



GOVERNMENT OF THE
DISTRICT OF COLUMBIA

Municipal Separate Storm
Sewer System

NPDES Permit No. DC0000221

**2014
MS4 Annual Report**



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Prepared by:

District Department of the
Environment

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DISTRICT
DEPARTMENT
OF THE
ENVIRONMENT



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List of Acronyms and Abbreviations

AFF	Alice Ferguson Foundation
AFV	Alternative Fuel Vehicle
AWS	Anacostia Watershed Society
BMP	Best Management Practice
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSS	Combined Sewer System
CWA	Clean Water Act
DCMR	District of Columbia Municipal Regulations
DCPS	District of Columbia Public Schools
DCRA	Department of Consumer and Regulatory Affairs
DDOE	District Department of the Environment
DDOT	District Department of Transportation
DGS	Department of General Services
DOH	Department of Health
DPR	Department of Parks and Recreation
DPW	Department of Public Works
EPA	United States Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FY	Fiscal Year (October–September)
GAR	Green Area Ratio
GIS	Geographic Information System
GPS	Global Positioning System
GSA	General Services Administration
HWD	District Department of the Environment Hazardous Waste Division
IPM	Integrated Pest Management
LID	Low Impact Development
MWEE	Meaningful Watershed Education Experience
MOU	Memorandum of Understanding
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Infraction
NOV	Notice of Violation

NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NWS	National Weather Service
OCC	Office of the Clean City
OCTO	Office of the Chief Technology Officer
OP	Office of Planning
Permit	National Pollutant Discharge Elimination System Permit
PROW	Public Right-of-Way
RCRA	Resource Conservation and Recovery Act
RSR	RiverSmart Rewards
SRC	Stormwater Retention Credit
SWAP	Stormwater Advisory Panel
SWEEP	Solid Waste Education and Enforcement Program
SWM	Stormwater Management
SWMD	District Department of the Environment Stormwater Management Division
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TWG	Technical Working Group
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WLA	Wasteload Allocation
WPD	Watershed Protection Division
WQD	District Department of the Environment Water Quality Division

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DISTRICT OF COLUMBIA
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
MUNICIPAL SEPARATE STORM SEWER SYSTEM DISCHARGE PERMIT ANNUAL
REPORT

1 INTRODUCTION

1.1 Background

The Government of the District of Columbia (the District) submits this Annual Report on stormwater pollution control for fiscal year (FY) 2014 (October 1, 2013 through September 30, 2014). This report documents activities required to fulfill the requirements of the District of Columbia's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. DC0000221 (Permit), reissued on October 7, 2011 and modified November 9, 2012, as well as additional activities undertaken by the District's stormwater management program to reduce pollutant loadings from the MS4 to the Potomac and Anacostia Rivers and their tributaries. The activities described in the Annual Report meet the reporting requirements of Section 6.2.1 of the Permit and serve as a review of program implementation and compliance. This report also contains the Discharge Monitoring Report (DMR) for interim monitoring, Section 5. The District Department of the Environment (DDOE) compiled this report with assistance and input from the District of Columbia Water and Sewer Authority (DC Water), the Department of Public Works (DPW), the District Department of Transportation (DDOT), and the Department of General Services (DGS).

1.2 Authorized Discharges

The MS4 Permit allows discharges of stormwater from the MS4 to the Potomac and Anacostia Rivers and their tributaries that comply with the requirements of the MS4 Permit. The Purpose of the District's MS4 Program is to reduce the pollutant loading from the MS4 to receiving waters, and to contribute towards meeting the District water quality standards and the approved Total Maximum Daily Loads (TMDL).

1.3 Limitations of Coverage

The District continues to prohibit, through the implementation of the MS4 Program described in this report, non-stormwater discharges into the MS4. Along with the MS4 Program implementation the District has removed the "waivers and exemption" provision that previously existed in its regulations at 21 DCMR § 528.

1.4 Discharge Limitations

The District continues to manage, implement and enforce a stormwater management program in accordance with all federal and local laws and regulations.

The District will continue to meet the requirements of the Permit, including attaining each annual numeric performance requirement, and making progress toward each five-year numeric performance requirement. Overall, the District has met or is on track to meet the Permit's requirements.

2 LEGAL AUTHORITY, RESOURCES AND STORMWATER PROGRAM ADMINISTRATION

2.1 Legal Authority

As required by Section 2 of the MS4 Permit the District developed and maintains the legal authority to control stormwater pollution within the MS4 drainage area.

The legal authority is established by the following laws and regulations:

◆ MS4 Program Activities:

- ◆ The Comprehensive Stormwater Management Enhancement Amendment Act of 2008, effective July 1, 2009 (D.C. Official Code § 8-151.51 et seq.)
- ◆ The District Department of the Environment Establishment Act of 2005, effective February 15, 2006 (D.C. Law 16-51, as amended; D.C. Official Code §§ 8-151.01 et seq. (2008 Repl. & 2012 Supp.))
- ◆ The Water Pollution Control Act of 1984, effective March 16, 1985 (D.C. Law 5-188; D.C. Official Code §§8-103.01 et seq.(2008 Repl. & 2012 Supp.)), as amended

◆ Soil and Sediment Control:

- ◆ The Water Pollution Control Act of 1984, effective March 16, 1985 (D.C. Law 5-188; D.C. Official Code 8-103.07 et seq. (2008 Repl. & 2012 Supp.))
- ◆ The Soil Erosion and Sedimentation Control Act of 1977, effective Sept. 28, 1977 (21 DCMR §§ 500-507; 21 DCMR §§ 40-48)

◆ Illicit Discharge and Dumping:

- ◆ The Water Pollution Control Act of 1984, effective March 16, 1985 (D.C. Law 5-188; D.C. Official Code 8-103.07 et seq. (2008 Repl. & 2012 Supp.)), as amended

◆ Plastic Bag Fee and Enforcement:

- ◆ The Anacostia River Clean Up and Protection Act of 2009, effective September 23, 2009 (D.C. Law 18-55; D.C. Official Code § 2-1226.51 *et seq.*)

◆ Coal Tar-Based Pavement Product Ban:

- ◆ Comprehensive Stormwater Management Enhancement Amendment Act of 2008, effective July 1, 2009 (D.C. Official Code § 8-151.81)

◆ **Pesticide and Fertilizer Control:**

- ◆ Section 12(a) of the Pesticide Operations Act of 1977, effective April 18, 1978 (D.C. Law 2-70; D.C. Official Code § 8-411(a) (2001))
- ◆ The Pesticide Education and Control Amendment Act of 2012, effective on October 23, 2012 (D.C. Official Code § 8-431 et seq)
- ◆ Section 103(b)(1)(B)(ii)(II) of the District Department of the Environment Establishment Act of 2005, effective February 15, 2006 (D.C. Law 16-51; D.C. Official Code § 8-151.03(b)(1)(B)(ii)(II) (2012 Repl.))

◆ **Polystyrene Ban:**

- ◆ The Sustainable DC Omnibus Amendment Act of 2014, effective January 1, 2016 (D.C. Act 20-385)

◆ **DC Solid Waste Management and Recycling:**

- ◆ Title 21 DCMR, Chapter 7, Chapter 8 and Chapter 20

Further authority is established by the following regulations:

- ◆ As required by Section 2.1.2, the District finalized the 2013 Stormwater Management Soil Erosion and Sediment Control (2013 Stormwater Rule) on Friday, July 19, 2013. The 2013 Stormwater Rule amended Chapter 5 (Water Quality) of Title 21 (Water and Sanitation) § 500 to 545 and 599, and §§ 546, 547, and 552 of the District of Columbia Municipal Regulations (DCMR).
- ◆ As required by Section 2.1.4 of the MS4 Permit, the District has drafted and amended environmental legislation and regulations to remove barriers to implanting the 2013 Stormwater Rule and other Permit required performance standards.

Additional legal authorities are discussed throughout the report where the activities are addressed.

2.2 Fiscal Resources

The District's Stormwater Permit Compliance Amendment Act of 2000 requires each agency to budget and fund costs for stormwater management activities that they were required to carry out prior to April 20, 2000. Those agencies continue to budget and fund those stormwater management activities listed in Table 1. Additionally, the District coordinates internally to spend special purpose revenue funds and to set the budget. The revenue target set in 2010, at the beginning of the Permit term, is still adequate to meet Permit requirements. The District will reevaluate this analysis for the updated SWMP, which will reflect any changes to the MS4 Program or revenue, required by Section 6.2.1.p of the MS4 Permit.

The Enterprise Fund

As required by Section 2.2 of the MS4 Permit the District has a dedicated funding source for MS4 Permit implementation. The District's Stormwater Permit Compliance Amendment Act of 2000 also established a Stormwater Permit Compliance Enterprise Fund (Enterprise Fund) to

provide revenue to implement and administer activities directly required by the MS4 Permit. The Enterprise Fund generates approximately \$13,000,000 per year that is utilized to substantively fulfill the requirements of the MS4 Permit. DDOE will continue current activities to manage stormwater pollution and encourage improved stormwater management techniques. This law also requires District agencies to maintain budget allocations that support baseline levels of effort for activities that control pollution from stormwater discharges from the MS4. This funding is derived from each agency's general obligation budget.

The Anacostia River Clean Up and Protection Fund

The Anacostia River Clean Up and Protection Act (Bag Law) requires all District businesses selling food or alcohol to charge \$.05 for each disposable paper and plastic carryout bag. The law allows businesses to keep \$.01 (or \$.02 if it offers a rebate when customers bring their own bag), and the remaining \$.03 or \$.04 is deposited in to the Anacostia River Clean Up and Protection Fund. This fund generates approximately \$2,000,000 per year and is used to implement watershed education programs, stream restoration, trash retention projects, and to purchase and distribute reusable bags to District residents. Many of these activities also support the Districts compliance with the MS4 Permit.

MS4 Program Budget and Expenditures

The District expends Enterprise Funds, Anacostia River Clean Up and Protection Funds, and general obligation funds to fulfill its FY 2014, see Table 2. DDOE budgets Enterprise Funds solely for activities that are specific to the MS4 Permit compliance. DDOE and other District agencies also allocate additional funds to complete baseline municipal activities that are necessary to control pollution in MS4 discharges. The current level of funding is sufficient to fully comply with the Permit requirements. The Enterprise Fund budget for FY 2015 provides for capital construction costs, operation and maintenance (O&M) of structural controls, and programmatic activities. Table 1 provides a summary of the budget for FY 2015 MS4 Permit-required programs. It is important to note that the budget includes capital funds that are often expended over multiple years. Table 2 provides a summary of the Enterprise Fund expenditures for FY14 for Permit required deliverables. Tables 1 and 2 meet the requirements of Section 6.2.1.k of the MS4 Permit.

Table 1 FY 2015 Budget

Permit Section	Topic	FY 2015 Budget
	General MS4 Permit Management	\$3,650,000
4.1	Standard for Long-Term Stormwater Management	\$500,000
4.1	Impervious Surface Retrofits, bioretention, green roofs, outfall repairs, tree canopy and other capital investments	\$4,270,000
4.1	Green Landscape Incentives / RiverSmart Programs	\$3,700,000
4.2	Operation and Maintenance of Stormwater Capture Practices	\$500,000
4.3	Management of District Government Areas	\$100,000
4.3	Enhanced Street Sweeping	\$550,000
4.4	Management of Commercial Institutional Areas	\$200,000
4.5	Management of Industrial Facilities and Spill Response	\$200,000
4.6	Stormwater Management for Construction Sites	\$915,000
4.7	Illicit Discharges and Improper Disposal	\$200,000
4.8	Flood Control Practices	\$100,000
4.9	Public Education and Public Participation	\$950,000
4.1	TMDL Wasteload Allocation Planning and Implementation	\$1,700,000
4.1	Trash TMDL Implementation	\$600,000
5.1	Revised Monitoring Program	\$600,000
5.2	Interim Monitoring	\$350,000
Total		\$19,085,000

Table 2 FY14 MS4 Program Expenditures by Program

Activity	Fund Source	Total
MS4 Monitoring, TMDL development, and IDDE	Stormwater Enterprise Fund	\$1,126,972
Construction plan review, construction and maintenance inspection, and restoration project management	Stormwater Enterprise Fund	\$830,477
Public Space Green Infrastructure Programs and trees	Stormwater Enterprise Fund	\$1,850,991
Green Infrastructure Retrofits (nonpublic space) and education	Stormwater Enterprise Fund	\$1,514,411
MS4 program administration, program implementation, regulatory development and fee collection	Stormwater Enterprise Fund	\$2,093,945
Enhance street sweeping, hazardous waste collection and outreach	Stormwater Enterprise Fund	\$537,000
Contracts - TMDL implementation planning, revised monitoring planning, catch basin cleaning, catch basin optimization planning and outfall survey	Stormwater Enterprise Fund	\$2,215,253
Other related expenses (legal and office expenses)	Stormwater Enterprise Fund	\$368,802
Stream restoration and design	Bag Law Fund	\$57,746
Trash reduction, green infrastructure installation and environmental education	Bag Law Fund	\$677,959
Total FY14 Expenditures		\$11,273,556

2.3 Stormwater Management Program Administration and Permittee Responsibility

DDOE was designated by the District Department of the Environment Establishment Act of 2005, D.C. Official Code 8-151.01 *et seq*, as the MS4 Permit Administrator and assumed this responsibility in February of 2007. On February 13, 2009, the District submitted to the United States Environmental Protection Agency (EPA) Region III an application for renewal of its MS4 Permit. A draft of the District's next MS4 Permit was issued on April 19, 2010. The District submitted comments on the draft MS4 Permit for EPA's consideration on June 20, 2010. EPA issued the final permit on October 12, 2011 and became effective on January 22, 2012. On November 9, 2012, EPA finalized limited modifications to the MS4 Permit to (1) provide additional public notice and input on the permittee's development of the Consolidated Total Maximum Daily Load (TMDL) Implementation Plan; (2) clarify and provide accountability for specific water quality-related outcomes, specifically on the content and timelines for the Consolidated TMDL Implementation Plan; (3) clarify that the District is the sole permittee; and (4) clarify that the District needs to notify the public of a sanitary sewer system overflow.

Read more about DDOE's stormwater permit at the following links:

- ◆ MS4 Permit Administration, <http://ddoe.dc.gov/service/separate-storm-sewer-system-ms4-permit>
- ◆ MS4 Permit, http://www.epa.gov/reg3wapd/pdf/pdf_npdes/stormwater/DCMS4/FinalPermit2011/DCMS4permit2011.pdf
- ◆ Final Signed Limited Modification to the DC MS4 Permit, http://www.epa.gov/reg3wapd/pdf/pdf_npdes/stormwater/DCMS4/MS4FinalLimitedModDocument/FinalSignedDCMS4LimitedMod%2011_9_12.pdf

DDOE partners with the Department of General Services (DGS), Department of Public Works (DPW), Department of transportation (DDOT) and DC Water to implement Permit activities. DDOE has executed independent MS4 MOUs with these agencies which specify activities to be implemented by the agencies as required under the Permit and specify reimbursement amounts for implementation of these activities. Copies of these MOUs are included in Appendix A of this report. An overview of District agency responsibilities for MS4 permit compliance is shown in Table 1. This table summarizes the Matrix of Responsibilities from the MOU executed on December 14, 2000, and updated in 2008, which assigned responsibilities District Agencies for compliance with the Permit. The Matrix of Responsibilities and the 2000 MOU have also been included in Appendix A.

Table 3 Agencies Responsible for District MS4 Permit Compliance

Responsible Agency	Compliance Activity
DDOE	MS4 program administration Source identification Wet/dry weather monitoring program Wet weather screening program Flood control projects review Construction management and plan review Pollutant control from hazardous waste sites Pesticide, herbicide, and fertilizer application Promoting LID practices Illicit discharge detection Sediment erosion control Inspection/enforcement
DC Water	Floatables reduction program Pollution prevention Operation and maintenance of sewer infrastructure Catch basin cleaning Illicit discharge detection
DPW	Street sweeping Seasonal leaf and holiday tree collection program Pollution prevention Household hazardous waste collection De-icing and snow removal Stormwater management at municipal waste transfer stations
DDOT	Pollutant reduction from vehicles and roadways Pollution prevention LID practices in public right-of-way
DGS	LID practices on District-owned properties Pollution prevention
OP	Planning for neighborhoods, public facilities, parks and open spaces, etc. Urban design and land use review

The District has a number of mechanisms in place to ensure that coordination across all agencies with responsibilities to implement Permit provisions occurs. Specifically, DDOE coordinates the District's MS4 Technical Workgroup (TWG) and the cabinet-level Storm Water Advisory Panel (SWAP).

The goal of the SWAP is to improve water quality of the Anacostia and Potomac Rivers through strategic and collaborative implementation of shared responsibilities under the District's MS4 Permit. This is a cabinet-level group of District agencies with stormwater management responsibilities. The SWAP was established by the Comprehensive Stormwater Management Enhancement Amendment Act of 2009 and is chaired by DDOE's Director. SWAP provides a forum for coordinating agency stormwater responsibilities and executive decision-making to overcome obstacles and resolve disputes. The group, which is required to meet at least twice per year, met on June 25, 2014 and September 24, 2014. The TWG is required to meet monthly to provide ongoing, staff-level coordination on stormwater issues.

Every year during the MOU and budget process the District assesses the need to add new agencies and group to the TWG and SWAP. In FY14 no new critical partners were identified. Additionally, DDOE continues to hold quarterly meetings with Non-governmental organizations (NGOs) to discuss partnership opportunities.

3 STORMWATER MANAGEMENT PROGRAM (SWMP) PLAN

The District continues to implement, assess, and upgrade all the controls and management practices described in the MS4 Permit and 2009 Stormwater Management Plan (SWMP). The Consolidated TMDL Implementation Plan, due to EPA in May 2015, will drive the District's determination of any future implementation needs that may need to be addressed in the updated SWMP, a requirement of Section 6.2.1.h of the MS4 Permit. This plan will also establish the framework for tracking the effects of stormwater management in the District, a requirement of Section 6.2.1.j of the MS4 Permit. Section 6.2.1.c of the MS4 Permit requires an assessment of the effectiveness of controls established by the SWMP. This requirement is fulfilled by Tables 9 and 10 which detail pollutant load and stormwater volume reductions.

The District is required by Section 6.2.1.a and Section 3 of the MS4 Permit to comply with all schedules of compliance. Table 4 includes program elements and strategies the District is required to submit to the EPA for review and approval.

Table 4 Stormwater Management Program Submittal Dates

Element	Required Submittal Date	Actual Submittal Date
Anacostia River Watershed Trash Reduction Calculation Methodology	01/22/2013	01/22/2013
Tree Canopy Strategy	01/22/2013	01/22/2013
Catch Basin Operation and Maintenance Plan	07/22/2013	07/05/2013
Outfall Repair Schedule	07/22/2013	07/05/2013
Updated Stormwater Regulations	07/22/2013	07/19/13
Stormwater Retention Standards for Substantial Improvement Projects	07/22/2013	07/19/13
Off-Site Mitigation/ Fee-in-Lieu Program	07/22/2013	07/19/13
Stormwater Management Guidebook	07/22/2013	07/19/13
Retrofit Program	01/22/2014	01/22/2014
Revised Monitoring Program	05/09/2015	Ongoing
Consolidated TMDL Implementation Plan	05/09/2015	Ongoing
Revised Stormwater Management Program Plan for Public Comment	1/22/2015	Ongoing
Final Revised Stormwater Management Program Plan	01/22/2016	Ongoing

At the time of submission of the 2014 Annual Report the District was finalizing a copy of the Draft Revised Stormwater Management Plan (SWMP) for Public Comment. The District will be publishing the Draft SWMP for public comment and as available will be found on the [on the DDOE website at www.ddoe.dc.gov](http://www.ddoe.dc.gov). The Public Comment notice will be available on the DC Register at <http://www.dcregs.dc.gov/>.

4 IMPLEMENTATION OF STORMWATER CONTROL MEASURES

4.1 Standard for Long-Term Stormwater Management

The District continues to implement and enforce a program in accordance with the MS4 Permit and the District Stormwater Management Plan (SWMP). The Stormwater Management Program is using retention practices to reduce stormwater runoff by mimicking natural landscapes through green roofs, bioretention, pervious pavers and other stormwater runoff reducing green infrastructure. The implementation of these activities, policies, and incentive programs are described throughout the 2014 Annual Report.

Table 5 details the District’s compliance with the MS4 Permit’s numeric performance standards.

Table 5 Numeric Performance Standards and Compliance

Numeric Requirement	Time Period	FY 2014 Achievement	Achievements to Date
Retrofit 18,000,000 square feet of impervious surfaces	Permit term	663,608 square feet	2,347,682 square feet ¹
Retrofit 1,500,000 square feet of impervious surfaces in the transportation right-of-way	Permit term	234,912 square feet	779,142 square feet
Plant 4,150 trees within the MS4 area (net increase)	Annually	6,413 trees	18,578 trees
Install 350,000 square feet of green roofs on District properties	Permit term	148,908 square feet	752,013 square feet
Remove 103,188 lbs. of trash annually from the Anacostia River	By the fifth year of the permit	91,471 pounds	186,960 pounds

¹ Discussion on District retrofit program and retrofit calculation is found in Section 4.1.5.4.

4.1.1 Standards for Stormwater Discharges from Development

DDOE finalized the 2013 Rule on Stormwater Management and Soil Erosion and Sediment Control (2013 Stormwater Rule) on Friday, July 19, 2013.

The 2013 Stormwater Rule satisfies the requirements of Section 4.1.1 of the MS4 Permit, which requires the District to implement a 1.2-inch stormwater retention standard for land-disturbing activities, a lesser retention standard for substantial improvement projects, and provisions for regulated sites to satisfy these standards offsite. The 2013 Stormwater Rule also includes the Stormwater Retention Credit (SRC) trading program, which allows property owners to generate and sell SRCs by installing green infrastructure that has the capacity to retain stormwater and thereby reduce the runoff that harms District streams and rivers. More information on the SRC trading program can be found in sections 2.1.2 and 2.1.3 of this report.

To view the 2013 Stormwater Rule and the 2013 Stormwater Management Guidebook (2013 SWMG): <http://ddoe.dc.gov/swregs>

DDOE continues to hold training sessions for the public, DDOE staff, and sister agency staff.

FY 2015 Goals: Additional trainings for District staff and the public will continue to be held throughout FY 2015.

4.1.2 Code and Policy Consistency, Site Plan Review, Verification and Tracking

As required by Section 4.1.2 of the MS4 Permit, the District has drafted and amended environmental legislation and regulations to remove barriers to the implementation of the retention performance standards. DDOE has also designed the 2013 Stormwater Rule to work in concert with other sustainability initiatives in the District, including OP's development of Green Area Ratio requirements under the zoning code. Along with code and policy revisions, the District maintains a plan review erosion control program for new construction coupled with a field inspection program to ensure compliance with District erosion control and stormwater management regulations.

The Green Area Ratio

The Green Area Ratio (GAR) is a zoning regulation that integrates sustainable landscape elements into parcel site design to promote greater livability, ecological function, and climate adaptation in the urban environment. The GAR sets minimum lot coverage standards for landscaping and site design features in site construction. The GAR assigns a weighted score to a building site based on the types of landscape and site design features that are implemented and the amount of area the features cover. The minimum GAR score needed to reach compliance is determined based on the zoning district of the site. With limited exceptions, sites that require a Certificate of Occupancy must submit a GAR plan as part of the building permit application. These sites include new building construction, additions and interior renovations where the cost of work exceeds 100 percent of the assessed land value. The Green Area Ratio became effective on October 1, 2013. In FY 2014 DDOE held 10 training sessions to the public and agency about the GAR. More information, including the GAR Guidebook and forms, can be found at <http://green.dc.gov/GAR>.

Green Building Act

The Green Building Act of 2006 requires all non-residential District public buildings to meet the U.S. Green Building Council's LEED certification standards for environmental performance at the "Silver" level or higher. District-owned or -financed residential projects 10,000 square feet or larger must meet or exceed the Green Communities certification standard. Beginning January 2012, all new private development projects 50,000 square feet or larger are required to meet LEED certification at the "Certified" level or higher. More information about the Green Building Act of 2006 can be found at <http://green.dc.gov/publication/green-building-act-2006>.

Low Impact Development and Green Infrastructure Design Standards

DDOT issued Green Infrastructure (GI) Standards in April 2014 to use on all public and private projects. The DDOT GI Standards include standard designs for bioretention, permeable pavements, and tree space design in the ROW. The DDOT Green Book contains 40 design drawings, 73 pages of material and construction specifications, a 28 page design manual, 33 pages of plant lists for bioretention areas and street trees, and standard maintenance schedules. The illustrated "Greening DC Streets" guide is a non-technical guide to educate residents, leaders, and stakeholders on opportunities and challenges in constructing GI in the District ROW. The standards, guide, and fact sheets on DDOT's projects can be downloaded from www.ddot.dc.gov/greeninfrastructure.

DDOT resolved many challenging design and construction issues in developing the GI standards, but many challenges remain in making GI a standard practice in the streetscape. DDOT established pedestrian safety guidelines around depressed stormwater capture areas in the urban streetscape. Curb wall designs were created to allow depressed planters for stormwater ponding and ensure the street and sidewalk remain stable. Protocols have been established for soil testing to determine infiltration of existing soils, but challenges remain in ensuring proper drainage. Underdrains must be connected to the sewer system through an inlet, manhole, or direct connect, however the sewer authority limits the connection options. DDOT has had difficulty in finding soil suppliers that will provide the bioretention soil mix and testing results per the new specifications. DDOT is validating the GI standards in the RiverSmart Washington project and lessons learned will be incorporated into updated standards and projects. More information about RiverSmart Washington can be found at <http://ddot.dc.gov/publication/riversmart-washington>.

DDOT offered several training sessions for staff, District agencies, and the public on the new GI standards and how to use them to meet the new stormwater regulations. A full list of FY14 trainings is as follows. In FY15, DDOT will offer additional refresher and full day trainings on the GI standards for design staff and create and offer a new training with DDOE for construction staff.

Training for DDOT Staff, Partner Agencies, & Public on Green Infrastructure Standards in FY 2014

- Trainings for DDOT Design Project Managers & consultant designers on stormwater regulations, GI Standards, and MEP process (October 22, 30, & December 16, 159 attendees)
- Conducted training on DDOT GI Standards for DC Building Industry Association, ABC (Builders & Contractors) and Apartment Owners Association (May 21, 2014)
- “Green Infrastructure (GI/LID) Design Standards” to DDOT Interagency meeting (June 30, 2014) (attendance by: OP, DDOE, NPS, NCPC, CFA, WMATA, DPR)
- Bioretention Maintenance Training Course sponsored by DDOT & offered through University of District of Columbia. Four sessions offered to landscape and maintenance contractors, supervisors, and workers (October 2013, July, August, & September 2014)
- Stormwater Regulations overviews to DDOT Teams
 - Asset Management (October 1, 2013)
 - Urban Forestry (October 8, 2013)
 - Public Space Regulations Administration (January 16, 2014)
 - Progressive Transportation Services Administration (April 2, 2104)

Sustainable DC

Sustainable DC is a planning effort that is led by DDOE and the Office of Planning (OP) and includes the public and subject matter experts to make the District the most sustainable city in the United States. The Sustainable DC Act of 2012 was signed into January 2013 and the Sustainable DC Act of 2014 was signed July 2014. Together, the acts remove obstacles and provide incentives to further the goals and actions in Sustainable DC as well as codify several important subtitles such as launching an environmental literacy program and banning Styrofoam starting in 2016. More information about Sustainable DC can be found at <http://sustainable.dc.gov/>.

Site Plan Review, Verification and Tracking

In FY 2014, DDOE began development of a database to manage submission, review, and inspection of Stormwater Management Plans, Erosion and Sediment Control Plans, and Green Area Ratio Plans. The database will also incorporate all functions of the interim database that has been used for the SRC Trading and RiverSmart Rewards (RSR) programs. As required by Section 4.1.2 of the MS4 Permit this database will track the on-site retention performance of each project subject to the 2013 Stormwater Rule.

