programs

In fiscal 2010, the District of Columbia's Watershed Protection Division will continue to follow the directive of its Nonpoint Source Management Plan. Planned activities for Nonpoint Source programs include:

Stormwater, Sediment, Floodplain Management and Low Impact Development

- Continue expansion of the District's *Stormwater Management Guidebook* to reflect new developments in areas such as industrial and commercial pollution-prevention planning, redevelopment project design flexibility, low impact design techniques, and non-structural Best Management Practices (BMPs) such as street sweeping, landscaping for stormwater facilities, rooftop treatment, and proprietary stormwater products.
- Use the new Low Impact Development DVD and guidance manual as a prominent part of the stormwater BMP maintenance and training program currently being developed by the University of the District of Columbia (UDC) Community College.
- Update the District's Floodplain Management Regulations (DCMR 20, Chapter 31) pursuant to changes in the National Flood Insurance Rate Maps (FIRMS).

Inspection and Enforcement

- Improve compliance with District of Columbia soil erosion and sediment control and stormwater management regulations through inspection and enforcement action.
- Provide excellent customer service by investigating and resolving one-hundred percent of citizen complaints relating to soil erosion control and drainage problems in a timely manner.
- Continue, with USDA-Natural Resources Conservation Service, to implement *The Maintenance of a Soil Survey for the District of Columbia* to provide necessary soil data.
- Submit revised soil erosion and sediment control, and stormwater management regulations to the Office of the Attorney General for review and approval.

Habitat Restoration, LID Retrofits, and Watershed Planning

- Attain a conditional letter of map renewal (CLOMR) permit from FEMA in order to begin construction of the Watts Branch stream restoration project.
- Complete design work on the Broad Branch stream restoration project.
- Complete design and construction work for a regenerative outfall/erosion control project in Rock Creek Park.
- Continue to identify potential restoration projects in the District.
- Complete Oxon Run and Rock Creek watershed implementation plans.
- Begin bidding out chosen Low Impact Development projects to pre-qualified design and construction firms.
- Expand the scope of the RiverSmart School projects, incorporating significant LID retrofits into 2 of 5 projects.
- Continue to build on the growing number of Low Impact Development (LID) demonstration projects. The construction of three additional projects is anticipated for FY2010.
- Using partnerships and funds from the NFWF Chesapeake Bay Stewardship Fund award, engage the community in designated research sites with a stormwater retrofit education program.

- Continue to expand the *RiverSmar*t brand for cost share incentive programs. Future retrofit targets may include businesses, affordable housing, parking lots, and commercial corridors.

Environmental Education and Outreach

- Offer training in Concept Oriented Reading Instruction (C.O.R.I.) to assist environmental educators with ways to use reading to teach environmental science and stewardship concepts.
- Develop an Environmental Literacy Plan for the District of Columbia.
- Strengthen the Schoolyard Greening Committee of DCEEC by conducting a series of gardening workshops.
- Seek ways to increase funding for RiverSmart Schools and Meaningful Watershed Education Experiences.
- Work with Emery Elementary, a Science Technology Engineering Math (STEM) school, to develop an environmental science focus.
- Continue to build upon an education collaborative composed of not-for-profit environmental organizations, teachers and government agencies to coordinate environmental education activities in the city.
- Continue to play a pivotal role in the District of Columbia Environmental Education Consortium (DCEEC)

Pollution Prevention

- Continue to work on the expansion of *RiversSmart Homes* city-wide. WPD anticipates installing approximately 150 rain garden, permeable paving and BayScaping sites, 250 rain barrels and 400 trees on homeowner properties in 2010.
- Work to expand the RiverSmart suite of programs to include a *RiverSmart Businesses* that may begin by targeting Marinas to increase their pollution reduction activities.
- Continue to implement an Integrated Pest Management campaign targeting homeowners in the District as a part of the RiverSmart Homes program.
- Continue to use the new Watershed Protection Division tracking system to improve drain marking efficiency, increase numbers of marked drains, and make the information available to other interested groups.
- Continue to carry out effective information and education campaigns on nonpoint source pollution prevention to targeted audiences who live, work, teach or visit in the District of Columbia and its watersheds.

Summary

The highly urbanized setting and the multiplicity of land ownership within DC can present challenges to nonpoint source pollution reduction; however, the same challenges present opportunities to form creative partnerships and test innovative technologies. An

ongoing goal of the Nonpoint Source Management Program is to continue development of monitoring and measurement techniques to further assess the effectiveness of nonpoint source pollution control programs. Additionally, the District of Columbia's Watershed Protection Division is working to further integrate its regulatory and non-regulatory branches.

By strengthening its existing programs and continuing to seek innovative solutions for reducing nonpoint source pollution in an urban setting, the District of Columbia will move steadily toward reaching the goals outlined in its Nonpoint Source Management Plan.

Appendix A: Financial Information

FY 2009 Grant	*Source*	*Federal*	*Match*
Nonpoint Source Implementation	US Environmental Protection Agency	$1,205,900	$803,933
Chesapeake Bay Implementation	US Environmental Protection Agency	$751,660	$751,660
Meaningful Watershed Experience	National Oceanic and Atmospheric Administration	$106,800	$38,924
Targeted Watershed Grant – Watts Branch Restoration	National Fish and Wildlife Foundation	$650,000	
Targeted Watershed Grant – RiverSmart DC- community based LID installation	National Fish and Wildlife Foundation	$800,000	$300,000

Appendix B: Agency Partners

District of Columbia - Lead Agency:
Department of the Environment, Watershed Protection Division

District Government:
DC Department of Parks and Recreation (DPR)
DC Department of Public Works (DPW)
DC Department of Transportation (DDOT)
Deputy Mayor's Office for Planning and Economic Development
DC Office of Planning (OP)
DC Public Schools (DCPS)
DC Soil and Water Conservation District (DCSWCD)
DC Water and Sewer Authority (WASA)

Federal Government:
Architect of the Capitol
National Park Service (USNPS)
US Army Corps of Engineers (USACE)
US Fish and Wildlife Service (USFWS)
US Department of Agriculture Natural Resources Conservation Service (USDA-NRCS)
US Environmental Protection Agency (EPA)
US Environmental Protection Agency, Chesapeake Bay Program (CBP)
US Geological Survey (USGS)
Various federal facilities

Local Groups:
Anacostia Watershed Society (AWS)
Casey Trees Endowment

DC Greenworks
FORCE, Washington, DC
Alice Ferguson Foundation
Interstate Commission on the Potomac River Basin (ICPRB)
Living Classrooms of the National Capital Region
Marina Environmental Education Fund (MEEF)
Metropolitan Washington Council of Governments (MWCOG)
Potomac Conservancy
Student Conservation Association (SCA)
Sustainable Community Initiative (SCI)
Washington Parks and People