Members of the public will use the database to submit information to DDOE as part of the plan review and approval process. The database tracks each site’s regulatory obligations and

compliance, including off-site retention achieved with SRCs or payment of the in-lieu fee (ILF). The database is also used to calculate and track discounts in the RiverSmart Rewards program.

Public users may use the database to:

- Submit compliance calculations and other information to support an application for DDOE approval of a Stormwater Management Plan, Erosion and Sediment Control plan, or Green Area Ratio plan
- Comply with an off-site retention obligation by applying to use SRCs or notifying DDOE of an in-lieu fee payment
- Apply to certify, transfer, or retire SRCs
- View the SRC registry
- Apply for a RiverSmart Rewards discount on the District's impervious surface-based fees

After completing applications, public users submit them electronically to DDOE. The database notifies DDOE of new applications. Staff review and make a decision to approve or disapprove each application and the database notifies public users of DDOE's decision.

After developing the database, DDOE held four meetings with a group of project engineers from the development community to test and revise the database. DDOE has also completed an internal testing period. DDOE is incorporating edits and working with a contractor to improve some functions of the database before an open release in FY 2015. More information about the Stormwater Database and trainings can be found at: <http://ddoe.dc.gov/swdb>.

FY 2015 Goals: DDOE will release the new BMP tracking database in FY 2015. Updates about the operation and implementation of the BMP tracking database will be included in future Annual Reports.

4.1.3 Off-Site Mitigation and/or Fee-in-Lieu

The 2013 Stormwater Rule provides regulated sites with flexible options for meeting regulatory requirements. Under the rule, each major regulated project faces a stormwater retention volume (SWRv) based on either the 0.8 or 1.2 inch storm. After they achieve half of their SWRv onsite, regulated sites may use Stormwater Retention Credits (SRCs) purchased from the private market or pay ILF to meet any remaining retention obligation. Program details are contained in Section 527 and Sections 530 through 534 of the 2013 Stormwater Rule and Chapters 6 and 7 of the 2013 Stormwater Management Guidebook. This meets the requirements of Section 4.1.3 of the MS4 Permit.

In FY 2014, the SRC trading program achieved several milestones. Beginning in January, major regulated projects were required to calculate and provide their SWRv on their stormwater management plans (SWMPs). As a result, DDOE is able to track potential SRCs and off-site retention volume, which could be met through SRCs or payment of in-lieu fee. Further, DDOE certified 51,249 SRCs, the first SRCs in the market, in April 2014 for the retention at four large

rain gardens in northwest DC. The owner sold 11,013 of those SRCs for \$2.27 each to a buyer in September 2014, who used the SRCs to meet retention requirements for a charter school undergoing a renovation. The seller and buyer used DDOE's template contract to settle the terms and conditions of the trade and DDOE listed the final price of its SRCs in the SRC Registry. The Registry, as well as other analyses and information on the SRC trading program, are available on an updated SRC Website, <http://ddoe.dc.gov/src>.

FY 2015 Goals: DDOE expects SRC trades to increase throughout FY2015. In addition, DDOE plans to stimulate transactions through several projects. For example, a purchase guarantee program will provide some sellers with a guaranteed price for their SRCs in order to stimulate supply and then demand. DDOE also continues to provide trainings, assist participants with their SRC applications, and will publish reports on the status of the program and other issues in FY 2015.

4.1.4 Green Landscaping Incentives Program

The District is using a series of stormwater incentive programs to help single-family residents and commercial properties, multi-family residences, schools and churches plan and implement stormwater retrofit projects and increase planted areas. RiverSmart programs are fully funded from local sources, Enterprise Fund or Anacostia Clean Up and Protection Fund. The GAR and DDOE's RiverSmart programs fulfill the requirements of section 4.1.4. Additional information about DDOE's incentive programs can be found at: <http://ddoe.dc.gov/riversmart>

District green landscaping incentive programs are:

- ◆ Green Area Ratio
- ◆ RiverSmart Homes
- ◆ RiverSmart Schools
- ◆ RiverSmart Communities
- ◆ RiverSmart Rooftops
- ◆ RiverSmart Rebates
- ◆ Stormwater Retention Credit Trading
- ◆ RiverSmart Rewards

Green Area Ratio

The GAR, a zoning regulation that integrates sustainable landscape elements into parcel site design, became effective on October 1, 2013. Specific information about the GAR can be found in Section 4.1.2.

Specific information about GAR, including the GAR Guidebook, regulations, and score forms are available at <http://green.dc.gov/GAR>.

RiverSmart Homes

The District recognizes the importance of targeting homeowners for pollution reduction measures because residential property is the largest single land use type in the city and is the slowest of all construction areas to be redeveloped. Since 2008, DDOE has been implementing RiverSmart Homes aimed at single family homes. The program started with eight demonstration sites—one in each ward of the city. It then expanded to a pilot program in the Pope Branch watershed of the city. The RiverSmart Homes Program is now mature and has been operating citywide since summer of 2009. In FY 2014, the program focused outreach efforts in targeted watersheds to increase RiverSmart Homes participation in the neighborhoods adjacent to stream projects. To view information on the RiverSmart Homes Program:

<http://ddoe.dc.gov/riversmarthomes>.

FY 2014 accomplishments include the following²:

- ◆ Installed 475 rain barrels³
- ◆ Planted 644 shade trees
- ◆ Installed 126 rain gardens⁴
- ◆ Implemented Bayscaping at 130 properties
- ◆ Installed pervious pavers at 27 properties
- ◆ Conducted 1,117 stormwater site audits

RiverSmart Schools

DDOE's RiverSmart Schools Program works with schools to install LID practices to control stormwater. These practices are specially designed to be functional as well as educational in order to fit with the school environment. Additionally, schools that take part in the RiverSmart Schools program receive teacher training on how to use the sites to teach to curriculum standards and how to properly maintain the sites. To view information on the RiverSmart Schools Program: <http://green.dc.gov/service/riversmart-schools>.

In FY 2014 DDOE completed the construction of five (5) RiverSmart Schools projects. Some highlights of these projects are:

Langdon Education Campus

- ◆ Located in the MS4 in the Anacostia River watershed
- ◆ Removed impervious channel and installed nine (9) infiltration swales at 132.05 cubic feet each with an underdrain, a 151.30 square foot linear bioretention, and a 2,850 square feet bioretention cell, that will capture and treat the 1.2-inch storm event

² RiverSmart Homes will have improved tracking in FY 2015 and more precise metrics will be reported in future Annual Reports.

³ RiverSmart Homes rain barrels are assumed to treat 210 sf of rooftop area to the 1-inch level.

⁴ RiverSmart Homes rain gardens assumed to retain 1 inch of runoff from 450 sf of impervious surface.

- ◆ The total combined volume provided is 6,197.35 cubic feet capacity before entering municipal stormwater system
- ◆ Completed an outdoor classroom on the campus with seating for 20 students

Maury Elementary

- ◆ Located in the CSS in the Anacostia River watershed
- ◆ A low-impact development stormwater retrofit consisting of 3,983 square feet of permeable green space that includes a 1,737-square foot bioretention cell to treat runoff from the existing parking and playground area. The bioretention cell is sized to capture and treat the 1.2-inch storm event

St. Columba's Nursery School

- ◆ Located in the MS4 in the Potomac River watershed
- ◆ Installed several retrofit projects including a 500-gallon cistern capturing runoff from the school building rooftops, an infiltration system (approximately 700 square feet) to treat and discharge the runoff volume generated by the hillside, walkways, and rooftops, and a green roof (approximately 300 square feet) was constructed on top of the storage shed
- ◆ The total drainage area is 8,742 square feet with 918 cubic feet volume capacity on site for the drainage area

British School of Washington

- ◆ Located in the CSS in the Rock Creek watershed
- ◆ Installed a pollinator garden that consist of 174 native plants to help absorb stormwater and create habitat on the schoolyard
- ◆ Engaged 3 Watershed Stewards to assist with the conservation landscape project
- ◆ Involved 37 students from British School of Washington to participate in the Community Work Days to plant, mulch, and water the native plants that comprise their conservation landscape

Seaton Elementary

- ◆ Located in the CSS in the Anacostia River watershed
- ◆ Outdoor Laboratory with vegetation planted as food for wildlife with natural grasses and flowers and an edible gardening with raised beds
- ◆ Constructed an 8' x 10' shed with connection to a 75 gallons Rainbox

RiverSmart Communities

The RiverSmart Communities program offers technical and financial assistance to multifamily residential properties, houses of worship, commercial properties, embassies and universities to install practices such as rain gardens, Bayscaping, pervious pavement, and rain cisterns to control stormwater pollution. Properties city-wide can apply for a rebate for up to 60% of the project cost for stormwater retrofits. Properties in priority watersheds can apply for design/build assistance and will be required to pay a smaller copayment, approximately 20% of the project cost. FY 2014 accomplishments are summarized in Table 6. View information RiverSmart Communities at <http://ddoe.dc.gov/service/riversmart-communities>.

Table 6 RiverSmart Communities Projects in FY 2014

Property Name	Watershed	Sewershed	Type of Practice	Total Treatment Area (sq. ft.)	Rain Garden Area (sq. ft.)	Permeable Pavement Area (sq. feet)
Meadowbrook Phase III	Potomac	CSS	Rain Garden	1,823	275	0
Ridgecrest Apartments	Potomac	MS4	Rain Garden	4,078	320	0
Capitol Park IV	Potomac	CSS	Permeable Pavement	820	0	820
Total				6,721	595	820

RiverSmart Rooftops

The District offers rebates for new green roofs on existing buildings of any size and new construction projects that add a green roof that exceeds their requirements for a stormwater management permit. The 2014-2015 green roof rebate program will provide base funding of \$10 per square foot, and up to \$15 per square foot in targeted watersheds. Based on District stormwater management priorities, DDOE has selected eight (8) areas on which to focus. The targeted sub-watersheds are:

1. Bloomingdale drainage areas
2. Dumbarton Run
3. Hickey Run
4. Nash Run
5. Oxon Run
6. Pope Branch
7. Texas Avenue Tributary
8. Watts Branch

To view a map of the targeted sub-watersheds:

https://www.google.com/maps/d/viewer?msa=0&mid=z7aCcmZk_iH4.kwE_7ZsUWMRo

The 2014 Green Roof Program is administered by the Anacostia Watershed Society for DDOE with funds from the Anacostia River Clean Up and Protection Fund and the Stormwater Enterprise Fund. In FY 2014 60,222 square feet of green roofs were installed through the Green Roof Rebate Program, Table 15. To view information on DDOE's Green Roof Rebate Program go to <http://www.anacostiaws.org/programs/stewardship/green-roofs>.

Rain Barrel Rebate

Property owners who purchase and install approved rain barrels may apply for \$1/gallon rebate. The barrel must hold at least 50 gallons to qualify. The rebate program works well for homeowners interested in alternative rain barrel options from the RiverSmart rain barrel offered

through RiverSmart Homes. Some homeowners also opt for the rain barrel rebates because they want more than two rain barrels (RiverSmart Homes limits homeowners to two per property), or because they are interested in installing rain barrels on their own. In FY 2014 the Rain Barrel Rebate Program installed 99 rain barrels with a total capacity of 6,917 gallons, Table 7.

Table 7 FY 2014 Rain Barrel Rebate Installations

Rain Barrel Model	Number of Barrels	Capacity per Barrel (gallons)	Total Capacity
Aquabarrel Abe	1	80	80
Earth Minded Rain Station	4	60	240
RiverSafe	1	132	132
Terra Cotta Rain Wizard	1	65	65
Savanna Rain Saver	1	55	55
Stoneware Urn	1	50	50
60 Gallon	2	60	120
Upcycle	2	50	100
Build a Barrel with Diverter	1	100	100
500 Gallon	3	500	1500
Rainwater Urn	2	50	100
Home Accents	1	50	50
Palm	1	50	50
DG 55	75	55	4125
Flat Back Whiskey Barrel	2	50	100
Rainwater HOG 51	1	50	50
Total	99	1457	6917

The Rain Barrel Rebate Program includes outreach to advertise the program through traditional channels and through innovative approaches (e.g., partnerships with local hardware stores). Homeowners are eligible to receive up to two rebates per property. The Rain Barrel Rebate Program is administered by the nonprofit organization, DC Greenworks, and paid for through the Enterprise Fund and the Anacostia River Clean Up and Protection Fund. To view information on the Rain Barrel Rebate Program: www.ddoe.dc.gov/service/riversmart-homes-rain-barrels.

Shade Tree Rebate

The Shade Tree Rebate Program provides rebates to individuals who purchase and plant a tree on residential or commercial private property. Small and medium canopy trees are eligible for rebates up to \$50 per tree and select species noted for their large canopy and environmental benefits qualify for rebates up to \$100 per tree. In FY 2014, 328 trees were planted through the Shade Tree Rebate Program. To view information on the Shade Tree Rebate go to <http://ddoe.dc.gov/service/riversmart-rebates>.

The Rain Garden, Pervious Paver, and Impervious Surface Removal Rebate Program

The Rain Garden, Pervious Paver, and Impervious Surface Removal Rebate Program is for single-family homeowners in the District. The rebate is based on how many square feet of impervious area a property owner is treating with the rain garden or pervious pavers/impervious surface removal. Impervious areas can either be rooftops or areas that are covered in concrete, asphalt, or other impervious surfaces. The rebate reimburses homeowners \$1.25 per impervious square foot treated. The minimum square footage that a property owner must treat is 400 square feet, which would total a \$500 rebate. The maximum rebate is \$1,000 or treating 800 square feet or more of impervious surface. FY 2014 accomplishments are summarized in Table 8.

In FY2014 DDOE expanded the Rebate Program to offer special incentives to homeowners in the Bloomingdale Sewershed, one of the District's targeted watersheds. Available only to homeowners in fiscal 2014, the rebate program extended a \$10/square foot rebate for removing impervious surfaces and replacing them with permeable pavement, or \$5 per square foot for impervious surface removal. All rebate offers ended on September 30, 2014.

The program was available to single-family homes, condominiums, co-ops, apartments, locally-owned businesses, and houses of worship within the Bloomingdale Sewershed, and was funded by DC Water and managed by DDOE. The program's higher financial incentive and limited time offering lead to a significant increase in projects completed under the Rain Garden, Pervious Paver, and Impervious Surface Removal Rebate Program. The square footage of treatment area increased from 8,230.5 sq. ft. in FY 2013 to 36,618 sq. ft. in FY 2014.

The program complemented efforts of the Bloomingdale Sewershed Rain Barrel-Cistern Program, which offered a free rain barrel or cistern to help reduce stormwater runoff and reduce potential flooding in the area. The Rain Barrel-Cistern program ended in February 2014.

To view information on targeted incentives in the Bloomingdale Sewershed, visit: <http://ddoe.dc.gov/bloomingdalerebates>.

To view the Rain Garden, Pervious Paver, and Impervious Surface Removal Rebate application package, visit: <http://ddoe.dc.gov/publication/rain-garden-pervious-paver-and-impervious-surface-removal-rebate-application>

Table 8 FY 2014 Rain Garden, Pervious Paver, and Impervious Surface Removal Rebate Program Accomplishments

Project Number	Sewer System	Rain Garden Installations	Surface Removal Installations	Pervious Pavers Installations	Installation Date	Area Treated (sq./ft.)
22	MS4		x	x	10/2/2013	1000
19	CSS		x	x	10/9/2013	1282
23	CSS			x	10/3/2013	1235
21	CSS			x	10/3/2013	800
20	CSS		x	x	11/12/2013	900
5-R47	MS4			x	3/24/2014	952
4-R25	MS4	x			4/25/2014	600
5-R26	MS4		x		4/2/2014	495
5-R34	CSS	x			4/24/2014	700
5-R30	CSS	x			5/19/2014	800
5-R59	MS4	x			6/12/2014	670
5-R27	MS4			x	6/18/2014	405
4-R76	CSS			x	6/27/2014	960
3-R80	MS4	x			7/23/2014	465
6-R81	CSS			x	7/17/2014	1,020
5-R35	MS4	x			8/25/2014	460
6-R85	CSS			x	8/25/2014	920
4-R84	CSS			x	9/4/2014	1,290
5-R78	MS4		x		9/4/2014	1,500
1-R86	CSS			x	9/17/2014	880
5-R88	MS4	x			9/10/2014	636

Project Number	Sewer System	Rain Garden Installations	Surface Removal Installations	Pervious Pavers Installations	Installation Date	Area Treated (sq./ft.)
5-R66	MS4	x			9/25/2014	638
24	CSS		x	x	12/3/2013	1,350
	CSS		x	x	3/21/2014	814
1-B32	CSS		x		6/12/2014	412
5-B20	CSS		x	x	7/28/2014	431
1-B24	CSS		x	x	7/1/3014	551
5-B26	CSS			x	8/1/2014	492
5-B27	CSS			x	8/29/2014	640
1-B31	CSS		x	x	8/26/2014	340
1-B33	CSS			x	8/29/2014	4,606
1-B30	CSS			x	8/26/2014	508
5-B34	CSS			x	8/27/2014	530
5-B35	CSS			x	8/27/2014	651
5-B36	CSS			x	8/27/2014	290
5-B41	CSS			x	9/9/2014	558
5-B37	CSS			x	8/29/2014	598
5-B38	CSS			x	9/19/2014	1,038
5-B39	CSS			x	8/29/2014	500
1-B40	CSS			x	8/29/2014	342
1-B28	CSS		x		9/2/2014	143
5-B43	CSS			x	9/9/2014	437
5-B46	CSS			x	9/9/2014	381
5-B47	CSS			x	9/9/2014	345

Project Number	Sewer System	Rain Garden Installations	Surface Removal Installations	Pervious Pavers Installations	Installation Date	Area Treated (sq./ft.)
5-B45	CSS			x	9/8/2014	346
5-B42	CSS		x		7/29/2014	646
5-B44	CSS			x	9/24/2014	493
5-B48	CSS			x	9/12/2014	568
Totals	11 MS4 37 CSS	8	13	35		36,618 sq. ft.

Stormwater Retention Credit Trading

The Stormwater Retention Credit (SRC) Trading Program is an innovative market-based program for managing stormwater in the District of Columbia. The SRC Trading Program allows property owners to generate and sell SRCs by installing green infrastructure that has the capacity to retain stormwater and thereby reduce the runoff that harms District streams and rivers. An SRC is worth one gallon of retention for one year, and regulated development sites buy and use SRCs to meet their regulatory requirements for retaining stormwater runoff. Information on the FY 2014 implementation of the SRC Trading Program can be found in Section 4.1.3 of this report. To view information on the Stormwater Retention Credit Trading Program: <http://ddoe.dc.gov/src>.

RiverSmart Rewards

DDOE established RiverSmart Rewards (RSR), DDOE's Stormwater Fee Discount Program, on July 19, 2013 upon promulgation of regulations published in 60 DCR 10732, amending Title 21, Chapter 5 to include Sections 557 through 563, and 559.

RiverSmart Rewards offers a discount of up to 55% off the DDOE Stormwater Fee charged on a property's water and sewer utility bill. In order to be eligible for a discount, a property must install and maintain green infrastructure practices that function to retain stormwater runoff. Eligible green infrastructure practices include bioretention, rainwater harvesting, permeable pavement systems, green roofs, and newly planted or preserved trees. All stormwater management practices assigned a retention value in DDOE's 2013 Stormwater Management Guidebook qualify for a discount. Discounts are available for three-year periods and are renewable.

DDOE calculates discounts based on the volume of stormwater retained by eligible green infrastructure practices. The maximum discount of 55% is provided when a property manages

the 1.2” storm event, and the discount is scaled back proportionately for properties that manage less stormwater.

In FY14, DDOE launched a Simple Application available to properties with green infrastructure practices managing stormwater from less than 2,000 square feet of impervious area. Most RiverSmart Homes participants qualify to use the Simple Application. DDOE uses a web-based data management system to track discount applications, approvals, and disapprovals. DDOE also coordinates administration of RiverSmart Rewards with DC Water, which established a discount program on October 1, 2013 for its Clean Rivers Impervious Area Charge (IAC). When a property is approved for a RiverSmart Rewards discount, it is also automatically eligible for DC Water’s Clean Rivers IAC Incentive Program. DDOE received 83 discount applications in FY 2014. To view information on RiverSmart Rewards go to <http://ddoe.dc.gov/riversmartrewards>.

FY 2015 Goals: The District will continue to implement green landscaping incentive programs. This will include all the listed RiverSmart Programs, GAR, SRC and RSR.

4.1.5 Retrofit Program for Existing Discharges

4.1.5.1 Retrofit Plan

DDOE submitted the District’s draft Retrofit Plan on January 22nd, 2014. This plan establishes performance metrics that will be utilized to track progress in retrofitting existing impervious surfaces throughout the District, as required by Section 4.1.5.1 of the District’s MS4 Permit. These metrics are consistent with the District’s stormwater management regulations and guidance document that require development projects to retain stormwater runoff. In addition, these performance metrics present a methodology for crediting the area of retrofits for projects that achieve more or less than the 1.2” retention standard. To view the District’s Draft Stormwater Retrofit Plan and calculator utilized to determine retrofit credit: <http://ddoe.dc.gov/stormwaterretrofitplan>.

4.1.5.2 Federal Facilities

The District does not have jurisdiction over federal lands to require the installation of structural retrofits to control stormwater pollutants that originate on federal lands. However, the District partners with many federal agencies to control stormwater runoff and to protect the Chesapeake Bay.

The EPA Chesapeake Bay Program is active in overseeing all other jurisdictions as they implement the Bay-wide TMDL. They also oversee the Watershed Implementation Plans (WIPs) being implemented by each state and the District of Columbia. The DC WIP outlines all the BMPs and actions that each federal agency committed to perform on their District properties. Many federal agencies have reported making substantial progress on these BMPs, with only a few agencies reporting they lack budget for the activities listed.

Additionally, the District worked with federal agencies, EPA Region III, and the Bay Program to develop and sign an MOU, which commits the signatories to work with DDOE on stormwater-related activities, particularly the items outlined in the WIP.

4.1.5.3 Volume and Pollutant Reductions

DDOE calculated the potential pollutant load and volume reductions achieved through the DC Retrofit Program. Table 9 details the runoff reductions from retrofit projects in the District.

In addition to stormwater runoff volume reductions, DDOE estimated potential pollutant load reductions resulting from these retrofit projects for bacteria (i.e., fecal coliform), nitrogen, phosphorus, suspended solids, copper, lead, zinc, cadmium, and trash, as shown in Table 10. Load reduction estimates for conventional pollutants are based on BMP removal efficiencies contained in the 2005 TMDL Wasteload Allocation (WLA) Implementation Plans for the Rock Creek and Anacostia Watersheds. Load reductions for trash are based on the trash loading coefficients developed for the Anacostia Trash TMDL. These methodologies will be revisited and updated as the District begins to develop its Consolidated TMDL Implementation Plan. For example, estimates for fecal coliform will be updated to estimate *E. coli*. BMP pollutant removal efficiencies will be updated as necessary for other pollutants of concern, as well.

Table 9 Stormwater Retained from Retrofit Projects

Watershed	Impervious Surface Retrofitted (square feet)	Runoff Retained (gallons)
Anacostia	335,672.45	13,676,879.69
Rock Creek	168,012.15	2,056,440.01
Potomac	129,567.40	1,353,380.43
City Wide	35,389.00	1,188,832.24
Total	668,641	18,275,532.37

Table 10 Pollutant Load Reduction from Retrofit Projects

Watershed	Fecal Coliform	TN	TP	TSS	Cu	Pb	Zn	Trash	Ca
Anacostia	2.12E+12	53.79	8.57	2171.18	1.92	8.75E-01	4.71E+00	1038878.96	9.58E-01
Rock Creek	1.73E+12	32.00	4.86	1242.84	1.03	4.59E-01	2.63E+00	0	5.03E-01
Potomac	3.26E+10	16.96	3.03	752.89	0.79	3.78E-01	1.75E+00	0	4.14E-01
City Wide	2.80E+11	6.97	1.05	268.44	0.22	9.68E-02	5.65E-01	0	1.06E-01
Total	4.16E+12	109.72	17.51	4,435.35	3.96	1.81	9.65	1,038,878.96	1.98E+00

4.1.5.4 Numeric Performance Requirement

In FY 2014, the District retrofitted 668,635 square feet of impervious surface, see Table 12. Since the start of the Permit Term in 2012 the District has retrofitted a total of 2,347,682 square feet of impervious surface. Data reported in Table 12 has been normalized to the 1.2” using the calculator included in the District’s Stormwater Retrofit Plan. Table 12 does not include data from projects that are regulated by the District’s Stormwater Management Regulations.

Tracking and reporting of retrofit projects under the Stormwater Management Regulations has been limited under the Stormwater Management Database. Once the new BMP Database is fully implemented and populated with historic data Table 12 will be updated.

DDOE is on track to meet the 18,000,000 square foot performance goal. To achieve 18,000,000 square feet of treatment, the District is implementing a wide range of stormwater management controls. Since many of these projects will be large, multi-year capital projects, the amount achieved each year will vary and cannot readily be broken down into an annual goal. The 2013 Rule on Stormwater Management and Soil Erosion and Sediment Control (2013 Stormwater Rule) will be a critical driver of retrofits in the District. The vast majority of development projects in the District involve the redevelopment of existing impervious surfaces. On average, regulated development projects disturb approximately 15 million square feet of land per year. Further, Major Substantial Improvement projects will result in a significant amount of additional stormwater retrofits. The 2013 Stormwater Rule took effect in July 2013 and the District expects to see the retrofit figures increase substantially in the near future. The Performance Standards went into effect in January 2014 for new projects going through the permitting process. The District expects retrofits to increase as projects under these new performance standards are constructed over the remainder of the Permit term. DDOE will continue to report on this Permit requirement in future Annual Reports.

The District covers 39,202 acres with a total of 16,997 acres of impervious cover, Tables 11. Table 11 fulfils the requirements of Section 6.2.1.n of the MS4 Permit. Section 6.2.1.0 requires the District to calculate the effective impervious surface reduced annually through projects that meet the performance standard. The District has created a new BMP tracking database and data is currently being migrated into it. Once the new BMP tracking database has been completely populated the District will report on the requirements of Section 6.2.1.0. Until that time the District will report on the percent of impervious surface reduced annually through the District Retrofit Program. The District continues to report on the number and square footage of practices installed, see Table 12.

Table 11 Total District Land Area by Watershed

Watershed	Land Area (square feet)	Impervious Surface (square feet)	Percent Impervious Surface	Percent of Impervious Surface Reduced Annually through the District Retrofit Program
Anacostia River	768,246,713	342,734,924	44.6	.098
Potomac River	518,360,312	237,976,429	45.9	.054
Rock Creek	421,040,752	159,678,779	37.9	.105
Total	1,707,647,777	740,390,132	43.4	.257

Table 12 Completed Retrofit Projects in FY 2014

Projects	Number of Practices	Total size	Impervious Surface Retrofitted (square feet)	Stormwater Runoff Retained (gallons)
Projects in the PROW	NA	234,912.00	234,912	3,421,432
Green Roofs ⁵	18	148,908.00	147,233	2,789,374
RiverSmart Homes Rain Barrels ¹	475	99,750.00	98,628	1,934,591
RiverSmart Homes Rain Gardens ²	126	56,700.00	56,062	1,099,657
RiverSmart Homes Bayscaping	130	58,500.00	57,842	842,454
RiverSmart Homes Permeable Pavers ³	27	12,150.00	12,013	235,635
RiverSmart Schools Cisterns ⁴	1	500 gallon	NA	NA
RiverSmart Schools Bioretention ⁶	2	4,585.00	4,782	93,799
RiverSmart Schools Green Roof ⁵	1	300.00	286	5,610
RiverSmart Communities Rain Gardens	2	595.00	568	11,141
RiverSmart Communities Permeable Pavers	1	820.00	783	15,359
RiverSmart Impervious Surface Removal Rebates	48	36,618.00	34,970	685,937
Rain Barrel Rebate	99	20,790.00	20,556	403,206
Total	930	674,628.00	668,635	11,636,800

¹RiverSmart Homes rain barrels are assumed to treat 210 sf of rooftop area to the 1-inch level.

²RiverSmart Homes rain gardens assumed to retain 1 inch of runoff from 450 sf of impervious surface.

³RiverSmart Homes permeable pavers assumed to retain 1 inch from retrofitted surface area.

⁴RiverSmart Schools cisterns are 500 gallons.

⁵Green roof calculations assume a 4-inch roof depth and 25 percent porosity for all roofs, for an assumed 1-inch retention capacity.

⁶RiverSmart Schools bioretention cells assumed to retain 1 inch from impervious parking lots.

For FY 2014, the following project types were counted towards meeting our retrofit performance standard.

Impervious Surface Removal in the Public Right-of-Way

DDOT's Impervious Surface Removal Project has focused on increasing the green space within the PROW of DDOT roadways. This was accomplished through a combination of practices including tree box expansion, tree box creation, continuous strip creation, and large area greening. DDOT continued the Impervious Surface Removal Project in FY14 at I St NE from 12th St to 14th St, at 8th St, 9th St, & Q St NW, and at 7th St & H St NW. As part of DDOT's sidewalk paving program, impermeable pavement is being replaced with porous flexible rubber sidewalk in areas where tree roots have raised the pavement.

Green Median Renovation

Existing medians that are finished with a hardscape such as brick, concrete or, pavers were renovated by removing this impervious surface, and replacing with a turf or mulched surface and planting street trees. These changes to the streetscape resulted in reductions to the amount of stormwater entering the sewer system and ultimately the District's waterways. The increase in planting locations resulted in an expansion in the Urban Tree Canopy. View information about DDOT's Green Median and Impervious Surface Removal Projects:

<http://ddot.dc.gov/DC/DDOT/On+Your+Street/Urban+Forestry/ARRA+Projects+to+Enhance+Urban+Tree+Canopy+and+Increase+Green+Infrastructure>.

Green Alleys

DDOT's Green Alley Projects are designed to reduce the quantity and improve the quality of stormwater within the District's PROW. Although alleys constitute a significant portion of impervious surface, most do not have stormwater controls, such as water quality catch basins or grate inlets. To mitigate this, Green Alley Projects use sustainable design and LID techniques that reduce the amount of stormwater and pollutants entering the sewer system by increasing water infiltration and treatment on site. The Chevy Chase Green Alley was completed in FY 2014 using pervious concrete in partial and full width sections. A portion of this alley is located in the RiverSmart Washington project area. A list of completed and upcoming Green Alley Projects is available at <http://ddot.dc.gov/GreenAlleys>.

Green Roofs

Details of the District's green roof installations are outlined in Section 4.1.7 of this report.

RiverSmart Programs

Details of the District's RiverSmart installations are outlined in Section 4.1.4 of this report.

RiverSmart Washington

The RiverSmart Washington project, a public-private sector partnership, is installing practices to reduce stormwater volume runoff in two neighborhoods. Construction started on the joint in

March 2014. The project is constructing bioretention and permeable pavement in streets and alleys of two neighborhoods in the Rock Creek Watershed. The MacFarland Petworth project area in the Combined Sewer System (CSS), is a row home neighborhood with small businesses and a school. The Lafayette Chevy Chase project area in the MS4 area contains medium density residential properties. The RiverSmart project is installing four green alleys, one full width permeable pavement roadway section, 16 permeable paving street parking lanes, 17 bioretention, and planting trees. Permeable pavement is being installed in several street parking lanes and one full section of a local residential roadway to demonstrate the feasibility and durability of permeable pavement use in the road. When RiverSmart Washington is finished in spring 2015, runoff from over six acres of ROW pavement will be retained. The total volume reduction will be monitored and measured in FY15 after construction is complete.

Retrofit Projects in the Public Right-of-Way

FY 2014, DDOT retrofitted 234,912 square feet of impervious surface in the PROW, Table 13. To date 779,142 square feet of the PROW have been retrofitted.

DDOT coordinated with other public and private groups to retrofit PROW areas for stormwater retention. In May 2014, the Golden Triangle Business Improvement District completed the 19th St NW bioretention areas at the intersection with L St NW. A bioretention on each of four corners collects street and sidewalk runoff and serves as a high profile demonstration project in the dense downtown neighborhood and high volume business district.

DC Water installed 14 bioretention areas along Irving St NW in the CSS area to retain street runoff and help mitigate flooding in the Bloomindale neighborhood.

DDOE managed the Broad Branch Stream Restoration project which included bioretention areas to retain runoff from alleys adjacent to the stream.

In FY14, DDOT completed several LID/GI retrofit design projects that will be constructed in FY15. These retrofit sites include East Beach Drive NW, Fitch Pl NE, Erie St SE, and Ft Dupont St SE using bioretention areas, bumpouts, and permeable pavements. The Q St Green Alley at 45th St will be constructed with bioretention planters and permeable pavers. The Normanstone Drive LID retrofit design is completed, but construction is on hold.

DDOT has been increasing use of stormwater treatment, retention, LID, and GI in major road construction projects. DDOT projects are being reviewed for GI retrofit opportunities and for compliance with new regulations. Several projects in design and construction in FY14 are subject to the pre-2013 stormwater regulations. In FY14, the 11th St Bridge project constructed two stormwater management ponds to meet the water quality treatment requirements. Of the three remaining bioretention areas in the 11th St Bridge project, two were replaced with Stormceptors due to contaminated soil and one will be constructed in FY15.

DDOT has several projects that completed design in FY14 and will start construction in FY15 which were not required to meet the new stormwater regulations. The Klinge Trail project includes a permeable pavement trail and several bioretention areas and swales to capture runoff before it flows into Klinge Run. Minnesota Ave NE will have multiple blocks with stormwater

planters in the streetscape to reduce and treat runoff in the Watts Branch watershed. The intersection redesign at 15th St, V St, & W St NW includes several bioretention planters and bumpouts to reduce runoff into the CSS. The Florida Ave NW project between U St and Sherman Ave includes several bioretention areas, larger tree soil volumes, and reduced impervious surface in this CSS neighborhood to mitigate flooding.

Several new design projects are required to meet the new stormwater regulations and are following the maximum extent practicable (MEP) process. The following projects started design in FY14 and will continue design in FY15: Oregon Ave NW, Virginia Avenue Tunnel street restoration, and Anacostia Streetcar Line Northern Terminus. The following projects developed concept plans in FY14 based on the MEP requirements and design build contracts will be awarded in FY15 to complete the plans: South Capitol St Bridge Phase 1 & 2 and the South Capitol St Trail. Overall, the DDOT Stormwater team assisted or reviewed 27 DDOT design and planning projects for stormwater retention opportunities or compliance with the new stormwater regulations.

Table 13 Completed Retrofit Projects in the PROW

Site Name	Sewershed	Watershed	Type (treatment or storage)	Impervious Area Treated (square feet)	Impervious Area Treated (acres)
I Street NE 1200 - 1300 Blocks	CSS	Anacostia	Paving Removal, tree box expansion, & street tree planting	2,751	0.06
8th, 9th and Q Street NW	CSS	Anacostia	Paving Removal, tree box expansion, & street tree planting	4,180	0.10
7th and H Street NW	CSS	Potomac	Paving Removal, tree box expansion, & street tree planting	249	0.01
Flexipave sidewalk Installations	Citywide	citywide	Permeable Paving	35,140	0.81
Bloomingdale Irving St GI 1	CSS	Anacostia	Bioretention	5,427	0.12
Bloomingdale Irving St GI 2	CSS	Anacostia	Bioretention	4,541	0.10
Bloomingdale Irving St GI 3	CSS	Anacostia	Bioretention	7,289	0.17

Site Name	Sewershed	Watershed	Type (treatment or storage)	Impervious Area Treated (square feet)	Impervious Area Treated (acres)
Bloomingtondale Irving St GI 4	CSS	Anacostia	Bioretention	2,010	0.05
Bloomingtondale Irving St GI 5	CSS	Anacostia	Bioretention	4,322	0.10
Bloomingtondale Irving St GI 6	CSS	Anacostia	Bioretention	8,206	0.19
Bloomingtondale Irving St GI 7	CSS	Anacostia	Bioretention	19,004	0.44
Bloomingtondale Irving St GI 8	CSS	Anacostia	Bioretention	0	0.00
Bloomingtondale Irving St GI 9	CSS	Anacostia	Bioretention	7,707	0.18
Bloomingtondale Irving St GI 10	CSS	Anacostia	Bioretention	13,631	0.31
Bloomingtondale Irving St GI 12	CSS	Anacostia	Bioretention	15,890	0.36
Bloomingtondale Irving St GI 13	CSS	Anacostia	Bioretention	7,135	0.16
Bloomingtondale Irving St GI 14	CSS	Anacostia	Bioretention	6,150	0.14
Bloomingtondale Irving St GI 15	CSS	Anacostia	Bioretention	4,833	0.11
Broad Branch Daylight project stormwater facility # 1	MS4	Rock Creek	Bioretention	36,193	0.83
Broad Branch Daylight project stormwater facility # 2	MS4	Rock Creek	Bioretention	10,867	0.25
Green Alley Quesada, Rittenhouse	MS4	Rock Creek	Permeable Paving	19,178	0.44
19th St & L St NW - Golden Triangle BID	CSS	Potomac	bioretention (4 facilities)	20,000	.46
2033 G St NW - George Washington University	CSS	Potomac	tree space expansion	210	.0048
TOTAL				234,912	5

4.1.5.5 Substantial Improvement Projects

As part of the 2013 Stormwater Rule, finalized on July 19, 2013, the District created the regulatory mechanism that will implement a stormwater retention performance standard for substantial improvement projects. The stormwater retention performance standards will be triggered by two different categories of projects:

- A) Sites that disturb 5,000 square feet (SF) or more of land will be required to retain the stormwater from a 1.2 inch storm, either on site or through a combination of on-site and off-site retention. The disturbance of 5,000 SF of land has been the trigger under the stormwater management regulations established in 1988. These projects are referred to as major land-disturbing activities.
- B) Major substantial improvement projects, which are renovations of existing structures that have a combined building and associated land disturbance that is 5,000 SF or more and for which the project cost exceeds 50% of the pre-project value of the structure, will be required to retain the volume from a 0.8 inch storm. This is a new trigger.

More information about the 2013 Stormwater Rule can be found at <http://ddoe.dc.gov/swregs>.

4.1.5.6 District-Owned Properties

As required under Section 4.1.5.6 of the MS4 Permit DDOE continues to work with the DGS Office of Sustainability and Energy Management to identify retrofit project opportunities, as well as to incorporate LID into new construction. DGS staff participates in monthly MS4 TWG meetings, and the Director of DGS is a member of the SWAP.

FY 2015 Goals: DDOE will continue to fund and install LID throughout the District through various programs. Additionally, the District will track and report retrofit installations and progress towards meeting the District's performance goal of retrofitting 18,000,000 square feet of impervious surface. DDOT will monitor and measure the total volume reduction after RiverSmart Washington construction is complete. Construction will begin at East Beach Drive NW, Fitch Pl NE, Erie St SE, and Ft Dupont St SE using bioretention areas, bumpouts, and permeable pavements. The Q St Green Alley at 45th St will be constructed with bioretention planters and permeable pavers. The Normanstone Drive LID retrofit design is completed, but construction is on hold. In FY 2015, DDOT will design neighborhood wide GI retrofits in the Klinge watershed to complement the Klinge Trail project and in the LeDroit Park area to mitigate flooding. DDOT will expand the Green Alley program and design several sites city wide. Design will start on GI retrofits in the ROW in Alger Park NE, Oregon Ave NW watershed, and Dix St NE.

4.1.6 Tree Canopy

4.1.6.1 Tree Canopy Plan

In January 2013, DDOE and DDOT's Urban Forestry Administration (UFA) published the District's Draft Urban Tree Canopy Plan for public comment in the D.C. Register. In March 2013, DDOE and UFA had a conference call with EPA Region III where EPA provided initial feedback to the plan. During this conference call EPA Region III stated that they would also

provide written comments. The District agreed to respond to EPA and other stakeholder comments by incorporating appropriate changes to the Draft Urban Tree Canopy Plan and creating a response document to each comment received. DDOE has received comments from EPA. To view the Draft Urban Tree Canopy Plan: <http://ddoe.dc.gov/treecanopyplan>.

4.1.6.2 Tree Planting in the District

In an effort to improve air and water quality, reduce the urban heat island effect, and offset greenhouse gas emissions, the District has adopted a 40 percent tree canopy goal. Currently, UFA plants and maintains the District’s street trees. DDOE, with help from nonprofit partners such as Casey Trees and Washington Parks and People, plants trees on private, federal, and other District lands. Additionally, DDOE offers a rebate to District homeowners who wish to plant a tree from the approved species list. To view information about UFA’s Tree Planting Program see <http://ddot.dc.gov/node/509082-ufa>. To view information about DDOE’s Shade Tree Rebate Program see <http://green.dc.gov/service/riversmart-homes-shade-tree-planting>.

As required by Section 4.1.6.3 of the MS4 Permit Table 14 documents tree planting efforts in FY 2014. Appendix B includes a map of FY 2014 citywide street tree planting.

Research estimates that street tree annual survival rates ranged from 94 to 97 percent. Based on this research the District is assuming a 5 percent mortality rate. Using this assumption, the District has achieved a net increase of 11,013 trees in FY 2014 with a net increase of 6,413 in the MS4.

Table 14 Trees Planted by Program for FY 2014

Program	Trees Planted Districtwide	Trees Planted in MS4 Area
RiverSmart Homes Tree Planting	634	NA
Casey Trees Tree Planting	1,539	1,326
UFA Districtwide Tree Planting	8,796	5,138
Tree Rebates	322	NA
Stream Restoration Tree Planting	273	273
Washington Parks and People Tree Planting	29	13
Total Trees Planted	11,593	6,750
Net Trees Planted¹	11,013	6,413
Estimated Annual Stormwater Volume Reduction (gallons)^{2,3,4}	11,804,835	7,235,325

1 5% tree mortality rate

2 1 inch of rainfall per acre is equal to 27,000 gallons of stormwater

3 Assumed 39.7 inches of average rain fall per year

4 CWP credits a 10% reduction in stormwater from tree cover

According to the 2013 Tree Report Card (the most recent report) by Casey Trees, the District tree canopy has currently been assessed at 36 percent. DDOE and UFA are currently building capacity to track tree mortality and replacement tree survival. This will help the District meet its tree canopy goals.

FY 2015 Goals: For FY 2015, DDOT has committed to plant 10,000 street trees across all eight Wards. Through its RiverSmart Homes and Tree Rebate programs, DDOE anticipates the planting of over 1,000 trees on private property in the District. Finally, DDOE will be undertaking two stream restoration projects which will also involve planting hundreds of trees.

Additionally, as part of Sustainable DC initiative the District complete tree-planting plans for schoolyards and public parks for these funds. The Sustainable DC Act of 2013 requires payment to immediately offset the destruction or removal of a tree. This change will allow the District Government to plant replacement trees on public space throughout the city to more rapidly replace lost trees and help achieve the citywide 40% tree canopy goal.

4.1.7 Green Roof Projects

4.1.7.1 Structural Assessment

In FY 2014 DGS completed a draft DC Smart Roof Cost-Benefit Report that estimates the costs and benefits of applying cool, green, or solar roofs on District owned buildings. The final report will be included in a future Annual Report.

4.1.7.2 Green Roof Installations

The District continues to aggressively retrofit existing rooftops and install new green roofs on District building. In FY 2014, the District installed:

- ◆ 148,908 square feet of green roofs Districtwide
- ◆ 18,089 square feet of green roofs were installed in the MS4 area
- ◆ 60,222 square feet of green roofs through the RiverSmart Rooftops Program
- ◆ 752,013 square feet of green roofs have been installed since the start of the Permit term
- ◆ 2,789,374 gallons of stormwater retained through green roof installations

4.1.7.3 Green Roof Tracking

DDOE continues to track green roof projects as required by Section 4.1.7.3 of the MS4 Permit. DDOE is regularly updating the database as additional green roofs are installed and verified through our inspection program. Table 15 has a detailed summary of District green roof installations in FY 2014.

Table 15 Summary of District Green Roof Installations Completed in FY 2014

Watershed	Sewershed	Project Name	Ownership	Size (square feet)	Green Roof Rebate Program
Potomac	CSS	Georgetown Post Office	Private	1,050	N
Anacostia	MS4	Howard University	Private	2,142	Y
Potomac	CSS	Potomac Plaza	Private	20,919	Y
Potomac	CSS	CSIS	Private	3,682	Y
Anacostia	CSS	American Psychological Association	Private	2,603	Y
5000 Overlook Ave SW		Fort Reno Reservoir	DC Water	42,390	N
Anacostia	CSS	Washington Gateway	Private	15,400	N
Anacostia	CSS	residential	Private	133	Y
Anacostia	CSS	Northwest One	Private	11,875	N
Anacostia	MS4	Friendship School	Municipal	7,478	Y
Anacostia	CSS	Carlos Rosario Intl. School	Private	3,500	N
Potomac	CSS	GWU - MISPH (950 NH Ave NW)	Private	5,860	Y
Anacostia	MS4	DCPCA		8,469	Y
Anacostia	CSS	United Methodist - General Board of Church and Society	private	6,800	Y
Anacostia	CSS	The Harper	Private	3,516	N
Rock Creek	CSS	Raymond Rec Center	Municipal	5,540	N
Anacostia	CSS	77 H	Private	5,415	N
Rock Creek	CSS	IMF Concordia	Private	2,136	Y
Total size (square feet)				148,908	
Total size in MS4 (square feet)				18,089	
Total installed through Green Roof Rebate Program (square feet)				60,222	
Total size normalized to 1.2" using the Draft Stormwater Retrofit Plan Calculator (square feet)				142,207	

FY 2015 Goals: DDOE will continue tracking, inspecting and funding green roof installations throughout the District of Columbia. DGS and DDOE will continue to report on the progress of the green roof structural assessment grant and meeting the green roof numeric requirement of the MS4 Permit.

4.2 Operation and Maintenance of Stormwater Capture Practices

4.2.1 District-Owned and Operated Practices

District included operation and maintenance requirements for retention practices and non-retention BMPs in the updated 2013 Stormwater Management Guidebook (2013 SWMG), which was finalized in July 2013. The 2013 SWMG is available at <http://ddoe.dc.gov/swguidebook>.

DDOE has held several sessions specifically for District staff. Agencies that have participated in these trainings include DDOE, DDOT, DGS, DCRA, DC Water, and DHCD. In FY 14, these trainings included:

- Two trainings on the MEP process for reconstruction of the PROW for roadway reconstruction projects
- Three sessions on general compliance with DDOE's stormwater regulations

DDOE also holds recurring meetings and training for DDOE staff, including plan reviewers and inspectors. This In FY 14, DDOE held 16 internal training sessions. DDOE plan reviewers meet regularly to discuss issues in the implementation of the regulations and receive training on topics including compliance calculations and unusual site conditions.

DDOE began development of a database to manage submission, review, and inspection of Stormwater Management Plans, Erosion and Sediment Control Plans, and Green Area Ratio Plans. The database will also incorporate all functions of the interim database that has been used for the SRC Trading and RiverSmart Rewards (RSR) programs. DDOE has previously submitted documentations regarding the functions and elements of the BMP database.

Members of the public will use the database to submit information to DDOE as part of the plan review and approval process. The database tracks each site's regulatory obligations and compliance, including off-site retention achieved with SRCs or payment of ILF. The database also calculates and tracks discounts in the RiverSmart Rewards program, inspection reports, as well as keeps an inventory of all practices on private property.

Public users may use the database to:

- Submit compliance calculations and other information to support an application for DDOE approval of a Stormwater Management Plan, Erosion and Sediment Control plan, or Green Area Ratio plan
- Comply with an off-site retention obligation by applying to use SRCs or notifying DDOE of an in-lieu fee payment

- Apply to certify, transfer, or retire SRCs
- View the Stormwater Retention Credit (SRC) registry
- Apply for a RiverSmart Rewards discount on the District's stormwater impervious fees

After completing applications, public users submit them electronically to DDOE. The database notifies DDOE of new applications. Staff review and make a decision to approve or disapprove each application and the database notifies public users of DDOE's decision.

After developing the database, DDOE held four meetings with a group of project engineers from the development community to test and revise the database. DDOE has also completed an internal testing period. DDOE is incorporating edits and working with a contractor to improve some functions of the database before an open release in FY 2015.

The District has expanding educational training for District agency employees, particularly with regard to Stormwater Pollution Prevention techniques and good housekeeping training.

FY 2015 Goals: DDOE has schedule additional training for District staff. These include training on BMP design, one-on-one "office hours" with DDOE staff for engineers who are developing Stormwater Management Plans, and training on the use of DDOE's Stormwater Management Database.

4.2.2 Non-District-owned and Operated Practices

As stated in Section 4.2.1, DDOE included operation and maintenance protocols in Chapter 5 of the 2013 SWMG, see <http://ddoe.dc.gov/swguidebook>.

Information about the electronic inventory of practices on private property can be found in Section 4.2.1. The new Stormwater Management Database is how the District will track non-district owned practices. All non-District properties are subject to inspection through DDOE's inspection and enforcement program. More information about DDOE's inspection and enforcement program can be found in Section 4.6.

FY 2015 Goals: DDOE will launch the updated BMP tracking database in early FY 2015.

4.2.3 Stormwater Management Guidebook and Training

On July 19, 2013 DDOE released the 2013 Stormwater Management Guidebook (2013 SWMG), which provides technical guidance on complying with the 2013 Stormwater Rule, as required by Section 4.2.3.1 of the MS4 Permit. The SWMG is available at ddoe.dc.gov/swregs. The webpage also contains a link to downloadable versions of several spreadsheets developed to assist with determining project compliance, and calculating SRCs that a project could earn. The available spreadsheets include the "General Retention Compliance Calculator" tool, a series of worksheets for the application and review of the proposed Maximum Extent Practicable (MEP) for the reconstruction of existing PROW, and an SRC Calculator to be used by SRC trading program participants.

As required by Section 4.2.3.2 of the Permit, DDOE holds training sessions for the public and District staff. DDOE also sends out updates to the stormwater stakeholder list of over 900 engineers, nonprofits, utilities, and government agencies. Information and schedules for upcoming Stormwater Guidebook training: <http://green.dc.gov/node/619262>

FY 2015 Goals: DDOE has committed to ensuring that interested stakeholders have the opportunity to participate in training sessions and will continue to add trainings based on stakeholder and public interest. A list of upcoming trainings can be found at <http://green.dc.gov/node/619262>.

4.3 Management of District Government Areas

4.3.1 Sanitary Sewage System Maintenance Overflow and Spill Prevention Response

As required by Section 4.3.1 of the MS4 Permit DC Water continues to implement an effective response protocol for overflow events. This protocol includes:

- ◆ Investigating complaints received within 24 hours of the incident report as outlined in the DC Water Emergency Command Center procedures and required by the DC Water All-Hazard Initial Response Actions Plan (2010).
- ◆ Responding within two hours to overflows for containment. Instructions on overflow response is located in the DC Water Sewer Emergency Containment Plan (2013) and DC Water All-Hazard Initial Response Actions Plan (2010).
- ◆ Notifying appropriate sewer and public health agencies within 24 hours when the sanitary sewer overflows to the MS4. Agencies are notified within 24 hours (per permit requirements) as identified in the DC Water Sewer Emergency Containment Plan (2013), DC Water Crisis Communication Plan, and the DC Water All-Hazard Initial Response Actions Plan (2010).
- ◆ Notifying the public in a timely and effective manner in the event of a discharge into the MS4 that may adversely affect public health. The procedures for notification are contained in the DC Water Crisis Communication Plan.

Due to confidentiality restrictions, the District cannot submit DC Water's All-Hazard Response Action Plan and Crisis Communication Plan at this time. However, these documents will be made available for review during the next EPA inspection and audit.

FY 2015 Goals: The District and DC Water will continue to coordinate to implement the provisions of Section 4.3.1 of the MS4 Permit. DC Water will continue to maintain a response and notification protocol.

4.3.2 Public Construction Activities Management

The District continues to comply with the construction and development requirements outlined in Section 4.3.2 of the MS4 Permit. Details of the construction management program are found in Section 2.6 of this report.

4.3.3 Vehicle Maintenance / Material Storage Facilities / Municipal Operations

Pollution Prevention

DDOE increased efforts to provide assistance to District agencies, including material storage facilities and equipment storage, in developing Stormwater Pollution Prevention Plans (SWPPPs) to better address spills and contingencies at their facilities. In 2012 DDOE created a staff position to focus on pollution prevention training and implementation. Since then, DDOE has held 17 training sessions for 101 staff at various levels that represented 6 agencies and 76 facilities. DDOE has also worked with sister agencies to develop, implement and update SWPPPs for appropriate facilities. Currently, two agencies have completed SWPPPs and a remaining four agencies will complete their plans in FY15. DDOE is also working with sister agencies to develop a self-inspection and reporting process to assure on-going compliance with pollution prevention practices. The District’s Office of the City Administrator facilitated a meeting with agency directors on September 24, 2014 to assure agency commitments to finalize and implement SWPPPs.

DDOE has also improved the database that tracks the inspection of sister agencies to assure that facilities are inspected and maintained.

District Fleet

DPW elected to purchase alternative fuel vehicles (AFVs) to reduce particulate vehicle emissions that contribute to stormwater runoff, Table 17.

Table 16 District Alternative Fuel Vehicles Fleet

Vehicle	Number of DPW Maintained Vehicles	Other Agency Maintained Vehicles (MPD, DCPS, FEMS, WASA)	Totals
Biodiesel	895	836	1,731
E85	647	97	768
Natural Gas	154	45	202
Hybrid	97	3	100
Total	1,820	981	2,801

FY 2015 Goals: DDOE will establish a schedule to inspect municipal vehicle maintenance, material storage, and operations facilities. DDOE will work with District agencies to finalize or

update SWPPPs for DGS, DC Water, DCHA, DPW, and DDOT. DPW will continue to maintain and purchase additional AFVs as needed.

4.3.4 Landscape and Recreation Facilities Management, Pesticide, Herbicide, Fertilizer and Landscape Irrigation

On May 30, 2014, DDOE published a Notice of Proposed Rulemaking for the District of Columbia Pesticide Operation Regulations in the *D.C. Register*. This Draft rulemaking implements the provisions of the Pesticide Education and Control Amendment Act of 2012 and amends and reorganizes the District's existing pesticide regulations. The public notice is available at <http://green.dc.gov/page/public-comments-district-columbia-pesticide-operation-regulations>.

As required by Section 4.3.4.1 of the MS4 Permit, the District has an Integrated Pest Management (IPM) and Nutrient Management Program that is intended to inform the public on the proper use and disposal of pesticides and the use of safer alternatives. DDOE's RiverSmart Homes and RiverSmart Communities programs provide educational materials designed for homeowners and property managers. These programs encourage IPM at all project sites.

Additionally, the District has several laws and guidance documents pertaining to IPM:

- 20 DCMR Section 2215 of the District of Columbia Pesticide Operation Regulations requires District agencies to utilize an integrated pest management policy to reduce pesticide application on public rights-of-way, parks, District-occupied buildings, and other District property, as required by the District's MS4 Permit (Notice of Proposed Rulemaking, 61 D.C. Reg. 5432. (May 30, 2014))
- The Anacostia Waterfront Environmental Standards Amendment Act of 2012 (D.C. Official Code § 2-1226.36(b)(4)) requires regulated projects in the Anacostia Watershed Development Zone (AWDZ) governed by this legislation to receive a DDOE-approved IPM Plan
- The Sustainable DC Act of 2012 (D.C. Official Code § 8-104.01 *et seq.*), which included The Anacostia River Clean Up and Protection Fertilizer Amendment Act of 2012
- The Pesticide Education and Control Amendment Act of 2012 (D.C. Official Code § 8-431 *et seq.*), which became effective on October 23, 2012
- Appendix R of the 2013 Stormwater Management Guidebook provides the guidelines for implementing the IPM for regulated projects in the AWDZ. Appendix R is available at <http://ddoe.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/Appendix%20R%20%20Integrated%20Pest%20Management.pdf>

Additionally, as required under Section 4.3.4.1 of the MS4 Permit, the District trains and certifies pesticide applicators, inspects sales and distribution establishments of pesticides, and monitors for the presence of pesticides in water bodies.

DDOE's Pesticide Management Program trains commercial applicators in the legal and safe application of pesticides and herbicides. Commercial applicators must receive a certification through the program to legally apply pesticides and herbicides in the District. DDOE is responsible for developing, updating, and administering examinations to qualified applicants for certification as pesticide applicators in The District.

DDOE is also responsible for regulating worker protection, ensuring compliance of both District and Federal laws, and inspections of workplaces, worksites, and retail establishments that sell, store, or use pesticides within the District. DDOE conducts inspections of retailers, wholesalers, and distributors of pesticide products not registered in the District or with the EPA, pesticides suspected of being shipped or distributed in violation of the District Pesticide Operations Act, pesticides displayed for sale in a manner to endanger human health and for pesticides that have been suspended or cancelled by the EPA.

The District waters are tested regularly for the presence of pesticides, herbicides, and fertilizers. Pesticides are monitored as part of DDOE's overall wet and dry weather stormwater sampling and analysis program. In previous years, pesticides have been detected in some of the samples collected from outfalls. When pesticides are found in monitoring samples, the Illicit Discharge Detection and Elimination (IDDE) Program is notified and an inspection is conducted.

As required by Section 4.3.4.2 of the MS4 Permit, District agency staff coordinate on the use of pesticide use. DGS maintains a plan to incorporate IPM on school properties. The Healthy Schools Act of 2010 requires the establishment of IPM in the DC Public Schools, under Title V, Sec. 501 (a)(1)(D). Implementation of this law requires coordination between DGS, DCPS, and pest control specialists.

As required by Section 4.3.4.3 of the MS4 Permit, the District regularly partners with outside organizations and jurisdictions to ensure pesticide and fertilizer use does not impact water quality. DDOE's RiverSmart Homes Program is a public-private partnership that aims to reduce stormwater runoff that harms the District's waterways and the Chesapeake Bay. RiverSmart Homes is a partnership between DDOE and non-profit groups, including Casey Trees, DC Greenworks, the Alliance for Chesapeake Bay, and District homeowners. RiverSmart programs provide financial incentives to help District property owners install green infrastructure, such as rain barrels, green roofs, rain gardens, permeable pavement, shade trees, and more. RiverSmart program encourages native planting and minimizing the use of herbicides, pesticides, and fertilizers that are typical in conventional landscaping. RiverSmart Homes has created a factsheet that describes the impact of fertilizer use on water quality and provides alternative options for home owners.

Additionally, through the Metropolitan Washington Council of Governments and the Chesapeake Bay Program's Urban Stormwater Workgroup, the District collaborates with other organizations in the region to discuss programs and measures to effectively limit the use pesticides and fertilizers.

As required by Section 4.3.4.4 of the MS4 Permit, the District provides incentives and education to curb the use of turf-grass fertilizer. The Sustainable DC Act of 2012, which included The Anacostia River Clean Up and Protection Fertilizer Amendment Act of 2012 (D.C. Official Code § 8-104.01 *et seq.*), established buffer zones around streams and rivers, as well as other limiting factors regarding where and when turf grass fertilizer can be applied. The legislation also requires retail establishments that sell fertilizer for turf to prominently display educational information. Additionally, the legislation requires the development of a public education program that shall include the dissemination of information regarding nutrient pollution, soil testing, proper interpretation of fertilizer label instructions, and the proper use and calibration of fertilizer application equipment, best management practices for fertilizer use in the urban landscape, the requirements of the legislation, and the effects of fertilizers on the Chesapeake Bay and its tributaries.

DDOE's RiverSmart Homes Program also educates residents about the benefits of native plants and Bayscaping and provides incentives for their installation. RiverSmart Homes improves District waterways by encouraging homeowners to install green infrastructure, which minimizes the use of herbicides, pesticides, and fertilizers that is typical in conventional landscaping. More information can be found at <http://ddoe.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/BayScaping%20JG.pdf>

The District's existing geographic information system (GIS) layers contain data that can be used to identify and prioritize potential target areas for addressing pesticide and fertilizer use. These areas include District parks, institutional areas (such as college and university campuses), and transportation corridors (such as railroads). DDOE will develop an outreach and implementation strategy to address pesticide and fertilizer application in these areas and will provide details in its updated SWMP. This activity is progress towards meeting the requirements of Section 4.3.4.5 of the MS4 Permit.

The above detailed implementation activities summarize and explain how the District is meeting the requirements of Section 4.3.4 of the Permit.

FY 2015 Goals: DDOE will work with relevant sister agencies to include Integrated Pest Management as part of their overall SWPPPs.

4.3.5 Storm Drain System Operation and Management and Solids and Floatables Reduction

As required by Section 4.3.5 of the MS4 Permit, the District continues to conduct routine catch basin cleaning and repair activities and floatables removal.

Catch Basin Cleaning and Outfall Repair

There are approximately 25,000 catch basins located within the public right-of-way in the District. Approximately 19,674 catch basins are in the MS4 area, with the remainder in the CSC

area. DC Water conducts the operation and maintenance of pipes and conduits carrying stormwater flow and does not differentiate between the two systems for maintenance purposes and works to keep all catch basins clean.

FY 2014 catch basin cleaning and repair activities:

- ◆ DC Water cleaned 29,313 catch basins
- ◆ DC Water repaired 422 catch basins

The number of catch basins cleaned and repaired has remained relatively constant since FY 2004. Figure 1 shows the eleven-year trend for the cleaning and repair of the District catch basins.

Section 4.3.5 of the MS4 Permit requires the District to ensure that each catch basin in the MS4 area is cleaned at least once annually. Since DC Water manages and implements the catch basin maintenance program citywide, they do not track and distinguish between catch basins in the separate and combined sewer areas. In FY14, DC Water performed 29,313 individual catch basin clean-outs, and there are approximately 25,000 catch basins throughout the District. These numbers are more than adequate to ensure that each catch basin in the District was cleaned at least once. DC Water is developing and testing a mobile application to track catch basin cleaning in the field and improve the accuracy of these records. Information on the development of this mobile application will be included in future Annual Reports.

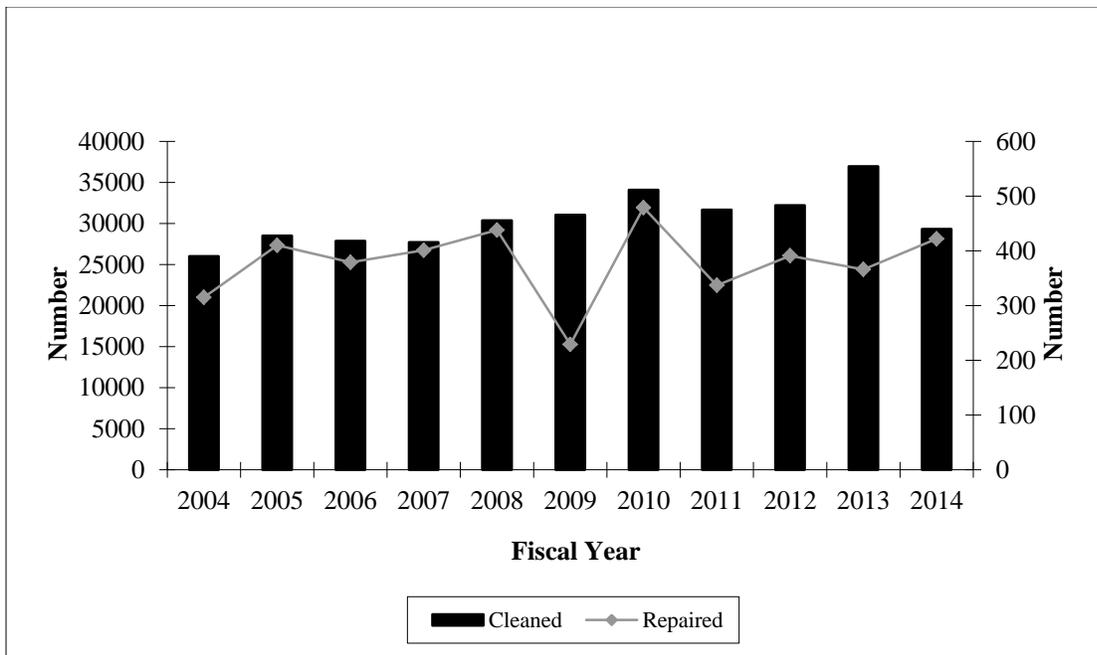


Figure 1 Number of Catch Basins Cleaned and Repaired

As required by Sections 4.3.5.1 and 4.3.5.3 of the MS4 Permit, in July 2013 DDOE and DC Water submitted an Optimal Plan for Catch Basin Cleaning, Inspection, and Repair Report and an Outfall Repair Schedule and Report to EPA Region III. These documents were posted to the DC Register for public comment and submitted to EPA for review and approval. Upon EPA approval of the deliverables, the District will begin implementing the recommendations of the plans.

- ◆ To view information about DC Water’s catch basin repair and cleaning activities:
http://www.dcwater.com/wastewater_collection/catch_basin.cfm.
- ◆ To View the Optimal Catch Basin Cleaning, Inspection, and Repair Report:
<http://ddoe.dc.gov/draftcatchbasinreport>
- ◆ To View the Draft Outfall Repair Schedule and Report:
<http://ddoe.dc.gov/draftoutfallreport>

Floatables Reduction

DC Water continues to conduct the floatables reduction program utilizing skimmer boats on the Potomac and Anacostia Rivers. Activities to remove floatable debris and trash from the rivers as well as accumulated trash on river banks continue five days a week using skimmer boats and support boats. In FY 2014, DC Water removed 500 tons of debris. Since 2003, DC Water’s skimmer boats have removed a total of 6,696 tons of debris from the Anacostia River. Figure 2 shows the 12-year trend of floatables tonnage removed from the District’s rivers.

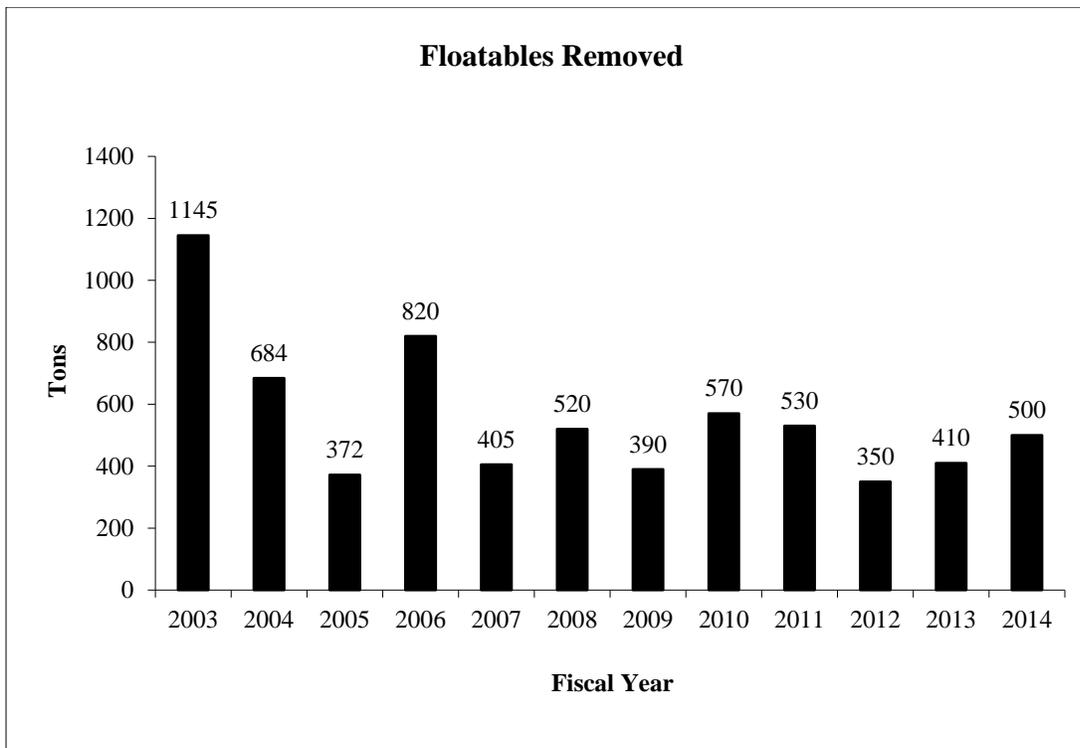


Figure 2 Trend in Floatables Removed

Trash TMDL Compliance

As required in Section 4.3.5.4 of the MS4 Permit, the District continues to comply with the Anacostia River Trash TMDL. Implementation activities can be found in section 2.10.1 of this report.

FY 2015 Goals: DC Water will continue to conduct the floatables reduction program on the Potomac and Anacostia River. Catch basin cleaning and outfall repair activities will also continue. . The District will fully implement the Catch Basin Optimization Plan upon the Plan's final approval by EPA.

4.3.6 Streets, Alleys, and Roadways

Street Sweeping

DPW is responsible for street sweeping activities in the District. DPW uses two basic methods to clean and sweep streets: mechanical street sweeping and litter vacuum personnel, complimented by truck crews that clean streets where the density of parked cars prohibits the effectiveness of mechanical cleaning. Table 17 illustrates the 14-year trend of street sweeping and litter receptacle activities.

In 2014 the District swept 1,526 acres of streets: 677 acres in the MS4 area and 663 in the CSS. A total of 1,609 tons of material were removed through daytime operations. Appendix C details the DPW street sweeping data for FY 2014. Street sweepers are deployed to residential, industrial, and environmental hotspot areas, as well as the Central Business district and arterial/highway routes at or above the frequencies indicated in Table 3 of the MS4 Permit. This report indicates that the District met the schedule specified in MS4 Permit Section 4.3.6.1, Table 3. To view information about DPW's Street Sweeping Program: <http://dpw.dc.gov/page/street-and-alley-cleaning>.

Table 17 DPW Street Sweeping and Debris Collection Activities

Fiscal Year	Streets Swept (miles)	Alley Segments Swept	Number of Litter Receptacles Cleaned	Litter and Debris Collected (tons)
2001	34,000	8,751	4,000	3,400
2002	74,490	16,400	4,000	8,920
2003	102,181	41,238	4,050	9,516
2004	103,163	13,354	4,050	9,346
2005	91,649	20,897	4,050	7,755
2006	72,468	3,781	4,200	6,632
2007	68,189	5,944	4,324	6,388
2008	64,955	4,181	4,445	7,411
2009	62,972	3,550	4,445	7,883
2010	87,837	2,397	4,445	7,834
2011	80,489	2,842	4,600	7,872
2012	82,240	3,647	4,600	6,851
2013	88,705	5,543	5,000	6,509
2014	69,076	5,694	5,000	7,225

Snow and Ice Removal

As required by Section 4.3.6.4 of the MS4 Permit, the District implements a snow removal and deicing program operating plan to ensure safe passage on its roadways using deicing materials that provide the minimum impact practicable to the storm water runoff from snow and ice that enters the MS4. In FY 2012, DPW assumed responsibility for the District’s snow removal and deicing program, which had previously been coordinated through DDOT. In FY 2014, The District received 32 inches of snow and mobilized trucks 28 times based on weather predictions.

As required by Section 4.3.6.3, the District investigates and implements techniques to reduce the impacts from deicing salts and salt storage. The District continues to research and utilize the most efficient and environmentally friendly de-icing products. The main tool utilized by DPW for snow and ice control is sodium chloride (rock salt). DPW expanded the liquid pretreatment of bridges and roadways to include agricultural products, such as beet juice, which helps to melt snow and ice. This allows DPW to treat the roads and bridges before the precipitation and

provides a safer roadway surface. The goal of the beet juice pretreatment is to reduce salt usage and find alternatives for de-icing products or additives, to reduce corrosion on bridges and equipment, and protect the environment. DPW has expanded the use of Pet Safe Salt on all District bridge sidewalks. DPW has 12 liquid spray trucks, 300 pieces of snow removal equipment, and a computerized brine making machine that mixes the materials. The District has 60,000 gallons of storage capacity.

The District has studied the use of permeable surfaces that require less use of deicing materials. There are many studies that have examined the performance of pervious pavement compared with conventional pavement in cold climates. The general consensus is that pervious applications show less buildup of ice and snow because of their ability to infiltrate precipitation that falls on it. The District used this research in its decision to implement the use of permeable pavement in the RiverSmart Programs.

Section 4.1.5 of the Annual Report details the use of permeable materials in Green Alleys, RiverSmart Homes, RiverSmart Washington, and RiverSmart Communities. As previously stated, RiverSmart Washington is a multi-agency project to install LID neighborhood-wide on public and private lands to measure stormwater runoff volume reduction. The RiverSmart Washington projects and DDOT's Green Alleys program represent the first significant installations of porous and permeable materials in the public right-of-way.

DDOT is implementing post-construction monitoring to study the long-term effects of the RiverSmart Washington projects. Porous materials are one of the many types of BMPs installed as part of this project. Completion of these projects will begin to provide a suitable baseline to conduct the evaluation of the relationship between porous and permeable surfaces and use of deicing materials.

The District operates five salt storage facilities that contain 38,000 tons of rock salt. At all of the facilities, the runoff is controlled by a stormwater management facility to reduce the amount of pollutants. Four of the five facilities are located within the MS4 area.

The locations of the four facilities inside the MS4 area are (1) Potomac Avenue and R Street SW, (2) 3815 Fort Drive NW, (3) 401 Farragut Street NE, and (4) underneath the Key Bridge. At each facility, the salt is stored in covered domes, and stormwater is managed with BMPs and good housekeeping practices. Facility staff clean salt spills and ensure salt is kept four feet from entrance doors.

As required by Section 4.3.6.4 of the MS4 Permit, the District continues to maintain a program that prevents excessive quantities of snow and ice from entering District water bodies. Yearly, the District conducts a Snow Plow Driver Training Program that stresses the importance of sensible salting and proper calibration of spreaders. This program consists of a classroom training that every District snow plow driver must attend. Additionally, DPW is updating the citywide Snow Removal Plan and expects it to be completed in the winter of 2014/2015. The current version of the District's Snow Removal Plan was provided in response to records request during EPA's May, 2013 inspection of the District's MS4 stormwater program.

If the District needs to haul snow due to major snow falls, DPW would utilize Lots 6, 7 and 8 of Robert F. Kennedy Memorial (RFK) Stadium, located in Ward 7. The District utilizes a strategy to minimize the impact of snow removal and stockpiling operations. This includes sweeping the storage area prior to the snow event, installing silt fence along the downside of the parking lots, and keeping catch basins clean and open.

FY 2015 Goals: DPW is continuing to expand the use of liquid applications, Snow Plow Driver Training Program, and use of Automated Vehicle Location (AVL) technology to better manage District resources. DPW continue to stress to all of the snow team about environmental concerns related to snow and ice removal and we continue to search for alternative products to reduce salt usage. Additionally, the District will continue to report on the implementation of permeable materials in future Annual Reports.

4.3.7 Infrastructure Maintenance / Pollution Source Control Maintenance

DDOE maintains a database of industrial, commercial, institutional, municipal, and federal facilities within the MS4 area. Included in this database are 20 municipal facilities identified as critical sources of storm water pollution. DDOE WQD conducts a minimum of two inspections of each municipal facility within the MS4 permit term to ensure compliance with maintenance standards, best management practices, the facility SWPPP and self-inspection and monitoring requirements, and proper record keeping. Within FY14 DDOE WQD conducted an inspection of 14 of the 20 municipal facilities identified and conducted several follow-up inspections to resolve deficiencies identified during the original inspections. At each site, DDOE inspects control strategies for protecting water quality, including good housekeeping practices, containment structures, pretreatment devices, sediment and erosion control devices, and other BMPs. Inspectors evaluate the effectiveness of the control strategies and document deficiencies for follow-up using standard forms based on facility type.

4.3.8 Public Industrial Activities Management / Municipal and Hazardous Facilities

No District owned facilities within the MS4 area have individual NPDES permits. In addition no District owned facilities currently have coverage under the NPDES Multi Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP). Currently, District Municipal facilities are covered and inspected under the District's MS4 Permit. District facilities that require MSGP coverage will pursue coverage after EPA issues a final updated MSGP.

EPA maintains sole enforcement authority over MSGP. DDOE received EPA grant funding in FY 2013 for staff and resources to conduct compliance evaluation inspections of MSGP facilities. With this funding, DDOE has begun implementing a program to inspect the MSGP facilities twice within the MSGP permit cycle. A complete list of MSGP facilities located within the District is found in Appendix D. A list of facilities with permit coverage in the District is available at <http://www.epa.gov/reg3wapd/npdes/dcpermits.htm>.

FY 2015 Goal: The District will obtain coverage under individual permits or MSGP for any industrial activity as appropriate and when a revised MSGP is available.

4.3.9 Emergency Procedures

The District did not conduct repairs of public service systems or infrastructure as part of any emergency circumstance that caused an upset of District Water Quality Standards. In FY 2014 there were no emergencies as defined by 40 C.F.R. 122.41(n). However, the District did respond to several IDDE emergencies as reported in Section 4.7.

FY 2015 Goals: The District will continue meet the requirements of Section 4.3.9 of the MS4 Permit.

4.3.10 Municipal Official Training

As required by Section 4.3.10 of the MS4 Permit the District continues to implement a training program for District staff who manage, investigate or work on stormwater practices regularly attend relevant trainings. Specifically, the District has taken significant steps to enhance its pollution prevention program since the current Permit was issued and has offered numerous targeted training sessions for municipal facility staff in categories 7–13, as identified in Permit Section 4.3.10. The District has also provided staff trainings in categories 1–9 and 14–16 with numerous training sessions during and after the development of the District’s 2013 Stormwater Management Rule and Guidebook. Specific information about District trainings for the 2013 Stormwater Rule and Guidebook can be found in Section 2.1.3 of this report.

DDOE offers the general public many options for training on its stormwater regulations. Trainings are advertised to DDOE’s stormwater stakeholder list of over 900 engineers, nonprofits, utilities, and government agencies. In FY 14, DDOE held 39 public training sessions on its stormwater regulations, the SRC program, and the GAR program. These trainings include:

- Eight training on general compliance with DDOE’s stormwater regulations
- Three trainings sessions on detailed compliance with DDOE’s stormwater regulations including site constraints and large storms
- Two trainings on the MEP process for reconstruction of the PROW for roadway reconstruction projects
- Three trainings on the MEP process for reconstruction of the PROW for parcel-based projects
- Twelve training sessions on the SRC program, RiverSmart Rewards program, and use of DDOE’s online application system
- One training session on the RiverSmart Rewards program
- Ten trainings on the Green Area Ratio program

Public training sessions are also open to District staff. However, DDOE has also held several sessions specifically for other agencies. Agencies that have participated in these trainings include DDOT, DGS, DCRA, DC Water, and DHCD. In FY 14, these trainings included:

- Two trainings on the MEP process for reconstruction of the PROW for roadway reconstruction projects
- Three sessions on general compliance with DDOE's stormwater regulations

DDOE also holds recurring meetings and training for DDOE staff, including plan reviewers and inspectors. In FY 14, DDOE held 16 internal training sessions. DDOE plan reviewers meet regularly to discuss issues in the implementation of the regulations and receive training on topics including compliance calculations and unusual site conditions.

Additionally, DDOT performs outreach to technical peer groups at meetings and conferences, both locally and nationwide. As part of project development, DDOT meets with residents and neighborhood groups to inform them of project design and construction plans. In 2014, DDOT began regular project update meetings in each ward of the city. DDOT presented the goals of the Green Infrastructure program and plans for ward projects at these meetings. The full list of technical meetings and outreach presentations is below.

- RiverSmart Washington project update meetings
 - MacFarland/Petworth area at Petworth Library (March 18, 2014)
 - Lafayette/Chevy Chase area at Chevy Chase Library (March 20, 2014)
 - Lafayette/Chevy Chase area at Quesada St & 33rd St NW (September 3, 2014)
- LID Retrofits Project updates
 - Fitch Pl project to ANC-7C (October 10, 2103).
 - Ft Davis project to residents at Francis Gregory Public Library (November 19, 2013)
 - Erie St SE project to ANC-8B (February 18, 2014)
 - East Beach Drive LID project to North Portal Estates Community Meeting (May 28, 2014)
- "LID Projects" at DDOT Project Updates meetings
 - Ward 7 (March 7, 2014)
 - Ward 8 (March 26, 2014)
- Stormwater overview to 2nd grade class at Capital City Public Charter School. (November 19, 2014)

FY 2015 Goals: DDOE has already scheduled many more training opportunities in FY 15, and is adding new training topics. These include training on BMP design, one-on-one "office hours" with DDOE staff for engineers who are developing Stormwater Management Plans, and training on the use of DDOE's Stormwater Management Database, which will be launched in FY 15.

4.4 Management of Commercial and Institutional Areas

As required by Section 4.4 of the MS4 Permit the District's inspection and enforcement program utilizes established policies and procedures to effectively limit and reduce the discharge of pollutants in stormwater from all industrial, commercial, institutional, municipal, and federal facilities within the MS4 area. These facilities are inspected a minimum of twice each permit

term under DDOE's inspection and enforcement program and tracked via the MS4 Tracking Database. The inspections of all MS4 facilities are conducted by trained DDOE staff. Control measures identified at these facilities are documented by inspectors and include good housekeeping practices, containment structures, pre-treatment devices, sediment and erosion control devices, and other large best management practices. The condition and effectiveness of the control measures are also documented during these inspections. If an inspection of an MS4 facility identifies an ineffective control measure or an imminent threat to water quality, DDOE inspectors require immediate corrective action through varying approaches: compliance assistance, site directive, notice of violation, and possibly notice of infraction.

Additionally, the District's Stormwater Management Guidebook provides the procedures for managing stormwater. The Stormwater Management Guidebook can be found at <http://ddoe.dc.gov/swguidebook>.

4.4.1 Inventory of Critical Sources and Source Controls

DDOE continues to maintain a database of critical sources of stormwater pollution. DDOE Water Quality Division (WQD) maintains a database of industrial, commercial, institutional, municipal, and federal facilities within the MS4 area. Commercial and institutional facilities identified within this database include automotive repair facilities, automotive fueling stations, automotive wash facilities, dry cleaners, and other facilities deemed as sources of stormwater pollution. DDOE WQD identified 132 commercial and institutional critical sources stormwater pollution within the District's MS4 area during FY 2014. This includes 79 automotive repair and fueling facilities, 4 auto wash facilities, 21 dry cleaners, and 28 other facilities that have been deemed a critical source by the District.

4.4.2 Inspection of Critical Sources

DDOE maintains an inspection and enforcement program to address sources of stormwater pollution within the MS4 area of the District. During FY 2014 the DDOE MS4 Inspection and Enforcement Program inspected 100% of the 132 commercial and institutional facilities identified by the MS4 facilities database. These inspections are documented with facility specific inspections forms and recorded in the MS4 Inspection Tracking Database. DDOE took appropriate enforcement actions to ensure compliance with the District's MS4 Permit.

All facilities on the critical source inventory are inspected at a minimum of twice per Permit term. During the inspections, control strategies for protecting water quality, including good housekeeping practices, containment structures, pre-treatment devices, sediment and erosion control devices, and other best management practices are inspected and documented. The effectiveness of the control strategies is evaluated and deficiencies are documented for follow-up.

Further, in FY 2014 DDOE improved its established inspection policies and procedures by implementing a mobile application, which utilizes rugged computer tablets that are enabled with global positioning system (GPS) software. This new program has created an automated database of inspection data and enabled inspectors to track and query specific controls on site, and will

allow access to complete inspection records from the field. This state-of-the-art customized software application is now used to conduct MS4 facility inspections, storm sewer outfall inspections, and illicit discharge investigations. This increased field capability will help ensure complete, effective, and consistent inspections. After critical sources are inspected they are tracked to verify that inspections occurred via the MS4 Tracking Database, which was provided to EPA and can be found in the EPA's Inspection Report Appendix 6.

4.4.3 Compliance Assurance

DDOE inspects each facility identified on the critical source inventory at a minimum of twice each during the permit term and are tracked to verify that inspections are occurring. Inspectors document control measures identified at these facilities, including good housekeeping practices, containment structures, pretreatment devices, sediment and erosion control devices, and other large BMPs. Inspectors also document the condition and effectiveness of these control measures.

FY 2015 Goals: The District will continue to inspect, track, and report on critical sources as required by the MS4 Permit.

4.5 Management of Industrial Facilities and Spill Prevention

The District continues to implement a program to monitor and control pollutants from Industrial facilities within the MS4.

DDOE maintains a database of industrial, commercial, institutional, municipal, and federal facilities within the MS4 area, as required by Section 4.5.2 of the MS4 Permit. The industrial facilities identified by the database covered under NPDES individual and general permits are inspected as part of DDOE's NPDES Inspection and Enforcement Program. The database includes 27 facilities covered by the 2008 NPDES Multi-Sector General Permit, 5 Major Individual NPDES Permitted facilities, and 6 Minor Individual NPDES Permitted facilities.

As part of the Inspection and Enforcement program WQD conducted Compliance Evaluation Inspections (CEI) of all 11 Individual NPDES permitted facilities within the District. WQD also conducted a CEI of 6 of the NPDES Multi-Sector General Permit facilities. A CEI is conducted to verify permittee compliance with regulations, permit conditions, applicable permit self-monitoring requirements, effluent limits, compliance schedules, and the current SWPPP. Additionally, the program reviews facility DMR's for compliance with established effluent limits and the District Water Quality Standards.

Industrial facilities identified by the MS4 facilities database and not covered under NPDES are inspected as part of the MS4 Inspection and Enforcement program. These facilities include, but are not limited to industrial facilities subject to SARA, EPCRA Title III, and RCRA requirements. In the event either of the inspection and enforcement programs identifies a facility that requires coverage under a NPDES permit, recommendations regarding the facilities permit status are referred to USEPA Region III.

The US EPA issues the NPDES permits in the District. The list of can also be found at <http://www.epa.gov/reg3wapd/npdes/dcpermits.htm>.

In accordance with the Permit, the District tracks industrial facilities within the District that are subject to regulation under the CERCLA. CERCLA status is not permanent, as the sites are cleaned up, they are moved off the active list. The list includes private and Federal sites.

Table 18 List of DC Sites with an EPA CERCLIS ID

EPA CERCLISID	Site Name	Federal Facility
DCN000306845	AARON'S CLEANERS	N
DCN000306920	APPALACHIA RISING SITE	N
DCN000306864	BAPTIZED BELIEVERS CHURCH	N
DCN000306840	BELAIR CLEANERS	N
DCN000306846	CAPITAL CLEANERS	N
DCD024224545	CENTURY DRY CLEANERS	N
DCN000305704	DIAMOND ORDNANCE FUZE LAB	Y
DCN000306926	FLORIDA AVENUE DUMP	N
DC8210021004	FORT MCNAIR	Y
DCD981042179	FRENCH'S DRY CLEANERS	N
DCN000306664	GEORGIA AVENUE PCE SITE	N
DCN000306842	GOODY CLEANERS	N
DCR000501270	GSA-SAINT ELIZABETH'S WEST CAMPUS	Y
DCSFN0305462	KENILWORTH PARK LANDFILL SITE	N
DCN000306844	LEON'S NEW SYSTEM DRY CLEANERS	N
DCN000306843	LONG BROTHERS CLEANERS	N
DCN000306847	MAGIC CLEANERS	N
DCD982566127	NAYLOR VALET CLEANERS	N
DCD003254273	NPS - ANACOSTIA PARK SECTIONS E & F	Y
DCD983967951	PEPCO BENNING ROAD FACILITY	N
DCN000305662	POPLAR POINT NURSERY	Y
DC0001401637	SEAFARERS YACHT CLUB ER	N
DCN000306928	SMITHSONIAN INSTITUTE-NATURAL HISTORY BUILDING	Y
DC8470090004	SOUTHEAST FEDERAL CENTER (GSA)	Y
DC9751305997	ST ELIZABETH'S HOSPITAL	N

EPA CERCLISID	Site Name	Federal Facility
DCN000306841	THE LAUNDRY BASKET	N
DCN000306885	UNITY HEALTH CARE CLINIC - WATER CONTAMINATION SITE	N
DC5570024443	USAF BOLLING AIR FORCE BASE	Y
DC7120507432	USDA NATIONAL ARBORETUM	Y
DCN000305585	VERMICULITE VPC1	N
DC4210021156	WALTER REED ARMY MEDICAL CENTER	Y
DCD983971136	WASHINGTON D.C. CHEMICAL MUNITIONS SITE (SPRING VALLEY)	N
DCN000306000	WASHINGTON DC MERCURY INCIDENT	N
DCD077797793	WASHINGTON GAS LIGHT SITE	N
DC9170024310	WASHINGTON NAVY YARD	Y
DCD982567414	Z CLEANERS	N

Based on data extracted from the online EPA CERCLIS database on November 2014 (www.epa.gov/enviro).

DDOE continues to conduct inspections to determine compliance with hazardous waste regulations. DDOE conducted inspections at RCRA Large Quantity Generator (LQG), Small Quantity Generator (SQG), and Conditionally Exempt Small Quantity Generator (CESQG) facilities. HWD conducted 50 inspections in FY 2014.

As required by Section 4.5.3 of the MS4 Permit the District continues to provide on-site assistance and inspections focused on the development of pollution prevention plans and permit compliance.

The District has focused efforts on District Government staff training and awareness of pollution prevention requirements and has continued to improve interagency coordination. In 2012 DDOE created a position to focus on pollution prevention training and implementation. Since then, DDOE has held 17 training sessions for 101 staff at various levels that represented 6 agencies and 76 facilities, see the Pollution Prevention Training Log in Appendix F. DDOE has also worked with sister agencies to develop, implement and update SWPPPs for appropriate facilities. Currently, two agencies have completed SWPPPs and a remaining four agencies will complete their plans in FY15. DDOE is also working with sister agencies to develop a self-inspection and reporting process to assure on-going compliance with pollution prevention practices. The District's Office of the City Administrator facilitated a meeting with agency directors on September 24, 2014 to assure agency commitments to finalize and implement SWPPPs.

DDOE inspectors provide onsite compliance assistance to facility staff through the MS4 Inspection and Enforcement Program. Additionally, Appendix Q of the 2013 SWMG provides guidance on good housekeeping practices to prevent potential construction site pollutants from interacting with stormwater.

Appendix Q of the 2013 SWMG can be found at:

<http://ddoe.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/Appendix%20Q%20%20pollution%20Prevention%20Through%20Good%20Housekeeping.pdf>

As required by Section 4.5.4 of the MS4 Permit the District continues to refine and implement procedures to investigate facilities suspected of contributing pollutants to the MS4. DDOE utilizes established policies and procedures to effectively limit and reduce the discharge of pollutants in stormwater from all commercial and industrial facilities within the MS4. These policies and procedures are outlined in the Illicit Discharge Detection and Elimination Program Inspection and Enforcement Strategy, Appendix E. DDOE enforcement procedures are addressed in *The Environmental Enforcement Guidelines*, see Appendix G. This document details the written enforcement strategy outlining how enforcement actions, such as violation notices, notices of infraction, and stop work orders, are issued and adjudicated. The strategies outlined in the manual provide the standard operating procedures for inspection and enforcement efforts within the District.

The program implementation activities in Sections 4.5 of the Annual Report address the District's requirements of section 4.5.6 of the MS4 Permit the Clean Water Act.

FY 2015 Goals: The District will continue to implement the provisions of Section 4.5 of the MS4 Permit. Additionally, In FY15 Stormwater Pollution Prevention Plans will be updated or completed for applicable facilities.

4.6 Management of Construction Activities

As required by Section 4.6.1 DDOE maintains a plan review and erosion control program for new construction, which coupled with a field inspection program, ensures compliance with the District erosion control regulations. DDOE reviews construction and grading plans for stormwater management, erosion and sediment control, and flood plain management considerations. As required by EPA, regulated projects in the District must have SWPPPs that "identify all potential sources of pollution which may reasonably be expected to affect the quality of stormwater discharges from the construction site."

In FY 2014, DDOE accomplished the following:

- ◆ Reviewed 2,153 stormwater management plans (SWM) and erosion and sediment control plans (ESC)
- ◆ Approved 1,705 SWM plans and ESC plans

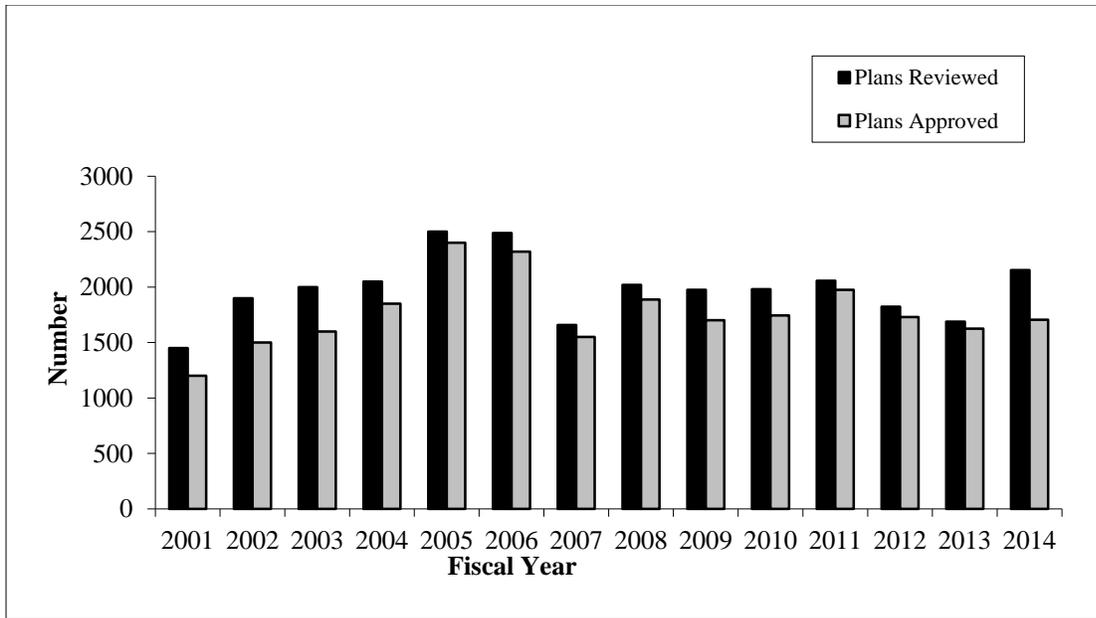


Figure 3 Total Number of Plans Reviewed and Approved Over Time

DDOE's construction site inspection program meets the required inspection frequency specified in Section 4.6.3 of the Permit. DDOE inspectors are authorized to conduct on-site inspections for all stormwater management facility construction in the District. The building permit holder is required to contact DDOE's Inspection and Enforcement Branch 24 hours before beginning construction of the stormwater management facility. The first step in all stormwater management facility construction inspections is a preconstruction meeting, where inspectors are required to review the SWMP with the owner/agent of the stormwater management facility. Inspections are performed at different stages of construction as outlined in the stormwater narrative of the approved SWMP and as specified in the specific Stormwater Management Facility Construction Report. A final inspection is performed upon completion of the stormwater management facility. The report indicates the due date of the As-Built plan of the completed stormwater management facility. A Final Approval Notice is issued to the owner/ agent after receipt and approval of the As-built.

The District's policies and procedures for erosion and sediment control inspections have been updated, see Appendix H. All District erosion and sediment control inspectors have been trained on the updated procedures, as well as receiving training on other current topics and best practices regarding soil erosion and sediment control.

In FY 2014, the District accomplished the following:

- ◆ Conducted 6,654 inspections at construction sites for enforcement of erosion and sediment control and stormwater management regulations
- ◆ Issued 135 enforcement actions, including stop work orders and civil infractions

DDOE conducts site inspections and calculates loading estimates from construction sites within the District. Figure 5 shows the 14-year trend of the construction inspection program. Figure 4 shows the 14-year trend of annual enforcement actions. Note that each time DDOE personnel

visit a construction site it is logged as an inspection. As a result individual construction projects are often inspected numerous times.

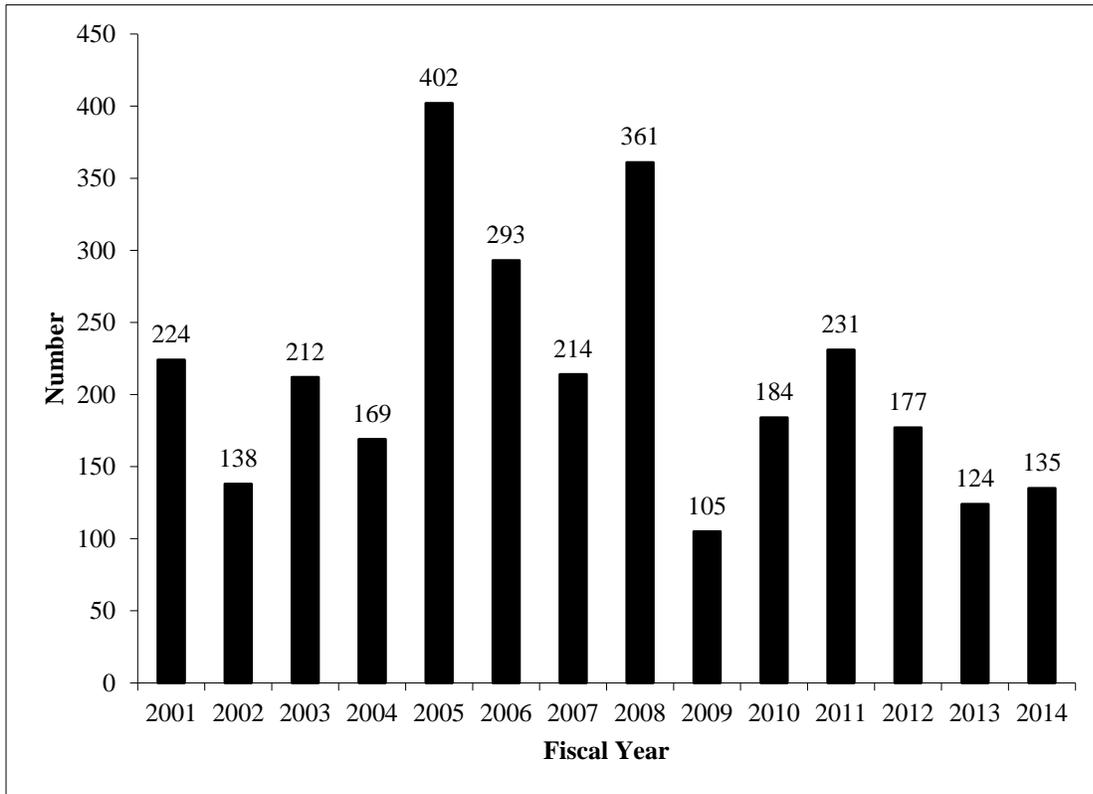


Figure 4 14-Year Trend in Enforcement Actions

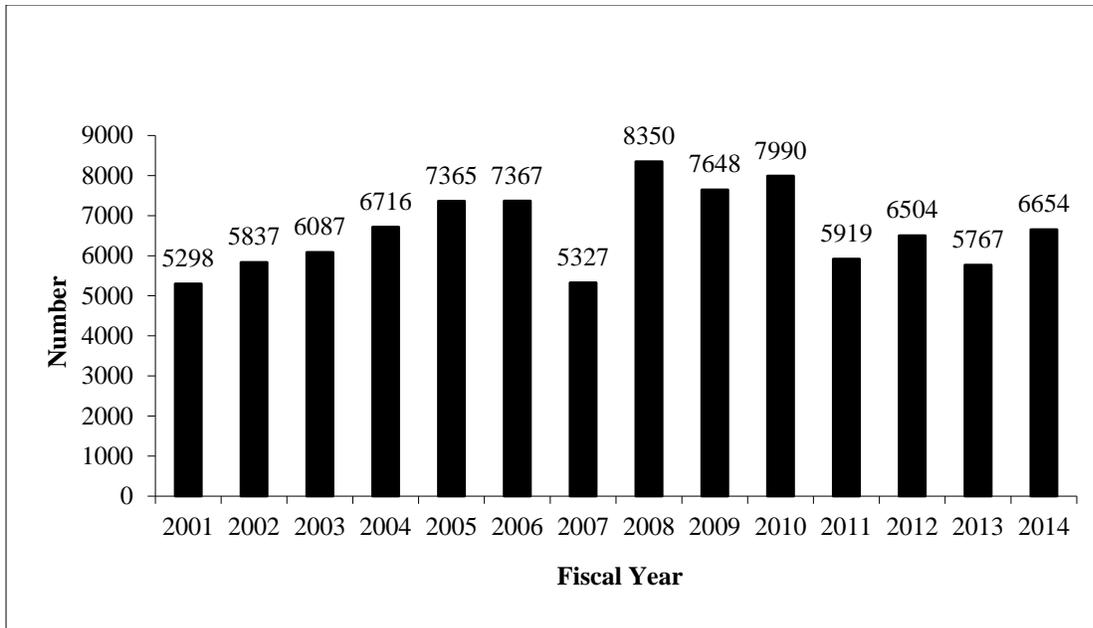


Figure 5 14-Year Trend in Annual Inspections

As required by Section 4.6.4 of the MS4 Permit the District is providing a listing of all violation and enforcement actions. A list of all Notice of Infractions (NOIs) is found in Appendix I. Additionally, the District is developing a new BMP tracking. This database will address the recordkeeping, paperwork, and data management requirement of the MS4 Permit. This database will track compliance with the District's updated stormwater management regulations, including the construction and ongoing maintenance of BMPs. A critical feature will be the ability for inspection personnel to access the new database in the field to review and update records during and immediately after an inspection. DDOE expects the database to be completed and functioning in 2015.

Educational training and compliance assistance for construction site operators is conducted during the site inspection process, as required by Section 4.6.5 of the MS4 Permit. This training includes distribution of the District's 2013 Stormwater Management Guidebooks and addresses particular needs and questions of the operators.

The accomplishments of the Inspection and Enforcement Program demonstrate the effectiveness of the Program and meet the requirements of Section 4.6.6 of the MS4 Permit. The District is performing multiple rounds of inspections, identifying violations were they are found, following up with sites as appropriate to ensure violations are addressed, and imposing penalties as appropriate. Since 1988, the District has required and enforced stringent erosion and sediment control measures for projects that disturb more than 50 square feet of earth, which significantly exceeds the Permit requirement to enforce controls on projects greater than 5,000 square feet. Regulation of construction sites prevents the acceleration of soil erosion and sedimentation, which reduces total suspended solids (TSS) and turbidity in District waters and reduces the amount of pollutants that adhere to the soil entering the waters. Dewatering practices at construction sites prevent additional pollutants, including toxics, from entering the District's

waters. SWPPPs and good housekeeping practices at construction sites further reduce the amount of pollutants that may be discharged to District waters. Additionally, the District has removed the “waivers and exemption” provision that previously existed in its regulations at 21 DCMR § 528.

FY 2015 Goals: The District will continue to review and approve SWM plans and to provide staff refresher training to continually improve efficiency for review and provision of technical assistance. The District will continue to provide educational materials to construction site operators and to enforce the inspection procedure guidelines. The new BMP tracking database will be functioning in FY 2015.

The District will continue inspections of commercial, residential, and road construction projects for the maintenance and implementation of erosion control devices and stormwater retention BMPs. DDOE will continue to track SWM facilities inspected and their BMPs its database system.

4.7 Management of Illicit Discharges and Improper Disposal

As required by Section 4.7.1 a-i of the MS4 Permit the District maintains an Illicit Discharge Detection and Elimination Program (IDDE) designed to detect and eliminate illicit discharges within the District. DDOE WQD, with the support of DC Water and DPW, investigates and conducts enforcement actions in accordance with the District’s MS4 permit, the District’s Water Pollution Control Act and the Districts Surface Water Quality Standards 21 DCMR § 1100 *et seq.*

The program also provides assistance to first responders, including DC FEMS, MPD, HSEMA, and the US Coast Guard in environmental emergencies. Reports or notifications from these agencies are routed to the DDOE Chief of Emergency Operations. Incidents potentially affecting the MS4 or District water quality are then referred to the WQD Inspection and Enforcement Branch for assistance. Those incidents referred to WQD through DDOE Emergency Operations are considered “emergency responses” and are designated and recorded as such.

In FY 2014, DDOE staff conducted:

- ◆ 46 illicit discharge investigations
 - ◆ 39 follow-up inspections at illicit discharge sites
- ◆ 9 Emergency Responses
 - ◆ 9 follow-up inspections at Emergency Response sites
- ◆ 147 targeted facility inspections
 - ◆ 12 follow-up inspections to ensure compliance
 - ◆ 169 outfall inspections

DDOE’s enforcement procedures are addressed in *The Environmental Enforcement Guidelines*, see Appendix G. This document details how enforcement actions, such as notices of violation, notices of infraction, and stop work orders are issued and adjudicated. The strategies outlined in

the manual provide the standard operating procedures for inspection and enforcement efforts within the District.

Field screening procedures consist of dry and wet weather monitoring. Once general geographic priority areas have been determined, DDOE conducts dry weather surveys through visual observations of outfalls to identify non-stormwater flows. Because illicit discharges are often intermittent, DDOE inspectors check for discharges multiple times in a given location, particularly in priority locations. DDOE reviews the collected screening data to discern any spatial or temporal patterns that may assist the program in prioritizing Sewershed for additional regulatory, educational, or structural pollution controls. Illicit discharges are also identified through routine facility inspections.

The District provides personnel with training on spill prevention and response as part of the larger Pollution Prevention Program, as well as during compliance assistance provided by the IDDE inspection staff.

Outfall Inventory

DDOE continues to refine an inventory of outfalls within the District. DDOE is still cross referencing and reconciling the results of the Outfall Repair Schedule and anticipates slight adjustments to outfall numbers through continued inspections and desktop analyses. DDOE is encouraged that, despite methodology and terminology differences, two separate outfall inventory efforts have resulted in such similar numbers. Table 19 details the current inventory of outfalls by watershed in the District.

Table 19 MS4 Outfalls Identified by Watershed

Watershed	Number of Outfalls
Anacostia River	198
Potomac River	209
Rock Creek	176
Total	583

As required by Section 4.7.2 and 4.3.5 the District maintains a solids and floatables program. Information about the District’s floatables program is found in Section 4.3.5 of this report.

As required by Section 4.7.3 the District continues to implement the prohibition against the disposal of used motor fluids, household hazardous waste, leaf and grass clippings, and animal waste into the storm sewer. Each of these programs are readily available and information can be found on the DPW and DDOE websites.

Motor Vehicle Fluids and Auto body Repair

In FY 2014, DDOE continued to offer the Compliance & Technical Assistance to managers, owners, and employees of gasoline stations, repair shops, fleet managers, and maintenance garages. This sector has significant direct impact on the quality of District waters.

To view information and presentation materials on the Environmental Compliance & Technical Assistance for Automotive and Fleet Managers Workshop: <http://green.dc.gov/event/workshop-automotive-and-fleet-managers>.

Visit DDOE's website for pollution prevention information for the auto body/ auto service industry: <http://ddoe.dc.gov/service/environmental-issues-auto-repair-and-maintenance>.

Illegal Dumping

DPW's Solid Waste Education and Enforcement Program (SWEEP) seeks to maintain clean private and public spaces by investigating illegal dumping complaints, overgrown lots, trash can litter and overflow, and other sanitation violations.

- ◆ To view information on DPW SWEEP program: <http://dpw.dc.gov/service/solid-waste-education-and-enforcement-sweep>

In FY 2014 DPW's SWEEP accomplished:

- ◆ 11,421 Responses to request for action from SWEEP
- ◆ 3,886 Number of requests for action for illegal dumping
- ◆ 79 Number of illegal dumping violations

Littering Enforcement

In December 2008, the Council of the District of Columbia passed the Anti-Littering Amendment Act of 2008. The legislation provided new tools to support the enforcement of littering. The Act also established a new violation for littering from a vehicle. It provides that "No person shall dispose or cause or allow the disposal of litter from a vehicle upon any public or private property. Litter shall include all rubbish, waste matter, refuse, garbage, trash, debris, dead animals, or other discarded materials of every kind and description." (DC Municipal Regulations § 18-2221.6). The penalty for the offense is a \$100 fine.

MPD issued 69 tickets for littering from a vehicle and 76 littering NOV's.

Pet Waste

DDOE continues to implement its education and outreach program entitled "Scoop Your Pet's Poop." This program is designed to inform citizens of their legal obligation to manage their pet's waste and to explain the reasons why it is important to do so.

In FY 2014, DDOE printed 10,000 pet waste educational flyers and hands them out at outreach events with a focus on, BIDs, condominium rental offices, and Department of Health and Department of Parks and Recreation events and offices. DDOT and DDOE continue to install aluminum street-signs at targeted locations citywide. In FY 2014 DDOE received more than 500 requests for pet waste street signs. In FY 2014 DDOE and DDOT installed 400 street signs

throughout all 8 Wards. Requests for pet waste street signs can be made at <http://green.dc.gov/page/pet-waste-sign-requests>.

Household Hazardous Waste

DPW continues to provide household hazardous waste (HHW) collection and seasonal leaf collection. During FY 2014, DPW operated monthly HHW drop-off sites at the Ft. Totten Transfer Station. Residents are able to bring their HHW materials and unwanted electronics for proper disposal. Appendix J contains details of the Districts HHW collection in FY 2014. A copy of the 2014-2015 Leaf Collection Program brochure can be found <http://dpw.dc.gov/node/461062>

FY 2014 DPW HHW, leaf collection, and holiday collection accomplishments:

- ◆ 182 tons of unwanted electronics for processing.
- ◆ 62,175 total pounds of HHW were collected in FY 2014
- ◆ 28,620 gallons of Flammable Liquid (Paints, Roofing Tar, Driveway Sealers, etc.)
- ◆ 52,80 cars participated in the FY 2014 HHW drop-off
- ◆ 8,000 pounds of waste pesticides solids (Insecticides)
- ◆ 11,000 pounds of flammable aerosols
- ◆ 86.50 tons of holiday trees
- ◆ 6,054 tons of leaves (Figure 6)

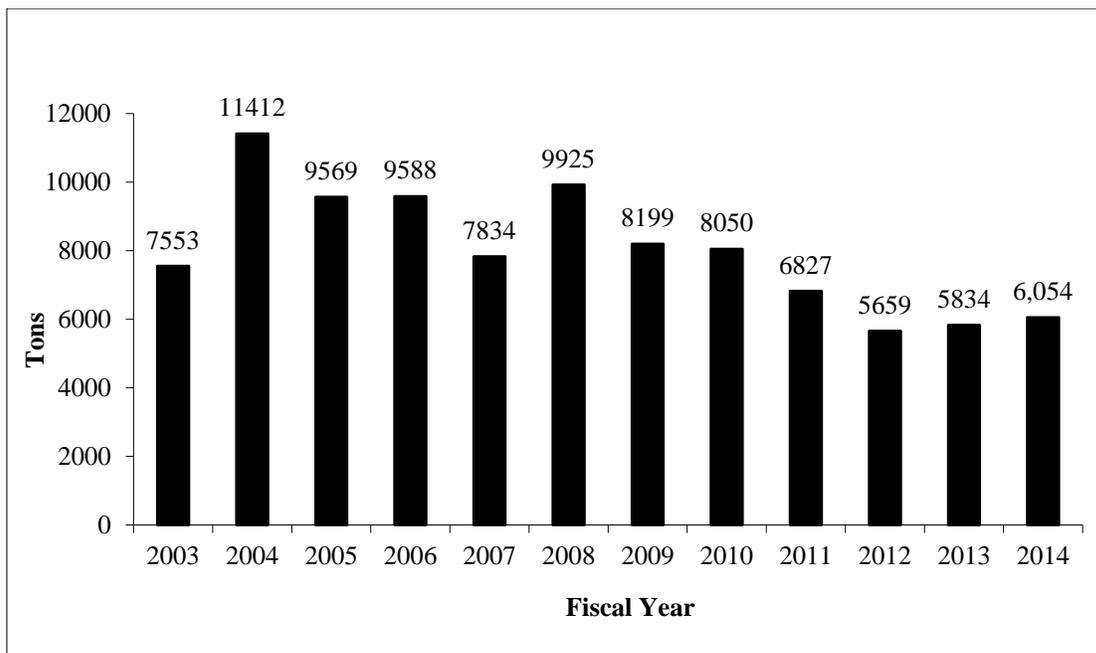


Figure 6 Leaf Collection Trend

Coal Tar Ban Enforcement

As required by Section 4.7.5 of the MS4 Permit the District continues to enforce its prohibition on the sale, use, and permitting of coal tar based pavement products.

In FY 2014 DDOE staff:

- ◆ Conducted 190 inspections
- ◆ Issued 3 NOVs, with one settlement agreement

When coal tar is confirmed on a site, DDOE requires that the coal tar pavement product is removed with a shot blast machine, which uses steel beebees, or “shot,” to pulverize the sealant layer on the lot. The machines are equipped with a HEPA filter and vacuum to eliminate ambient dust release. Historically, there has been a discrepancy between the number of notices of violation (NOVs) issued and the number of remediated sites in a given fiscal year. This is due to the time that the legal process takes to progress from an NOV, to an NOI, to an Office of Administrative Hearings (OAH) order compelling remediation. This interval can cause remediation activities to occur in a subsequent fiscal year.

In FY 2014, DDOE required coal tar remediation at 3 sites (see Table 20). As of September 2014, DDOE has ordered the remediation of 13 sites contaminated with coal tar pavement sealant, totaling 436,271 square feet. All sites have been successfully remediated. The remediated sealant from these 13 sites contained the same amount of PAHs as approximately 600,000 gallons of undiluted used motor oil, the third most concentrated source of PAHs in the urban environment.

Table 20 FY 2014 Coal Tar Remediation

Site Number	Ward	Square Feet	Coal Tar Sealant Applied	Remediated
1	5	35,827	September 2013	April 2014
2	3	45,723	August 2010	June 2014
3	4	40,320	July 2010	July 2014

DDOE maintains a tip line for citizens to report properties they suspect are in violation of the District's ban on coal tar pavement products.

In FY 2014 DDOE performed several studies to increase the effectiveness of the Coal Tar Inspection and Enforcement Program, a Coal Tar Sealant Prevalence Study and an Aerial Imagery Analysis.

DDOE has nearly completed an internal study measuring the prevalence of sealed parking lots and driveways in the District. Effective January 1st, 2009, the District banned coal tar-based

pavement sealants, which contain exceptionally high concentrations of polycyclic aromatic hydrocarbons (PAHs). Understanding the prevalence of sealed parking lots and driveways will enable DDOE to better estimate the impact of the ban on PAH loading to the District's water bodies. DDOE expects the study to be completed in the first quarter of FY2015.

DDOE inspects all sealed parking lots that it identifies for compliance with the District's ban on coal tar pavement sealants, since it is impossible to differentiate between types of sealant visually. In 2014, for the first time, DDOE performed a computer analysis of recently-captured aerial imagery to remotely identify sealed parking lots for inspection. DDOE analyzed the imagery with a computer algorithm that uses complex GIS and remote sensing technology to identify dark-colored paved areas. The algorithm was first developed by a DDOE employee in FY2013. It greatly increases the efficiency of the District's enforcement efforts. The technology has already led to the discovery of two violations of the District's ban on coal tar pavement products.

Coal tar education and outreach efforts are reported in Section 4.9.4 of this report.

- ◆ To view information on the District's coal tar ban: <http://ddoe.dc.gov/coaltarban>

Anacostia Clean Up and Protection Act Enforcement

The District continued to implement the Bag Law, which requires all District businesses selling food or alcohol to charge \$.05 for each disposable paper or plastic carryout bag. DDOE maintains a tip line for citizens to report a business they suspect to be in violation of the Bag Law. To view information about the Bag Law at <http://green.dc.gov/bags>

In FY 2014, DDOE staff:

- Performed 564 total inspections
- Issued 165 NOVs
- Issued 49 NOIs

Bag Law education and outreach efforts are reported in Section 4.9.4 of this report.

FY 2015 Goals: The District will continue to investigating illegal dumping complaints, overgrown lots, trash can litter, and other sanitation violations. The District will continue the program to detect illicit discharges, and to prevent improper disposal into the storm sewer system. DDOE personnel will continue to investigate potential illicit discharges in response to reports by citizens or government personnel.

DDOE will continue compliance education and enforcement efforts for the Bag Law Program. In FY15 DDOE launched a Environmental Tips Mobile Application (App). This App encourages the public to report bag law violations, including sharing photos and comments. DDOE staff will track these tips and investigate as appropriate.

DDOE will purchase and install additional pet waste street signs. DDOE will also print 10,000 additional pet waste flyers for city-wide dissemination.

DDOE will continue coal tar ban enforcement efforts and continue to draft regulations for the implementation of the ban on coal tar.

The District will strive to increase the number of citizens participating in the HHW and leaf collection programs through public education and the continuation of HHW collection at a transfer station on a monthly basis.

4.8 Flood Control Projects

The District of Columbia adopted the Flood Insurance Rate Maps (FIRM), issued by the Federal Emergency Management Agency (FEMA), on September 27, 2010. There have been no major changes in floodplains areas since the effective 2010 FIRM. After a major FIRM revision, for example for the area behind the Potomac Park Levee System after the completion and certification of the 17th Street levee construction, DDOE will update the impervious surface analysis of floodplains in the District, a requirement of Section 4.8.1 of the MS4 Permit.

Review in Compliance with the District's Flood Hazard Rules:

FY 2014 Flood Control Program accomplishments:

- 235 flood zone determinations were processed for various developers as part of the permitting process by DDOE review engineers co-located at the satellite office in the Department of Consumer and Regulatory Affairs (DCRA)
- 42 Environmental Impact Screening Forms were reviewed and 5 were approved for compliance with the District's Flood Hazard Rules (20 DCMR, Chapter 31), and the District's Environmental Policy Act (DC Law 8-36).
- 4,050 Erosion & Sediment Control (ESC), Stormwater Management (SWM) and Floodplain Management (FPM) Plans were reviewed and approved for compliance with the District's Flood Hazard Rules (20 DCMR, Chapter 31).

DC Flood Risk Management

DDOE, OP, the D.C. Homeland Security and Emergency Management Agency (HSEMA), the U.S. Army Corps of Engineers (USACE), the Federal Emergency Management Agency (FEMA), the National Park Service (NPS), the National Oceanic and Atmospheric Administration's National Weather Service (NWS), the U.S. Geological Survey (USGS), DC Water and the Washington Metropolitan Area Transit Authority (WMATA) have developed an interagency team at the District level to help coordinate, collaborate, and develop and implement solutions to the District's flood priority problems. The goal is to leverage information and resources, improve public risk communication, and create a mechanism to collaboratively solve flood risk issues.

Representatives from Federal and District agencies have met every two months since April 2012, to better prepare for floods along the Potomac River. Following Hurricane Sandy, these agencies created a Post-Hurricane Sandy lessons-learned document. Their efforts have made improvements in flood monitoring, flood forecasting, inundation mapping, and awareness. The DC Flood Risk Management Team (Team), DC Silver Jackets Team, is focusing on all types of potential flooding in the District. The Team is currently developing an MOU, with a formalized mission, objectives, organization, memberships, agency roles, and responsibilities.

The major goals of the team include:

- ◆ Update and revise the existing 2006 Flood Emergency Manual for Washington, DC and Vicinity
- ◆ Ensure that the construction, certification, and accreditation of the Potomac Park levee system are complete
- ◆ Obtain funding for completing the design and construction of the Potomac Park levee system improvement to the authorized 1:500 chance-per-year protection
- ◆ Increase flood risk awareness in the District
- ◆ Provide multi-agency expert advice to the District Emergency Operations Center (EOC) during a flood event
- ◆ Improve flood forecasting and communication of predicted flood depths throughout the District before a flood event
- ◆ Improve hurricane storm surge flood modeling, forecasting, and emergency response

The Silver Jacket Team is an innovative program that provides an opportunity to consistently bring together multiple state, federal, and sometimes tribal and local agencies to learn from one another and apply their knowledge to reduce risk. State agencies, including those of the State National Flood Insurance Program Coordinator and the State Hazard Mitigation Officer, come together with the federal family of agencies, including the USACE and the Federal Emergency Management Agency (FEMA), in a common forum to address the states' flood risk management priorities. There are currently 41 active state Silver Jackets teams including region III states: VA, MD, PA, DE, and WV.

- ◆ More information of the Silver Jackets Team: <http://www.nfrmp.us/state/>
- ◆ The District of Columbia Silver Jackets Team Web Page: <http://www.nfrmp.us/state/factDC.cfm>

A flood inundation map is under development. The tool will provide real-time and forecasted river levels at stream gages to help communities identify immediate flooding risks. This project will involve developing a flood hazard mitigation tool to inform the general public, land use planners, floodplain managers, and emergency managers of risks associated with riverine and tidal flooding along the Potomac River and tidal flooding along the Anacostia River. The tool will provide a stage inundation map library for the District, Northern Virginia, and adjacent communities based on the U.S. Geological Survey (USGS) stream gages and the National Weather Service (NWS) flood forecast points. These gages are located on the Potomac River at Wisconsin Avenue and on the Washington Channel at Southwest Waterfront.

Since the District experiences both riverine and tidal flooding, two sets of maps will be developed for the Potomac River for each gage and forecast point. This will be a “pilot project,” because USGS and NWS do not currently have any flood inundation mapping projects for areas that experience both riverine and tidal flooding. The methodology developed from this project can then be applied to other locations around the nation.

Using both predicted tidal stage and river flow data, a flood model can digitally display inundation areas throughout most of the District on USGS and NWS map viewer websites (i.e., USGS Flood Inundation Mapper and NWS Advanced Hydrologic Prediction Service). Flood inundation maps at 1-foot intervals will be developed for the two gages. The Geographic Information System (GIS) datasets also will be supplied to local officials, flood risk planners, and emergency managers with GIS capability.

As part of this project, a flood loss analysis using FEMA’s HAZUS software will be conducted and incorporated in the tool. HAZUS uses GIS technology to estimate the physical, economic, and social impacts of disasters. It is used for mitigation, preparedness, response, and recovery. HAZUS analyses are categorized according to the spatial resolution of the input data and the equations (loss functions) used in calculating loss and damage extents.

Upon deploying the tool, a broad outreach campaign will target both local authorities and the general public to inform them of the existence of the maps and where to obtain them. The Washington DC Silver Jackets Team’s (Team’s) Flood Inundation Mapping Task Group members include the District of Columbia District Department of the Environment (DDOE), the U.S. Army Corps of Engineers (USACE), the U.S. Geological Survey (USGS), the National Weather Service (NWS), the Federal Emergency Management Agency (FEMA), the National Park Service (NPS), and the National Capital Planning Commission (NCPC). The Task Group members are actively involved in developing the project and contribute funding or “in-kind” resources. Other Team members will provide input to the project and will be kept apprised of the study progress. As part of the outreach component, the Team will coordinate with numerous other non-member agencies and organizations.

FY 2015 Goals: The flood control program will continue to review and track compliance with the District’s Flood Hazard Rules. The program will also continue to develop the flood inundation map and outreach program.

4.9 Public Education and Participation

The District continues to implement an education and outreach program that is targeted and will reduce or eliminate behaviors that will cause adverse stormwater impacts.

4.9.1 Education and Outreach

The District conducts public education activities related to stormwater pollution. These activities targets:

- Teachers and students (RiverSmart Schools, DC Environmental Literacy Plan, District of Columbia Environmental Education Consortium, The Anacostia River Environmental Education Fair, Meaningful Watershed Education Experiences (MWEE), Environmental Ambassadors)
- Businesses (Bag Law, Coal Tar, Motor Oil, Pollution Prevention)
- ◆ District employees (2013 Stormwater Rule, Pollution Prevention, Stormwater Guidebook)
- ◆ Homeowners and property managers (RiverSmart Homes, RiverSmart Communities, RiverSmart Washington, IDDE)
- ◆ Developers and engineers (2013 Stormwater Rule, Stormwater Guidebook, SRC)
- ◆ General public (Storm drain markers, HHW, motor oil)

More information about each of these programs is presented in Section 4.9.4 of the Annual Report.

4.9.2 Measurement of Impacts

In October 2013, DDOE received the report of findings for a series of surveys that examined disposable bag usage and distribution after the District's five-cent fee on disposable bags took effect. DDOE commissioned the Alice Ferguson Foundation and OpinionWorks, LLC to complete the surveys, which sought input from both residents and businesses. The resident survey was completed in January 2013 and the business survey was completed from February-April 2013.

The resident survey found that 80% of residents report using fewer disposable bags than before the fee took effect. The average household reported using only four disposable bags per week in 2013, compared to 10 disposable bags per week before the fee took effect. Likewise, 67% of residents report seeing fewer plastic bags as litter, compared to before the fee took effect.

The business survey found that as many as four out of five businesses reported providing fewer plastic bags to customers. On average, businesses reported distributing 50% fewer plastic bags to customers, and 50% of the businesses surveyed stated that they have saved money as a result of the bag fee.

This study and anecdotal evidence from environmental groups hosting trash clean-up events shows that the Bag Law is working and keeping trash out of District water bodies.

Results of this study can be viewed at

<http://ddoe.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/DDOE%202013%20Bag%20Law%20Survey%20Final%20Report%20%282%29.pdf>.

4.9.3 Recordkeeping

As required by Section 4.9.3 of the MS4 Permit DDOE continues to track and record stormwater related public education and outreach activities through the WPD database. Items the WPD database tracks are:

- ◆ District youth receiving environmental education
- ◆ District teachers receiving environmental education training
- ◆ Agency staff receiving training
- ◆ Watershed meetings attended
- ◆ Environmental events attended

4.9.4 Public Involvement and Participation

As required by Section 4.9.4 of the MS4 Permit the District continues to provide the opportunity for direct public involvement through a variety of programs.

In FY 2014, WPD installed 109 storm drain markers with the help of private citizens, youth groups, individuals from various volunteer groups, and DCPS school groups throughout the District of Columbia.

The District hosts volunteer stream clean ups throughout the year. More information about volunteer stream cleanups can be found in Section 2.10 of this report.

The District has created a working group of stakeholders consisting of non-profit groups, and federal and District agencies to review progress throughout the development of the Consolidated TMDL Implementation Plan. This working group holds regular meetings provide information on the progress on the development of this plan.

Additional education and outreach prams include:

- DC Environmental Literacy Plan
- RiverSmart Schools
- District of Columbia Environmental Education Consortium
- The Anacostia River Environmental Education Fair
- Meaningful Watershed Education Experiences (MWEE)
- Environmental Ambassadors
- Trash and Litter Education
- Coal Tar Program
- Bag Law Outreach

- RiverSmart Washington
- IPM
- Clean Marina

DC Environmental Literacy Plan

On July, former Mayor Vincent Gray signed into law the Sustainable DC Omnibus Amendment Act of 2013. One of its seven subtitles is the “Environmental Literacy Plan Adoption” Act, which creates a new program and staff within the DC Office of the State Superintendent of Education (OSSE) to further develop and implement the Environmental Literacy Plan first developed under the Healthy Schools Act. The Environmental Literacy Plan will bring environmental education, including meaningful outdoor experiences, to District youth.

DDOE continues to collaborate with OSSE, DC Public Schools, the DC Environmental Education Consortium, and other community stakeholders to implement this plan.

This past summer, more than thirty District teachers from OSSE’s Science Educator Leadership Cadre participated in an Environmental Literacy Summer Institute. Teachers learned about the Next Generation Science Standards (NGSS) and assessment strategies, and discussed how these new standards will change current teaching practices.

Guest lecturers provided presentations and academic field experiences that support the Environmental Literacy Framework, a new guidance document that provides a grade-by-grade outline of environmental contexts for learning and corresponding sustainability initiatives that are aligned with the NGSS. After three intensive weeks of instruction, the teachers were tasked with developing curriculum units that address the content and processes derived from the NGSS and that support the goals of Sustainable DC. These curriculum units will be field-tested during school year 2014-2015.

RiverSmart Schools

RiverSmart Schools works with DC Public Schools (DCPS), charter schools, and private schools to install LID practices to control stormwater. These practices are specially designed to be functional as well as educational in order to fit with the school environment. Additionally, schools that take part in the RiverSmart Schools program receive teacher training on how to use the sites to teach to curriculum standards and how to properly maintain the sites. See section 2.1.4 for additional details.

RiverSmart Schools is managed by DDOE's WPD. In FY 2014 RiverSmart Schools accomplished the following:

- ◆ Audited 15 District schoolyards for potential stormwater management projects.
- ◆ Provided 35 teachers with a four-day workshop on RiverSmart Schools site usage and programming.
- ◆ Conducted 22 classroom visits and provided 15 boat trips to support integration of watershed lessons for the RiverSmart Schools project at each participating school.
- ◆ Engaged students, teachers, and volunteers in Community Work Days to construct and maintain Schoolyard Conservation Sites. 150 youth from four schools participate in five community work days.

District of Columbia Environmental Education Consortium (DCEEC)

DDOE organizes a network of environmental educators throughout the city so that ideas and resources can be shared among them. The DC Environmental Education Consortium (DCEEC) provides opportunities for networking, event coordination, and program partnering among its members. The members provide environmental expertise, professional development opportunities, curricula and resources, and hands-on classroom and field studies to District schools.

In October 2014, DDOE and DCEEC hosted the 8th Annual D.C. Teacher's Night at the U.S. Botanical Gardens where 276 teachers pre-registered and 165 attended. At this event teachers learned about environmental programming from approximately 40 exhibitors representing local environmental and science education organizations. The teachers met with local environmental educators who connected them with environmental education opportunities both inside and outside the classroom. Participants also took part in hands-on experiments and left with lesson plans for their classrooms.

This year the District held its 3rd annual Growing Healthy Schools Week, which is the fusion of DC School Garden Week and DC Farm to School Week. Growing Healthy Schools Week highlights the interrelated goals of these two former weeks and reflects the components of the recent Healthy Schools Act, which encourages linkages between farm-to-school and school garden programs.

During the week, school staff worked with local non-profits, farms, and chefs to coordinate inspiring activities aimed at engaging the broader community, increasing environmental literacy, building program capacity, and connecting students to their food.

The Anacostia River Environmental Education Fair

This year marked the first Anacostia Environmental Youth Summit, which elevates the Anacostia River Environmental Fair into a city-wide showcase that spotlights youth voice, demonstrates environmental literacy, and encourages stewardship for the Anacostia, Potomac Rivers and the Chesapeake Bay. On May 16, 2014, 25 exhibitors and over 400 students were scheduled to participate in this event in Anacostia Park. Unfortunately, the event was cancelled due to inclement weather and was not able to be rescheduled.

Meaningful Watershed Educational Experiences (MWEEs)

DDOE funded non-profit partners to create meaningful watershed educational experiences for hundreds of District young people.

Outcomes include:

- ◆ AFF provided a trash-focused MWEE for 3rd through 5th graders at Kimball Elementary (20 students), Anne Beers Elementary (30 students), and Aiton Elementary (20 students). This included 70 MWEE hours. The grant program ended June 30, 2014.
- ◆ Live It Learn It implemented four trash-focused MWEE programs to seven (7) District of Columbia Public Schools. Approximately 115 students in 5th grade at Payne Elementary, Barnard Elementary, Randle Highlands Elementary, Smothers Elementary, CW Harris Elementary, Houston Elementary, and Neval Thomas Elementary participated in the trash-focused MWEE that include school trash collection and data, stream study, and pre-post lessons. The grant program sustain a two-year period for 16 classes and ends June 30, 2015.
- ◆ Alice Ferguson Foundation and partners Living Classrooms of the National Capital Region and NatureBridge began a pilot project to engage fifth grade students attending schools in Wards 7 and 8 in an Overnight Meaningful Watershed Educational Experience. Students spend three days and two nights in a natural setting learning about the environment. The partners reached 47% (696 out of 1467) students. DDOE plans to expand this program to all District wards in FY 15.

Environmental Ambassadors

DDOE funded non-profit partners to create a group of children and youth to serve as role models for third to eighth graders (target population). The Environmental Ambassadors functioned as “opinion leaders” – respected and admired by other members of the community. These opinion leaders espouse a certain lifestyle - such as respecting the environment by recycling, or properly disposing of trash – and their peers wish to emulate them. Outcomes include:

- Earth Conservation Corps worked with 48 students from Brent Elementary School. The students accepted the Trash Ambassadors challenge and created a short video.
- Living Classrooms of the National Capital Region worked with 25 students from Eastern Senior High School. These students learned about green careers and worked with 15 students from Eliot-Hine Middle School in Eastern High School’s greenhouse and garden.
- Earth’s Natural Force Connections recruited 14 students to become ENF Rangers. The ENF Rangers performed songs and dances with environmental messages. The rangers completed four assemblies at seven schools, with at least 100 students attending each assembly at their school.

RiverSmart Washington and Green Alleys

RiverSmart Washington is a multi-agency project to install LID neighborhood wide on public and private lands to measure volume reduction. There are two project areas in the Rock Creek Watershed: the MacFarland site, in the Petworth neighborhood and located in the combined sewer system, and the Lafayette site, in the Chevy Chase neighborhood and located in the MS4..

The District's Green Alley Projects are designed to reduce the quantity and improve the quality of stormwater within the city's right-of-way (ROW). Green alleys are one of the project types that are tracked to make progress toward the MS4 Permit's requirement to retrofit 1.5 million square feet of impervious surface in the transportation ROW. Although alleys constitute a significant portion of impervious surface, most do not have stormwater controls, such as water quality catch basins or grate inlets. To mitigate this, Green Alley Projects use sustainable design and LID techniques that reduce the amount of stormwater and pollutants entering the sewer system by increasing water infiltration and treatment on site. A list of completed and upcoming Green Alley Projects is available at <http://ddot.dc.gov/GreenAlleys>.

In FY 2014, DDOT conducted presentations to both residents and technical experts regarding RiverSmart Washington, Green Alleys, and Green Infrastructure Standards.

Presentations to Technical Experts

- “Stormwater Regulations & LID/GI Standards” to DDOT & American Council of Engineering Companies of Metropolitan Washington Quality Forum (October 8, 2013, 60 attendees)
- “Implement Permeable Pavements to Improve Infrastructure Sustainability – A Case Study in RiverSmart Washington” Poster presentation at Transportation Research Board National Meeting (January 13, 2014)
- “Stormwater Regulations & GI/LID Standards” to Construction Management Association of America, National Capital Chapter. (March 12, 2014, 100 attendees)
- “Creating a Green Streets Program in DC” to Chesapeake Water Environment Association, Stormwater Committee Seminar (June 4, 2014, 60 attendees)
- “Creating GI Standards for DC Streets” to FHWA/EPA nationwide webinar (June 19, 2014, 600 viewers)
- “DDOT Green Streets & GI Standards” at Metropolitan Washington Council of Governments “Green Streets Best Practices Workshop” (July 28, 2014)
- “DDOT Green Infrastructure Standards” at District of Columbia Regulatory Authority Green Building Symposium (September 26, 2014, 40 attendees)
- “DDOT Green Infrastructure Standards” to American Council of Engineering Companies of Metropolitan Washington (September 24, 2014, 40 attendees)
- "Green Infrastructure in DC" at WEFTEC (Water Environment Federation Technical Exhibition and Conference) Stormwater Congress in New Orleans (September 29, 2014)
- Tour of DDOT stormwater sites at Nannie Helen Burroughs Ave NE, Pennsylvania Ave SE, Green Alleys, 11th St Bridge, and The Yards streetscape for AASHTO Stormwater Practitioners meeting with representatives from about 30 DOT's nationwide (July 30, 2014, 50 attendees)
- Tour of RiverSmart Washington project site for EcoDistrict conference attendees (September 26, 2014, 50 attendees)

Presentations to the General Public

- RiverSmart Washington project update meetings
 - MacFarland/Petworth area at Petworth Library (March 18, 2014)
 - Lafayette/Chevy Chase area at Chevy Chase Library (March 20, 2014)
 - Lafayette/Chevy Chase area at Quesada St & 33rd St NW (September 3, 2014)
- LID Retrofits Project updates
 - Fitch Pl project to ANC-7C (October 10, 2103).
 - Ft Davis project to residents at Francis Gregory Public Library (November 19, 2013)
 - Erie St SE project to ANC-8B (February 18, 2014)
 - East Beach Drive LID project to North Portal Estates Community Meeting (May 28, 2014)
- “LID Projects” at DDOT Project Updates meetings
 - Ward 7 (March 7, 2014)
 - Ward 8 (March 26, 2014)
- Stormwater overview to 2nd grade class at Capital City Public Charter School. (November 19, 2014)

Coal Tar Ban

In FY 2014 The Coal Tar Program was able to contribute an article to the Property Management Association (PMA) newsletter. This article can be found at <http://viewer.zmags.com/publication/3d9312e7#/3d9312e7/45>

Bag Law

FY 2014 Bag Law Program accomplishments include:

- DDOE ran 22 full or half page ads regarding the accomplishments of the Bag Law in local newspapers (Washington Post Express, Washington Post El Tiempo Latino, Hill Rag, East of the River, MidCity DC)
- Bag Law inspectors tabled at local community events
- Distributed 2,150 reusable bag to District residents

Integrated Pest Management/Nutrient Management

DDOE continues to implement the Integrated Pest Management/Nutrient Management program. Educational materials, such as brochures and videos that provide suggestions on proper lawn fertilization, disposal of household waste, and application of pesticides and herbicides, were distributed to gardeners, homeowners and teachers. The materials were primarily distributed through the Environmental Resource Center at environmental events where the target audience is teachers and District residents.

Clean Marina

DDOE and NPS of the National Capital Region partner with marinas in the District to educate the public on environmentally responsible boating practices. The Clean Marina Program encourages marina, boatyard, and boat club operators, as well as the boating public, to reduce pollution through their daily operations and through encouraging boaters to do the same. In FY 2014, the Clean Marina program recertified two marinas and one Clean Marina Partner. One new partner joined in FY14. To view more information on DDOE's Clean Marina Program: <http://ddoe.dc.gov/service/environmental-issues-marinas>

Trash and Litter

A major component of DDOE's public education activities in FY 2014 related to anti-littering and trash prevention efforts. Trash education and outreach activities are detailed in section 4.9.4 of this report.

As required by Section 4.9.4.1 of the MS4 Permit the District will make the updating of the Stormwater Management Plan (SWMP) open to the public. The Draft SWMP is due for public comment on January 22, 2015.

As required by Section 4.9.4.2 of the MS4 Permit the District has established routine communication to groups. DDOE offers the public many options for training on its stormwater regulations. These trainings are advertised to DDOE's stormwater stakeholder list of over 900 engineers, nonprofits, utilities, and government agencies. In FY 14, DDOE held 39 public training sessions on its stormwater regulations, the SRC program, and the GAR program. Additionally, DDOE holds quarterly meetings with environmental non-profits regarding partnership opportunities and available grants. These meetings are held by the DDOE director and involve all DDOE programming.

As required by Section 4.9.4.3 of the MS4 Permit all MS4 Permit deliverables are made available for public comment.

- DDOE Annual Reports and Discharge Monitoring Reports are found at: <http://ddoe.dc.gov/publication/ms4-discharge-monitoring-and-annual-reports>
- The Draft Stormwater Retrofit Plan can be found at: <http://ddoe.dc.gov/stormwaterretrofitplan>
- The Draft Tree Canopy Plan can be found at: http://ddoe.dc.gov/sites/default/files/dc/sites/ddoe/page_content/attachments/Draft_Urban_Tree_Canopy_Plan_Final.pdf
- The Draft MS4 Catch Basin Maintenance Optimization Plan can be found at: http://ddoe.dc.gov/sites/default/files/dc/sites/ddoe/page_content/attachments/Draft_Urban_Tree_Canopy_Plan_Final.pdf
- The Draft MS4 Outfall Repair Schedule can be found at: <http://ddoe.dc.gov/draftoutfallreport>
- The 2013 Stormwater Guidebook and 2013 Stormwater Rule can be found at: <http://ddoe.dc.gov/swregs>

As required by Section 4.9.4.5 of the MS4 Permit these websites are regularly updated, at a minimum annually.

DDOE websites and social media sites:

- ◆ www.ddoe.dc.gov
- ◆ https://twitter.com/DDOE_DC
- ◆ <https://www.facebook.com/DC.DDOE>
- ◆ <http://www.youtube.com/user/DDOEPublicInfo>

FY 2015 Goals: The District periodically evaluates existing public education materials and revises or develops additional materials as necessary. DDOE will continue to update, add to, and refine the website and social media outreach to display all relevant information including reports, accomplishments, and outreach materials.

4.10 Total Maximum Daily Load Wasteload Allocation Planning and Implementation

4.10.1 Anacostia River Watershed Trash TMDL Implementation

The District is on track to meet the October 7, 2016, deadline for removing 103,188 pounds of trash annually from the Anacostia River. In FY 2014 the District removed 91,471 lbs. of trash from the Anacostia River.

To meet this requirement the District is using the following approaches to meet the Permit requirements:

- ◆ In-stream and end-of-pipe best management practices (e.g. trash traps)
- ◆ Stream clean-up activities
- ◆ Street sweeping environmental hotspots
- ◆ Education and outreach
- ◆ Regulatory approaches (e.g. Bag Fee)

Specifically, through stream clean-ups, street sweeping of environmental hotspots, in-stream and end of pipe BMPs, education and outreach, and enforcement of the Bag Law and littering laws.

Below is a description of the progress made to date with each of the following practice categories.

In-Stream and End-of-Pipe Best Management Practices

As stated in the draft Anacostia River trash TMDL implementation plan released in December 2013, the District will retrofit many “hotspot” Sewershed with end-of-pipe trash BMPs, or trash traps, by 2017. To date, the District has installed seven trash traps in the Anacostia River watershed, Figure 7. Four of those traps have been installed within hotspot Sewershed. Table 21 shows the average and annual maximum trash load that has been collected by each trap since its

installation. DDOE is currently exploring opportunities to install trash traps at other hotspot Sewershed outfalls in 2015.



Figure 7 Current location of trash traps in the Anacostia River watershed

The District met the FY14 goal of installing a trash trap at River Terrace Park, along the Anacostia River, Figure 8. This trap was installed at the end of an MS4 pipe, which empties into a restored wetland along the Anacostia River. The Sewershed for the outfall is approximately 800 acres in size, draining an area both east and west of Minnesota Ave SE.



Figure 8 Trash Trap Installed at River Terrace Park MS4 Outfall

Stream Clean-Up Activities

The District sponsors several clean-up events on an annual basis throughout the Anacostia watershed. Examples include, the Alice Ferguson Foundation's Potomac Trash clean-up and the Anacostia Watershed Society annual Anacostia River Earth Day clean-up. The total amount of trash collected at each cleanup event in the District can be found in Appendix K.

Street Sweeping Environmental Hotspots

DPW continued to implement the enhanced street sweeping program in 2014. DDOE funded DPW to develop an enhanced street sweeping program for the District. The purpose of this project was to make street sweeping more efficient by creating extra time per month to sweep streets identified as environmental hotspots by DDOE. More information about street sweeping can be found in Section 4.3.6.1.

Education and Outreach

The District met the 2014 goal to fully implement grants focused on changing littering behavior. In FY 2014 DDOE continued to fund the Alice Ferguson Foundation to develop and implement community outreach strategies that are geared towards reducing litter in the community. This campaign involved partnering with local businesses to:

- display education and outreach materials
- conduct community trash clean-ups
- disseminate reusable bags to District residents
- work with community organizations on litter awareness and prevention.

To monitor for the effectiveness of the educational campaign AFF has conducted on-line behavioral surveys, trash counts, and visual behavioral studies in the targeted neighborhoods. on

the results of this monitoring will measure how the campaign has affected littering behavior. This data will be used to develop a load reduction efficiency for education and outreach to be counted towards the performance requirement of Section 4.10.1 of the MS4 Permit. The District is counting education and outreach towards compliance with Section 4.10.1 of the MS4 Permit since it meets the definition of Approach 5, Prevention through waste reduction practices, regulations and/or incentives.

Regulatory and Enforcement Approaches

The District continued to enforce the Bag Law, illegal dumping laws, and littering laws. Section 4.7 of this report provides details on the number of enforcement measures taken by the Bag Law Program in 2014. Section 4.7 also provides an update on litter enforcement activities undertaken by the DC MPD in 2014.

Summary of 2014 Trash Load Reductions

Table 21 below displays the current progress made by the District at reducing 103,188 lbs. of trash per year from reaching the Anacostia River.

Table 21 Annual Trash Load Reduction

Activity Category	Activity	Amount of Trash Removed (pounds)	Annual Load Reduction (pounds)	Calculation Methodology
Trash Traps	Marvin Gaye Park Bandalong	1,296	26	Annual average value taken from empirical data collected between Jan 2012 & November 2014. The average amount of trash collected during this time period is multiplied by 2% since that is the approximate proportion of the Watts Branch watershed which lies within District and drains to the trash trap.
	River Terrace Trash Trap	256	256	Current total collected in 2014. Data was only collected during part of 2014.
	Kenilworth Bandalong	2,323	2,323	Annual average taken from empirical data collected between March 2011 and November 2014. No reduction factors are being applied since the entire drainage area above this trap lies within the District.

Activity Category	Activity	Amount of Trash Removed (pounds)	Annual Load Reduction (pounds)	Calculation Methodology
	Nash Run Trash Trap	2,126	1,595	Annual average taken from empirical data collected between 2009 and 2014. The total amount collected is then multiplied by 75% since that is the approximate proportion of the Nash Run watershed that lies within the District and drains to the trash trap.
	Hickey Run BMP	10,000	2,000	Based on assumed efficiency of 100 percent design capture of device. A reduction factor of 20 percent was applied since glass and plastic bottles may not have been emptied of water.
	James Creek Bandalong	184	184	Annual average taken from empirical data collected between January 2012 and November 2014. No reduction factors have been applied since the entire drainage area for this practice lies within the District.
	Earth Conservation Corps Trash Booms	1,475	124	Amount collected from trap in 2014. Annual average not taken for 2013 and 2014 data since only four months of data was collected in 2013. Reduction factors are applied since a portion of the trash collected is coming from the mainstem of the river. A reduction factor of 16.5% is applied since this the proportion of the Anacostia watershed which lies within the District. A second reduction factor of 50.8 % is applied to account for the District's portion of the Anacostia served by the MS4.

Activity Category	Activity	Amount of Trash Removed (pounds)	Annual Load Reduction (pounds)	Calculation Methodology
Roadway and Block Cleanups	Adopt-A-Block Program	425	85	All cleanup events counted are found in the MS4 area of the Anacostia River. None are located along the river. An assumed weight of 25 lbs. per bag is applied to calculate the total weight of bags collected. The total weight of all trash collected is multiplied by 20% to account for not all plastic bottles and other containers being emptied of water.
Sweeping Environmental Hotspots	Sweeping Environmental Hotspots	144,768	72,384	The total area of roadways within the environmental hotspots (e.g. blocks found to contain high trash amounts) ⁵ was calculated. That area was then multiplied by 50% because roughly half of the roadway (the middle of the road) is swept in these areas because they are unsigned. That area is then multiplied by the trash loading coefficient of 31.12 lbs./acre developed for the TMDL. That total mass in pounds is then multiplied by 16 since the DC Department of Public Works (DPW) is supposed to sweep environmental hotspots (i.e. blocks with high amounts of trash) twice per month, 8 months out of the year. That result is then multiplied by 50% because not all hotspots may always be swept.

5 - The environmental hotspots which are swept differ from the “hotspot” sewersheds mentioned earlier. The environmental hotspots swept represent a series of blocks found to contain very high amounts of trash.

Activity Category	Activity	Amount of Trash Removed (pounds)	Annual Load Reduction (pounds)	Calculation Methodology
Clean-Up Activities	Clean-Up Events	33,507	2,868	Based on empirical data collected during cleanup events within the District's portion of the Anacostia watershed. If a site is located along the mainstem of the river, a reduction factor of 16.5% is applied since this the proportion of the Anacostia watershed which lies within the District. A second reduction factor of 50.8 % is applied to account for the District's portion of the Anacostia served by the MS4. A third reduction factor of 20% is applied to account for the fact that not all plastic and glass bottles collected may have been emptied of water before bagged.
	Skimmer Boats	1,116,000	9,354	Based on the annual average of material collected by DC Water skimmer boats between 2003 and 2014. The average amount is first multiplied by 16.5 %, which represents the proportion of the watershed that lies within the District. A second reduction factor of 50.8 % was applied to account for the area of the District's portion of the watershed served by the MS4. A third reduction factor of 50 % was applied since not all material collected by the skimmer boats may have been trash. Finally, a fourth reduction factor of 20 percent was applied since not all plastic and glass bottles collected were emptied of water.
Education and Outreach	Watershed Wide Anacostia Campaign	NA	NA	Efficiency being assessed. DDOE is awaiting results from a grant funded project being undertaken by the Alice Ferguson Foundation. Results should be finalized some time in 2015.

Activity Category	Activity	Amount of Trash Removed (pounds)	Annual Load Reduction (pounds)	Calculation Methodology
Regulatory Approaches	Bag Law	1,072	272	DDOE currently estimates (based on data collected for the development of the Anacostia Watershed Trash Reduction Plan) that there are 82,431 bags in the river and tributaries. This amount is first multiplied by 50.8%, since this is the proportion of the Anacostia River served by the MS4. The amount is then reduced by 50% because according to a recent survey report, 50% of businesses in the District report a 50% reduction in bag purchases. Finally, the total number of bags is then multiplied by 0.013 lbs., which is the standard weight for a plastic bag.
Total (pounds)		1,313,432	91,471	

FY 2015 Goals: The District will continue to implement trash reducing BMPs and monitor for trash. DDOE is actively exploring other project opportunities focused on implementing trash BMPs. DDOE will report on all new activities in the next Annual Report.

4.10.2 Hickey Run TMDL Implementation

In FY14 DDOE created the Hickey Run Hero Program where homeowners in the Hickey Run Watershed were challenged to see which city block can manage the most stormwater. The goal of the competition is to help homeowners install green features on their properties. As of November 11th, DDOE has provided over 200 homeowners with site-specific stormwater plans and 62 homes have two or more features. The winning block will receive financial and technical assistance for a “green block makeover,” which may include green infrastructure enhancements such as permeable pavement, trees and rain gardens. More information about the Hickey Run Hero program can be found at <http://ddoe.dc.gov/service/hickeyrun>.

The Terre Kleen (TK45), installed in Hickey Run on October 26, 2011, is being monitored and maintained on a weekly basis. Additionally, every three months the BMP is cleaned of trash and sediment, and oil absorbent socks are replaced. The contract for monitoring and maintenance is through DGS and managed by DDOE. In 2012, the U.S. Geological Survey installed a stream gage just downstream of the BMP.

- ◆ To view gage data, including height, temperature, conductivity, and turbidity:
http://waterdata.usgs.gov/dc/nwis/uv/?site_no=01651770&PARAMeter_cd=00065,00060.62620

FY 2015 Goals: A final contract will be awarded for construction of the Springhouse Run restoration project for Springhouse Run. Once the contract is awarded the project should be completed in last 2015.

Additionally, a new maintenance contract for the Terre Kleen BMP will be awarded in FY 2015. This contract will also require maintenance staff to quantify the amount and type of trash being removed..

4.10.3 Consolidated TMDL Implementation Plan

DDOE secured contractor support to assist in the development of the TMDL Implementation Plan and held a project kickoff meeting in July 2013. Since then, the project team has:

- ◆ Assembled a stakeholder committee to participate in and assist with the development of the plan, comprised of District and Federal agencies, the business community, and environmental organizations. The stakeholder committee has been convened for seven meetings to review and provide feedback on the project:
 - ◆ Meeting One – Project Introduction (8/26/2013)
 - ◆ Meeting Two – Methodology (12/5/2013)
 - ◆ Meeting Three – Methodology Feedback and Modeling (3/12/2014)
 - ◆ Meeting Four – Implementation Plan Modeling Tool (5/6/2014)
 - ◆ Meeting Five – Methodology and Modeling Tool Updates (6/26/2014)
 - ◆ Meeting Six- Revised Monitoring Program (8/7/2014)
 - ◆ Meeting Seven – Revised Monitoring, Gap Analysis (11/3/2014)
- ◆ Completed several project deliverables, including:
 - ◆ Quality Assurance Project Plan
 - ◆ Consolidated District TMDL Inventory and Literature Review
 - ◆ TMDL Implementation Plan Methodology
 - ◆ Revised Sewershed/Watershed delineations and BMP Implementation GIS layers
 - ◆ IP Modeling Tool
 - ◆ Draft Final Comprehensive Baseline Analysis

These deliverables are available on the Project website at:
<http://dcstormwaterplan.org/documents-and-deliverables/>.

Progress on the Consolidated TMDL Implementation Plan will continue in FY 2015 as DDOE works to complete and submit the plan by the May 11, 2015 Permit deadline. DDOE anticipates that the IP, updated with stakeholder feedback, will outline FY 2015-2020 Goals in detail.

2015 Goals: Progress on the Consolidated TMDL Implementation Plan will continue in FY 2015 as DDOE works to complete and submit the plan by the May 11, 2015 Permit deadline.

5 MONITORING AND ASSESSMENT CONTROLS

5.1 Revised Monitoring Program Development Status

A key component of the Consolidated TMDL Implementation Plan is the revised monitoring program framework. The high-level objectives of the revised monitoring program include:

- ◆ Estimating wet weather pollutant loading for the parameters identified in the permit (e.g., E. coli, total nitrogen, total phosphorus, TSS, select metals, and trash)
- ◆ Evaluating health of receiving waters
- ◆ Identifying pollution sources
- ◆ Tracking performance toward compliance with TMDL Wasteload allocations

In FY 2014, the project team completed the following project deliverables:

- ◆ An analysis of monitoring needs and requirements
- ◆ A review of the existing monitoring programs
- ◆ A crosswalk comparison of monitoring needs and existing monitoring components

FY 2015 Goals: The project team is preparing the first draft of the revised monitoring framework for internal DDOE feedback, and anticipates releasing a version for stakeholder review and feedback in February 2015. DDOE expects to begin phasing in components of the final revised framework in FY 2016.

5.2 Interim Monitoring

In FY14 sampling is proceeding under the interim sampling provisions. The District is providing a summary of monitoring data, trends in pollutant loading, monitoring station locations, and storm information as required by Section 6.2.1.b. Additionally, as required by Section 5.7 of the MS4 Permit the District has submitted monitoring data via NetDMR and in the subsections below. Results of trash monitoring from FY 2013 are found in Section 4.10.1 of this report.

5.2.1 Wet Weather Discharge Monitoring

Water quality monitoring for chemical constituents took place at six monitoring stations, as required by Table 5 of Section 5.2.1 of the MS4 Permit, throughout the District during the 2014 sampling period, Table 22. Detailed map of each of the monitoring stations is found in Figure 9.

Table 22 Monitoring Stations and Dates

Watershed	Site	Location	Drainage Area (Acres)	Dates of Wet Weather Sampling	Dates of Dry Weather Sampling
Anacostia River	A1	Anacostia High School (Corner of 17th St and Minnesota Ave, SE)	252	01/10/14 04/07/14 06/04/14	04/03/14 7/22/14
	A2	Gallatin & 14th St NE (Across from the intersection of 14 th St and Gallatin St, NE)	662	12/06/13 04/25/14 06/04/14	04/03/14 07/23/14
Potomac River	B1	Walter Reed (Fort Stevens Drive NW)	23	12/6/13 01/10/14 04/07/14	04/03/13 07/22/14
	B2	Soapstone Creek (Connecticut Avenue and Albemarle Street, NW)	320	12/06/13 01/10/14 04/25/14	04/03/14 07/22/14
Rock Creek	C1	Battery Kemble Creek (49th and Hawthorne Streets, NW)	11	12/6/14 01/10/14 04/07/14	04/03/14
	C2	Oxon Run (Mississippi Avenue and 15th Street, SE)	43	11/26/14 04/07/14 06/04/14	04/03/14 07/22/14

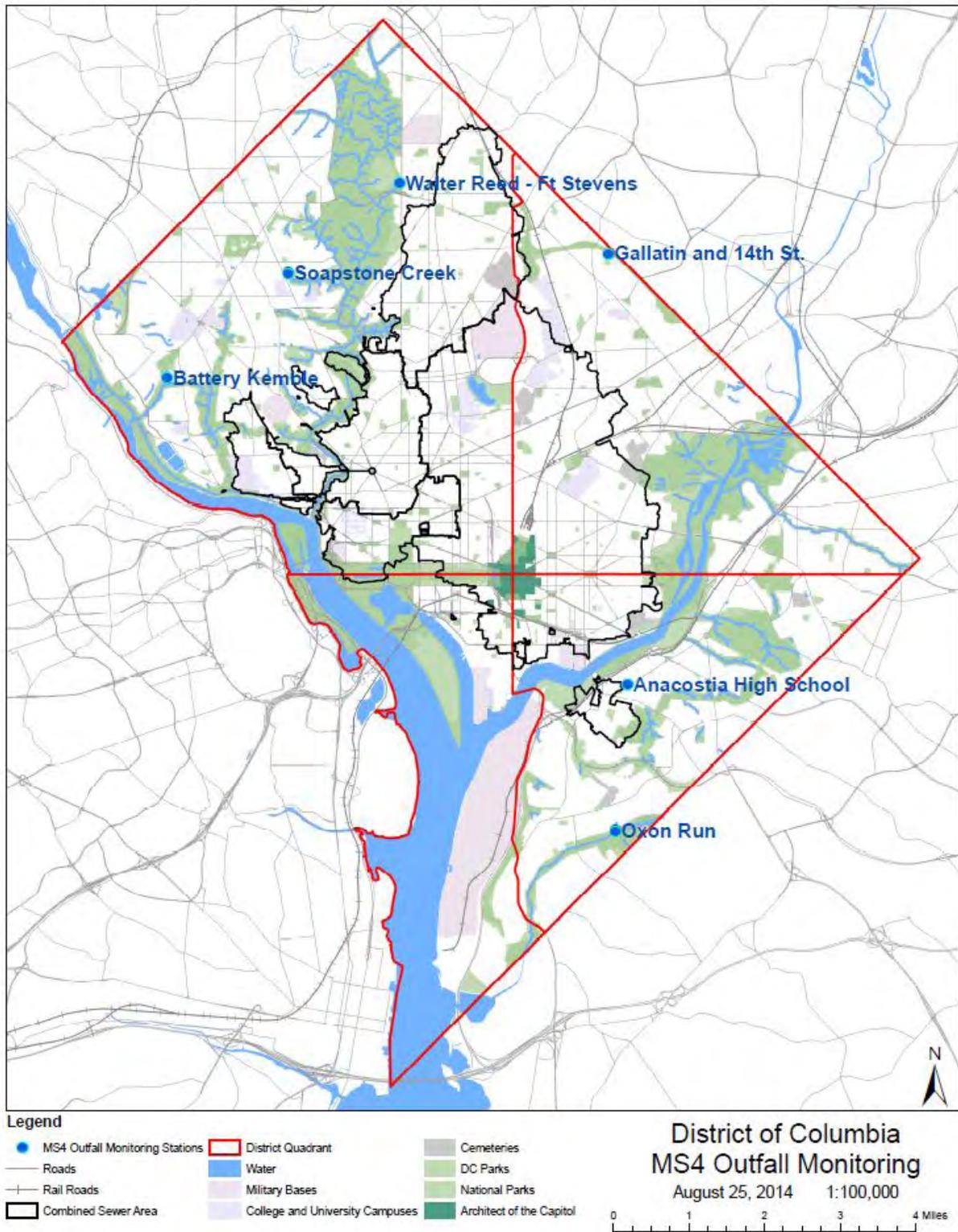


Figure 9 District MS4 Monitoring Stations

The District’s annual Discharge Monitoring Report is included in the 2014 Annual Report and is found in Section 5.2 – 5.7 of this report. As required the Annual Report provides all monitoring data, and a brief synthesis of whether the data indicate that relevant waste load allocations and targets are being achieved.

Table 23 details the ambient water quality results for wet weather sampling.

Table 23 Ambient Water Quality Data for Wet Weather Sampling

Site ID	Location	Date	Water Temp (°F)	pH	DO (mg/L)
A1	Anacostia High School	1-10-14	56.3	7.13	10.61
		4-7-14	50.2	7.1	9.9
		6-4-14	67.1	6.25	7.7
A2	Gallatin and 14 th St. NE	12-6-13	54.32	7.26	10.14
		4-25-14	59.72	7.21	12.44
		6-4-14	69.98	7.5	7.6
B1	Walter Reed/Fort Stevens Dr.	12-6-13	53.6	7.1	10.20
		1-10-14	43.52	7.06	11.95
		4-7-14	50.0	7.99	10.19
B2	Soapstone Creek	12-6-13	57.0	7.53	10.73
		1-10-14	46.94	7.00	11.11
		4-25-14	60.98	7.6	10.4
C1	Battery Kemble	12-6-13	52.4	7.07	11.05
		1-10-14	46.4	7.08	12.1
		4-7-14	50.1	7.35	9.23
C2	Oxon Run	11-26-13	51.26	7.82	10.7
		4-7-14	49.9	7.11	9.92
		6-4-14	68.54	6.37	7.67

Table 24 details the wet weather sampling data for the required monitoring parameters. The geometric mean for each parameter was calculated to represent the event mean concentration (EMC). The wet weather summary data has also been submitted electronically to EPA via NetDMR.

Table 24 Summary of Wet Weather Monitoring

Parameters	Anacostia High School	Gallatin & 14th St., NE	Water Reed/ Fort Stevens	Soapstone Creek	Battery Kemble	Oxon Run
Cadmium (mg/L)	0.00025* (n=3)	0.0003 (n=3)	0.00050* (n=3)	0.00025* (n=3)	0.00025* (n=3)	0.00025* (n=3)
Copper (mg/L)	0.0140 (n=3)	0.0185 (n=3)	0.0203 (n=3)	0.0284 (n=3)	0.1197 (n=3)	0.0201 (n=3)
E. Coli (MPN/100mL)	1062 (n=3)	9042 (n=3)	29374 (n=3)	8595 (n=3)	13904 (n=3)	5763 (n=3)
Lead (mg/L)	0.0084 (n=3)	0.0062 (n=3)	0.0072 (n=3)	0.0081 (n=3)	0.0062 (n=3)	0.0032 (n=3)
Nitrogen, Total as N (mg/L)	3.55 (n=3)	2.87 (n=3)	3.42 (n=3)	2.51 (n=3)	2.47 (n=3)	3.48 (n=3)
Phosphorus, Total as P (mg/L)	0.16 (n=3)	0.23 (n=3)	0.24 (n=3)	0.28 (n=3)	0.27 (n=3)	0.17 (n=3)
Total Suspended Solids (mg/L)	36.43 (n=3)	20.97 (n=3)	30.57 (n=3)	53.80 (n=3)	23.89 (n=3)	12.97 (n=3)
Zinc (mg/L)	0.0579 (n=3)	0.0700 (n=3)	0.0806 (n=3)	0.1002 (n=3)	0.0329 (n=3)	0.0607 (n=3)

* If a sample result is below the reporting limit, one-half the reporting limit is used in the calculation of the geometric mean

5.2.1.1 Trash Monitoring

In 2014, DDOE awarded a grant to the Anacostia Watershed Society (AWS) to conduct stormwater monitoring for trash at six outfalls throughout the District. Several of the stormwater monitoring stations included in the MS4 permit possessed outfalls that were too large to allow for trash monitoring. Working with EPA Region III, DDOE and AWS were able to identify three of the stormwater monitoring stations included in the 2012 MS4 permit as being feasible for trash monitoring. Appendix L contains a land use map of each trash monitoring location. Table 25 provides details on each sampling site.

Trash monitoring stations included:

- ◆ **Walter Reed-Fort Stevens Drive** (16th Street and Fort Stevens Road, N.W. at an outfall)
- ◆ **Battery Kemble Creek** (49th and Hawthorne Streets, N.W. at an outfall)
- ◆ **Oxon Run** (Mississippi Avenue and 15th Street, S.E. into Oxon Run at an outfall)

An additional three locations located solely within the Anacostia River watershed were selected in collaboration with EPA Region III and DDOE. These three locations were previously monitored during the development of the Anacostia Trash TMDL. These stations will provide data on other types of land use not addressed in the three stations above required by the MS4 permit. These stations included:

- ◆ **McDonald's** (Minnesota Avenue NE and Nannie Helen Burroughs Ave NE at an outfall)
- ◆ **Benning Road** (Benning Road NE and Anacostia Avenue NE at an outfall)
- ◆ **New York Avenue** (New York Avenue NE and South Dakota Avenue NE interchange stormwater pond outfall)

Table 25 Trash Monitoring Station Information

Watershed	Site	Physiographic Province	Station	Land use	Acres
Rock Creek	WR	Piedmont	Walter Reed (Ft Stevens Rd & 16 th St, NW)	Mixed density residential	23
Potomac	BK	Piedmont	Battery Kemble (Garfield St & 49 th St, NW)	Low density residential	11
	OR	Coastal Plain	Oxon Run (Mississippi Ave & 15 th St, SE)	Residential 46%, Public Land 45%, Commercial 5%, Utilities 4%	43
Anacostia	BR	Coastal Plain	Benning Road (Benning Rd & Anacostia Ave, NE)	Commercial	12
	McD	Coastal Plain	McDonald's (Minnesota Ave & Burroughs Ave, NE)	Residential 65%, Commercial 23%, Industrial 12%,	7.4
	NYA	Coastal Plain	New York Ave BMP (New York Ave & South Dakota Ave, NE)	Transportation right of way	1.5

Samples were obtained by placing custom made trash traps at the end of each storm sewer pipe and collecting solid material exiting from the outfall during a rain event. The traps fit over an outfall, with a box or sock of one-inch metal poultry netting that collected trash and natural debris emanating from the pipe. When an acceptable rain event was predicted, traps were deployed at one or more monitoring sites. After the rain ended, traps and any material contained within the trap were retrieved. Trap contents were transferred to labeled plastic trash bags for transport. The trap contents were taken to a residence at 3031 Oliver Street NW, Washington, DC, which is the same place samples were processed during the data collection for the TMDL. The bagged samples were set on a sloped concrete pad and small slits were cut in the bottom of the bags to allow water to drain away.

The samples were processed within 72 hours of collection, before appreciable degradation of any organic matter. The trap contents were hand-sorted to separate trash from natural debris. The natural fraction was weighed and properly discarded. The trash fraction was further sorted into its individual components and quantified using the categories used for the Anacostia River trash TMDL. The total trash fraction was then weighed and properly discarded.

Monitoring began at each site when permission to monitor was obtained from the property owner, such as the National Park Service (NPS) or the District Department of Transportation (DDOT). Monitoring was allowed to begin at three sites in September and at a fourth site in October. The National Capital Parks-East Office of NPS did not give permission to monitor the Oxon Run and Benning Road sites until November 2013. As a result of the delays in NPS permitting, and the snowy winter weather, monitoring did not begin at the Oxon Run and Benning Road sites until 2014. Additional information about sampling delays can be found in Section 5.2.4.

Monitoring conducted for the development of the Anacostia trash TMDL in the coastal plain showed that at least 0.25 inches of rainfall is necessary to move trash through the District's MS4. Only samples from storms at least 0.25 inches in magnitude were monitored at stations found within the coastal plain. However, under the direction of DDOE, who gained approval from EPA, samples collected at Piedmont stations were only collected from storms at least 0.10 inches in magnitude. This was due to greater slopes found in the Piedmont province that could affect flow velocity and movement of trash through the MS4. Table 26 details the rain event characteristics of sampled storms.

Table 26 Rain Event Characteristics

Date	Precipitation (inches) ¹	Duration (hours) ¹	Peak Intensity ²	Days from Previous Rain ¹	Sites Sampled
09/12/13	0.13 ³	1 ³	0.13 ³	10	WR
09/12/13	0.64 ³	6 ³	0.47 ³	10	BK
09/21/13	0.87	8	0.50	5	McD
10/07/13	1.13	5	0.75	16	NYA
11/16/13	0.42	7	0.13	9	WR, BK
11/26/13	2.20	30	0.33	8	McD, NYA
12/22/13	0.24	2.5	0.14	5	WR, BK
12/29/13	1.31	9	0.31	6	McD, NYA
02/03/14	1.48	13	0.22	5	OR
04/15/14	1.53	21	0.64	7	BR
04/25/14	0.39	3	0.28	3	OR
06/08/14	0.45	5	0.16	3	BR
08/11/14	1.63	20	0.65 ⁴	7	BR
08/20/14	0.26	1.5	0.34 ⁴	3	OR

¹Precipitation amount, duration, and days from previous rain taken from National Weather Service Washington Reagan National Airport KDCa weather station

²Peak intensities from H Street Corridor-NoMa KDCWASH127 Weather Underground station

³ Event data taken from Bethesda KMDBETHE6 Weather Underground station

⁴ Peak intensity from Aurora Hills KVAARLIN26 Weather Underground station

Table 27 details the results of total trash collected in pounds from each 2013 sampling event. The greatest total, and greatest average, amount of trash was captured at Benning Rd followed by the following sites in order: Oxon Run (Potomac), Walter Reed (Rock Creek), McDonald's (Anacostia), New York Avenue (Anacostia) and Battery Kemble.

Table 27 FY 2013 Trash Monitoring Results

Station	Date	Rain Amount (inches)	Trash Weight (pounds)
Walter Reed (Rock Creek)	09/12/2013	0.13*	3.313
	11/16/2013**	0.42	0.500
	12/22/2013**	0.24	2.813
Battery Kemble (Potomac)	09/12/2013	0.64*	0.125
	11/16/2013**	0.42	0.003
	12/22/2013**	0.24	0.006
Oxon Run (Potomac)	02/03/2014**	1.48	9.813
	04/25/2014**	0.39	4.438
	08/20/2014**	0.26	1.313
Benning Road (Anacostia)	04/15/2014**	1.53	45.125
	06/08/2014**	0.45	10.438
	08/11/2014**	1.63	3.813
McDonald's (Anacostia)	09/21/2013	0.87	0.875
	11/26/2013**	2.20	3.750
	12/29/2013**	1.31	0.250
New York Ave BMP (Anacostia)	10/07/2013**	1.13	3.063
	11/26/2013**	2.20	0.938
	12/29/2013**	1.31	0.500

Rain Amount taken from National Weather Service Washington Reagan National Airport KDCa weather station unless otherwise indicated

* Event data taken from Bethesda KMDBETHE6 Weather Underground station

** Due to weather, permitting, and access issues several samples were taken outside of FY2013. Additional details on sampling delays can be found in Section 5.2.4.

A total of 7,818 items of trash were collected during sampling. The number of items in major categories is shown in Figure 10. As in all previous studies, the food wrappers were the most abundant item encountered. Bottles and various beverage containers were not a dominant fraction by number of items, but they are highly visible and occupy a large volume of the trash

samples. Paper and plastic bags were a slightly smaller portion of the trash than in previous studies.

Expanded polystyrene foam was aggregated into one number that included fragments and pieces of cups and takeout containers, whole cups and plates, packing material, and miscellaneous foam pieces, but excludes whole Styrofoam clamshells, which were counted in the take-out category.

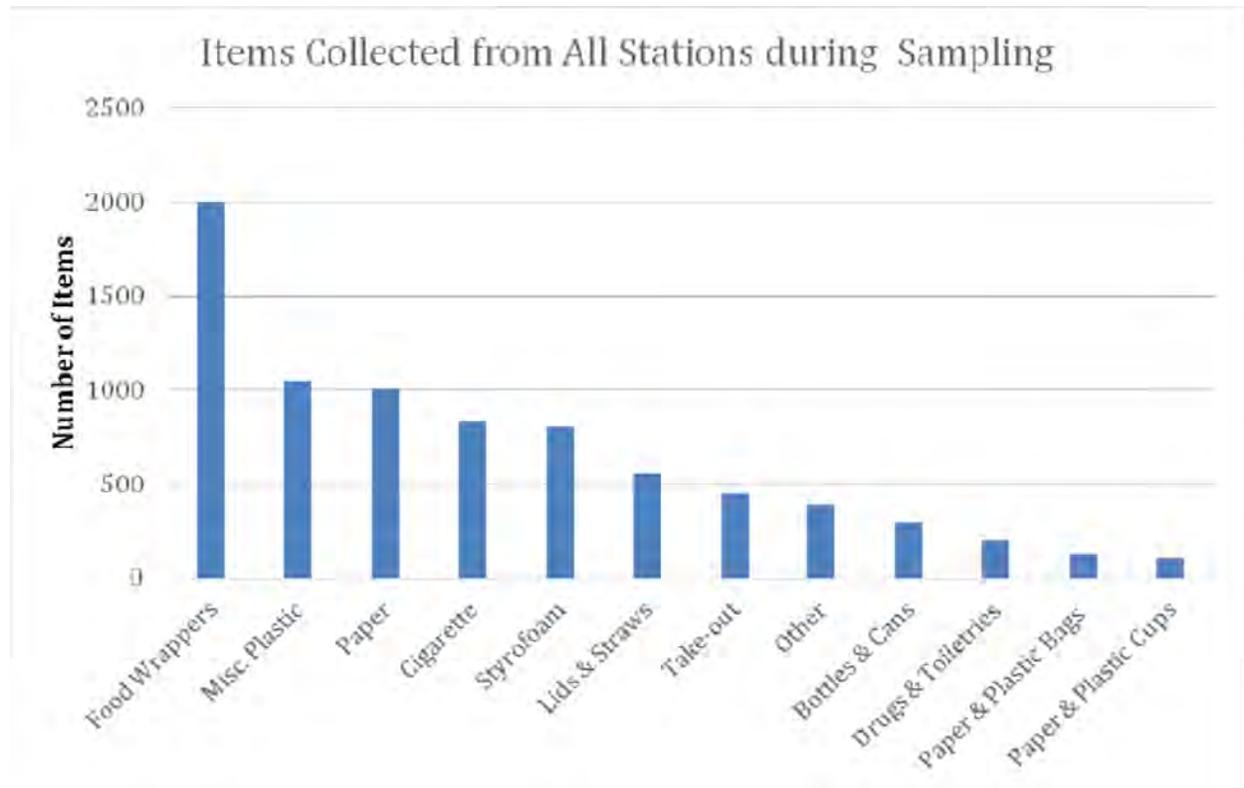


Figure 10 Items Collected During Trash Sampling

5.2.1.2 Estimates of Cumulative Pollutant Loading

The Simple Method is widely used to estimate stormwater runoff pollutant loads for urban areas. The Simple Method estimates pollutant loads for chemical constituents as a product of annual runoff volume and pollutant concentrations (Equation 1).

Equation 1 Simple Method

$$L = \sum_{i=1}^{\text{No. of landuse types}} \left(\frac{P}{12} \times CF \times Rv_i \times C_i \times A_i \times 2.72 \right)$$

Where:

- L = Pollutant loading (lb./year for chemical constituents, MPN/yr. for bacteria)
- P = Average annual rainfall (inches)
- CF = Correction factor (0.9) to adjust for storms where no runoff occurs (dimensionless) (EPA 1992)
- Rv_i = Runoff coefficient for the land use type (dimensionless)
- C_i = Average event mean concentration (EMC) (mg/L for chemical constituents)
- A_i = Land use area (acres)
- 2.72 = Unit conversion factor for chemical constituents in concentration units of mg/L; 12,334,885 for bacteria in units of MPN/100 mL.

The geometric mean of the measured event mean concentration (EMCs) were calculated for each monitoring station (Equation 2).

Equation 2 Event Mean Concentration

$$\text{Geomean of EMCs} = \left[\prod_{j=1}^m \text{EMC}_j \right]^{\frac{1}{m}}$$

Where:

- EMC_j = Event Mean Concentration of storm
- m = Number of storms at monitoring location

The total cumulative pollutant load for each of the three watersheds was calculated using the data from each monitoring site in a watershed. This calculation assumes that the two sampling stations are representative of the respective Potomac River, Anacostia River and Rock Creek watersheds. Given this assumption, a simple ratio is used to cover a cumulative load for each watershed (Equation 3). The annual pollutant loads for the selected pollutants is detailed in Table 28.

Equation 3 Cumulative Pollutant Load

$$L_A = \left(\frac{\sum L_i}{\sum A_i} \right) (A_t)$$

L_A = Estimated subwatershed cumulative pollutant load (lb./year)

A_t = Subwatershed total area (acres)

L_i = Pollutant loading for each monitoring site (lb./year)

A_i = Size of each monitoring site (acres)

Table 28 Annual Pollutant Loading

Station	TSS (lb./yr.)	TN (lb./yr.)	TP (lb./yr.)	Cd (lb./yr.)	Cu (lb./yr.)	Pb (lb./yr.)	Zn (lb./yr.)	E. Coli (MPN/100ml)
Anacostia High School	62,143	6,056	273	ND	23.88	14.33	100.64	8.2E+12
Gallatin & 14th St. NE	102,811	14,071	1,128	1.47	90.70	30.40	343.19	2.0E+14
Water Reed	4,588	633	32	0.07	1.62	0.00	6.64	2.2E+13
Soapstone Creek	38,025	569	498	0.55	39.09	0.00	88.84	3.8E+14
Battery Kemble Creek	19,325	1,998	218	ND	96.83	5.02	2.08	5.1E+13
Oxon Run	54,371	14,588	713	ND	84.26	13.41	254.46	1.1E+14
Load Estimates Anacostia Watershed (lbs./yr.)	1,434,725	175,056	12,182	12.79	996.61	389.01	3,860.38	1.8E+15
Load Estimates Potomac Watershed	6,728,927	1,514,447	85,012	0.00	16,534.45	1682.77	23,424.04	1.5E+16

Station	TSS (lb./yr.)	TN (lb./yr.)	TP (lb./yr.)	Cd (lb./yr.)	Cu (lb./yr.)	Pb (lb./yr.)	Zn (lb./yr.)	E. Coli (MPN/100ml)
(lbs./yr.)								
Load Estimates Rock Creek Watershed (lbs./yr.)	505,076	14,240	6,282	7.35	482.57	0.00	1,131.72	4.8E+15
Total Load Estimates (lbs./yr.)	8,668,729	1,703,743	103,475	20.14	18,013.63	2071.78	28,416.14	2.1E+16

5.2.1.3 Water Quality Trend Analysis

An examination of water quality trends was limited due to the differences between the 2013 and 2014 monitoring regime and the current interim monitoring requirements.

Tables 29,30, and 31 present the range in concentrations (minimum and maximum) for each watershed. Concentrations of cadmium, show a slight increase in the Anacostia River and Rock Creek watersheds. TSS concentrations also slightly differ in the Anacostia River. A slight increase in Zinc was observed in Rock Creek watershed. All other parameters were observed to be at concentrations below those of the preceding year.

Table 29 Summary of Selected Parameters in the Potomac River Watershed

Parameters	2013*		2014*	
	Concentration (mg/L)		Concentration (mg/L)	
	Low	High	Low	High
Cadmium, Total	ND	0.0036	ND	ND
Copper, Total	0.021	0.25	0.022	0.13
Lead, Total	0.0028	0.022	0.0026	0.019
Zinc, Total	0.016	0.32	0.016	0.079
Total suspended solids	9	120	8	62
Total Phosphorous	0.072	0.46	0.11	0.38
Total Nitrogen	1.9	5.7	2.1	3.4

* Samples were collected from two (2) stations for a total of six (6) sample events in 2013-2014

Table 30 Summary of Selected Parameters in the Anacostia River Watershed

Parameters	2013*		2014*	
	Concentration (mg/L)		Concentration (mg/L)	
	Low	High	Low	High
Cadmium, Total	ND	0.0037	ND	0.0052
Copper, Total	0.016	0.917	0.011	0.018
Lead, Total ¹	0.0033	0.014	0.0021	0.015
Zinc, Total	0.0055	0.27	0.047	0.087
Total Suspended Solids	10	75	4	200
Total Phosphorous	0.23	0.45	0.03	0.48
Total Nitrogen	2.7	5.6	2.4	4.2

*Samples were collected from two (2) stations for a total of six (6) sample events in 2013-2014

Table 31 Summary of Selected Parameters in Rock Creek Watershed

Parameters	2013*		2014*	
	Concentration (mg/L)		Concentration (mg/L)	
	Low	High	Low	High
Cadmium, Total	ND	0.00077	ND	0.002
Copper, Total	0.012	0.12	0.016	0.04
Lead, Total	0.0036	0.026	0.0055	0.012
Zinc, Total	0.036	0.094	0.058	0.12
Total Suspended Solids	6.5	110	23	79
Total Phosphorous	0.17	0.63	0.17	0.44
Total Nitrogen	1.7	5.8	2.1	4.7

*Samples were collected from two (2) stations for a total of six (6) sample events in 2013-2014

5.2.2 Storm Event Data

The National Oceanic and Atmospheric Administration (NOAA) rain gauge located at Reagan National airport is used to track rain conditions for the District and surrounding areas, Table 32. The Annual precipitation within the District of Columbia for the 2014 monitoring period was 49.48 inches. A number of the rainfall events were in the form of short duration thunderstorms followed by a lengthy dry period which did not meet the sampling requirements in the MS4 Permit. Table 33 details the measurements of storms sampled in the FY 2014 monitoring period. This information includes, as required by the MS4 Permit, the date, duration, and size of storm events, and time to previous sampled storm. The required flow measurements can be found in table 38 in Section 5.5 of this report.

Table 32 Precipitation Record for the District of Columbia

Year	Month	Actual (inches)*	Number of Days in Month with Storms >0.10 inches	Monthly Average (inches)
2013	October	6.25	5	3.40
	November	2.92	5	3.17
	December	5.53	8	3.05
2014	January	2.58	7	2.81
	February	4.02	5	2.62
	March	4.26	8	3.48
	April	6.47	6	3.06
	May	4.96	9	3.99
	June	3.31	7	3.78
	July	4.68	7	3.73
	August	3.39	7	2.93
	September	1.11	3	3.72

* Rain gauge Reading at Ronald Reagan National Airport.

Table 33 Characteristics of Sampled Storms

Date	Precipitation (inches)	Duration (hours)	Time to Previous Measurable Rainfall (approx. days)	Sites Sampled
11-26-13	1.46	8	7	C2
12-6-13	0.63	17	8	A2, B1, B2, C1
1-10-14	1.44	36	4	A1, B1, B2, C1
4-7-14	0.38	10	7.5	A1, B1, C1, C2
4-25-14	0.39	3	10	A2, B2
6-4-14	0.42	5	7	A1, A2, C2

5.2.3 Sample type, Collection, and Analysis

The District conducted the water quality sampling and analysis in accordance with the requirements specified in the MS4 Permit, SWMP, and EPA regulations. Table 34 details the water quality sampling and laboratory requirements.

Table 34 Sample Analysis Requirements

Bottle Type	Sample Type	Parameter	Method	Units	Monitoring Detection Limit
1000 mL Plastic, Sterile	Grab	E. coli	SM9221F	MPN/ 100 mL	200
500 mL Plastic H ₂ SO ₄	Composite	Total Nitrogen	Calculation	mg/L	1.0
500 mL Plastic H ₂ SO ₄	Composite	Phosphorus, Total	SM4500-P B, E	mg/L	0.010
1-L Plastic Unpreserved	Composite	Total Suspended Solids	SM2540D	mg/L	1.0

Bottle Type	Sample Type	Parameter	Method	Units	Monitoring Detection Limit
1000 mL Plastic HNO ₃	Composite	Cadmium, Total	EPA 200.8	mg/L	0.00050
1000 mL Plastic HNO ₃	Composite	Copper, Total	EPA 200.8	mg/L	0.0010
1000 mL Plastic HNO ₃	Composite	Lead, Total	EPA 200.8	mg/L	0.0010
1000 mL Plastic HNO ₃	Composite	Zinc, Total	EPA 200.8	mg/L	0.0050

5.2.4 Sampling Waiver

For FY 2014 the District was able to collect all required monitoring samples for the chemical constituents listed in Table 4 of the MS4 Permit. However, FY 2014 trash monitoring has been delayed.

DDOE expects 2014 trash monitoring report to be completed early in 2015 and will submit an addendum to the 2014 Annual Report featuring all data collecting during that sampling period, as required by Section 6.2.3 of the MS4 Permit. Several factors, such as site access, permitting, and severe weather delayed collection of trash samples for 2013 and 2014.

5.3 Dry Weather Monitoring

5.3.1 Dry Weather Screening Program

The District continues with the dry weather screening program as described in the SWMP. Dry weather sampling will commence on scheduled days following periods of dry weather (seventy-two (72) hours of no precipitation).

Sampling location and dates are found in Table 22. Table 35 detail the ambient water quality results for dry weather sampling.

Table 35 Ambient Water Quality Data for Dry Weather Sampling

Site ID	Location	Date	Water Temp (°F)	pH	DO (mg/L)
A1	Anacostia High School	4-3-14	54.3	7.62	9.55
		7-22-14	72.86	7.9	8.9
A2	Gallatin and 14 th St. NE	4-3-14	54.7	7.19	9.23
		7-23-14	73.4	7.61	10.21
B1	Walter Reed/Fort Stevens Dr.	4-3-14	54.06	7.08	10.63
		7-22-14	70.3	6.77	9.35
B2	Soapstone Creek	4-3-14	54.48	7.05	9.91
		7-22-14	66.56	7.09	10.98
C1	Battery Kemble	4-3-14	52.52	7.14	9.75
		NDF	--	--	--
C2	Oxon Run	4-3-14	56.6	7.1	8.36
		7-22-14	70.88	7.1	9.0

NDF – No Dry Weather Flow

The water quality monitoring data for dry weather sampling is found in Table 36. The geometric mean for each parameter was calculated to represent the event mean concentration (EMC). The wet weather summary data has also been submitted electronically to EPA via NetDMR. The analysis for dry weather monitoring included additional parameters of concern. The full analysis for dry weather monitoring is included in Appendix M.

Table 36 Summary of Dry Weather Monitoring

Parameters	Anacostia High School	Gallatin & 14th St., NE	Water Reed/Fort Stevens	Soapstone Creek**	Battery Kemble	Oxon Run
Cadmium (mg/L)	0.0004* (n=2)	0.0003* (n=2)	0.0004* (n=2)	0.0004* (n=2)	0.0003* (n=2)	0.00025* (n=2)
Copper (mg/L)	0.0124 (n=2)	0.0068 (n=2)	0.0024* (n=2)	0.0158* (n=2)	0.0032 (n=2)	0.0023 (n=2)
E. Coli (MPN/100 mL)	1600 (n=2)	271 (n=2)	57 (n=2)	1600* (n=2)	130 (n=2)	521* (n=2)
Lead (mg/L)	0.0119 (n=2)	0.0009* (n=2)	0.0007* (n=2)	0.0028* (n=2)	0.0005 (n=2)	0.0010 (n=2)
Nitrogen, Total as N (mg/L)	3.13 (n=2)	4.90 (n=2)	3.60 (n=2)	3.78* (n=2)	2.80 (n=2)	3.87 (n=2)
Phosphorus, Total (as P) (mg/L)	0.23 (n=2)	0.27 (n=2)	0.01* (n=2)	0.13* (n=2)	0.01* (n=2)	0.01* (n=2)
Total Suspended Solids (mg/L)	30.74 (n=2)	3.34 (n=2)	0.17* (n=2)	5.37* (n=2)	2.40 (n=2)	10.00 (n=2)
Zinc (mg/L)	0.0759 (n=2)	0.0215 (n=2)	0.0182 (n=2)	0.0277* (n=2)	0.0063 (n=2)	0.0123 (n=2)

If a sample result is below the reporting limit, one-half the reporting limit is used in the calculation of the geometric mean

5.3.2 Screening Procedures

Details on screening procedures can be found in Section 4.7.

5.3.3 Follow-up on Dry Weather Screening Results

The District continues to implement an IDDE program for locating and ensuring elimination of all suspected sources of illicit connection and improper disposal identified during dry weather

screening. The District’s IDDE program description and implantation activities can be found in Section 4.7 of this report.

5.4 Area and Source Identification Program

The District is highly urbanized, with little available land for further development. The MS4 drainage area contains approximately 26,500 acres, which is two-thirds of the District. The Combined Sewer System (CSS) drainage area encompasses approximately 12,640 acres, which is one-third of the District. All new development and redevelopment of existing areas is subject to the District’s stormwater management regulations with a review by DDOE. The land use and impervious area must be indicated on all stormwater management plans submitted to DDOE for review and inspection. No single development plan reviewed to date has sufficient land area to make a significant impact to the MS4 system. The cumulative impacts of the proposed and new developments have not resulted in a significant change for the existing land use activities in the portion of the District served by the MS4. Table 37 provides the existing land use by planning area in the District (MS4 and CSS).

Table 37 Acres of Existing Land and Water Use by Planning Area

Land Use Type	Planning Area											
	Capitol Hill	Central Washington	Far northeast & southeast	Far southeast & southwest	Lower Anacostia waterfront/near southwest	Mid city	Near northwest	Rock creek east	Rock creek west	Upper northeast	Citywide	Percent (%)
Public Rights-of-Way	759	899	1,338	906	477	628	716	1,311	1,760	1,223	10,018	25
Single Family Detached Homes	6	0	775	164	7	15	84	919	2,324	641	4,936	13
Single Family Attached Homes/ Row Homes	520	10	641	328	30	497	340	606	290	611	3,874	10
Low-Rise Apts.	43	10	436	555	106	136	110	85	185	189	1,856	5
High-Rise Apts.	4	26	20	44	26	59	65	25	109	25	402	1
Commercial	97	448	129	63	122	144	220	106	170	296	1,795	5
Industrial	5	16	12	5	42	21	6	16	0	295	418	1
Local Public Facilities	72	47	154	441	47	54	75	131	67	102	1,110	3
Federal Facilities (excl. parks)	47	481	4	1,067	409	1	1	412	283	76	2,781	7
Institutional	42	67	71	117	22	142	249	163	659	730	2,262	6

Land Use Type	Planning Area											
	Capitol Hill	Central Washington	Far northeast & southeast	Far southeast & southwest	Lower Anacostia waterfront/near southwest	Mid city	Near northwest	Rock creek east	Rock creek west	Upper northeast	Citywide	Percent (%)
Permanent Open Space	296	678	1,321	729	533	141	354	878	2,011	1,038	7,980	20
Rail, Utilities Communication,	1	36	223	74	11	97	6	83	4	321	857	2
Vacant	66	58	179	188	51	36	33	22	111	99	843	2
Total Land	1,958	2,776	5,305	4,687	1,884	1,971	2,259	4,757	7,982	5,645	39,225	100
Water	117	509	135	1,791	1,295	46	239	19	313	89	4,554	
Total Land and Water	2,075	3,284	5,440	6,474	3,179	2,017	2,498	4,776	8,288	5,735	43,766	

5.5 Flow Measurements

Table 38 details flow measurements and flow conditions during FY 2014 MS4 sampling.

Table 38 Stormwater Sampling Flow Measurements and Conditions

Date	Site Number	Event Type	Location Name	Watershed	Flow Conditions	Flow Rate at Outfall(GP M)
1/10/2014	A1	Wet	Anacostia High	Anacostia	Good	~898
1/10/2014	B1	Wet	Walter Reed/Fort Stevens	Rock Creek	Good	~37
1/10/2014	B2	Wet	Soapstone Creek	Rock Creek	Good	~1,145
1/10/2014	C1	Wet	Battery Kemble Creek	Potomac	Good	~24.9
4/3/2014	A1	Dry	Anacostia High	Anacostia	Good	~448.8

Date	Site Number	Event Type	Location Name	Watershed	Flow Conditions	Flow Rate at Outfall(GP M)
4/3/2014	A2	Dry	Gallatin	Anacostia	Good	~982
4/3/2014	B1	Dry	Walter Reed/Fort Stevens	Rock Creek	Good	~12.47
4/3/2014	B2	Dry	Soapstone Creek	Rock Creek	Good	~233.8
4/3/2014	C1	Dry	Battery Kemble Creek	Potomac	Good	~6.23
4/3/2014	C2	Dry	Oxon Run	Potomac	Good	~149.6
4/7/2014	A1	Wet	Anacostia High	Anacostia	Good	~897
4/7/2014	B1	Wet	Walter Reed/Fort Stevens	Rock Creek	Good	~62.3
4/7/2014	C1	Wet	Battery Kemble Creek	Potomac	Good	~62.3
4/7/2014	C2	Wet	Oxon Run	Potomac	Good	~523.6
4/25/2014	A2	Wet	Gallatin	Anacostia	Good	~374
4/25/2014	B2	Wet	Soapstone Creek	Rock Creek	Good	~299.2
6/04/2014	A1	Wet	Anacostia High	Anacostia	Good	~561.0
6/04/2014	A2	Wet	Gallatin	Anacostia	Good	~1,496.1
6/4/2014	C2	Wet	Oxon Run	Potomac	Good	~224.4
7/22/2014	A1	Dry	Anacostia High	Anacostia	Good	~280
7/22/2014	B1	Dry	Walter Reed/	Rock Creek	Good	~1.26

Date	Site Number	Event Type	Location Name	Watershed	Flow Conditions	Flow Rate at Outfall(GPM)
			Fort Stevens			
7/22/2014	B2	Dry	Soapstone	Rock Creek	Good	~187
7/22/2014	C2	Dry	Oxon Run	Potomac	Good	~112
7/23/2014	A2	Dry	Gallatin	Anacostia	Good	~336
7/23/2014	C1	Dry	Battery Kemble	Potomac	No Dry Flow	No Dry Flow
12/6/2014	A2	Wet	Gallatin	Anacostia	Good	~6,284
12/6/2014	B1	Wet	Walter Reed/ Fort Stevens	Rock Creek	Good	~474
12/6/2014	B2	Wet	Soapstone Creek	Rock Creek	Good	~936.93
12/6/2014	C1	Wet	Battery Kemble Creek	Potomac	Good	~23.28

5.6 Monitoring and Analysis Procedures

The District monitoring is conducted using the procedures approved in 40 C.F.R Part 136, http://www.epa.gov/region9/qa/pdfs/40cfr136_03.pdf.

Detection limits for the District's water quality monitoring can be found in table 31.

5.7 Reporting of Monitoring Results

The MS4 Permit Section 5.7 and 6.2.1.b requires all monitoring results and trends to be reported in the Annual Report. Section 5 of this report is the District's Annual Discharge Monitoring Report and fulfils the Requirements of Section 5.7 and 6.2.1.b of the MS4 Permit.

All monitoring results are submitted in Net DMR as required by the MS4 Permit and one copy of the Annual Report and DMR is sent to EPA Region III and National Marine Fisheries Service North East Region.

5.8 Additional Monitoring

The District did not monitor any pollutant more frequently than required by the MS4 Permit.

5.9 Retention of Monitoring Information

The District continues to retain all monitoring records in electronic and hard copy files as required by the MS4 Permit.

5.10 Record Content

DDOE maintains a record of rainfall event, sampling, and analysis data. This data includes:

- Description of Sampling
 - Sampling protocols
 - Location/Collection time
 - Sample collection procedures
 - Field notes
 - Sampling personnel
- Storm Event Data
 - Date and duration of storm events sampled
 - Rainfall measurements
 - Duration between storm event sampled and the end of the previous measurable storm event
 - Estimate of the total volume of the discharge sampled
- Storm Water Analysis Data
 - Field test results
 - Laboratory results

6 REPORTING REQUIREMENTS

The District continues to comply with the reporting requirements and deliverable dates of the MS4 Permit.

6.1 Discharge Monitoring Report

The DMR is found in Section 5 of this report.

6.2 Annual Report

The District continues to submit the Annual Report to EPA Region III. The 2014 Annual Report can be found on the DDOE website at <http://ddoe.dc.gov/publication/ms4-discharge-monitoring-and-annual-reports>. The 2014 Annual Report follows the format of the MS4 Permit and addresses each Permit requirement. The required elements of Section 6.2.1 a-p are addressed throughout the 2014 Annual Report. The activities described as “FY15 Goals” in each section of

the Annual Report fulfill the Section 6.2.1.1 requirement to provide a summary of commitments for the next year.

7 MODELING

A TMDL Implementation Plan modeling tool integrated with DDOE's new BMP tracking database is an essential component of the Consolidated TMDL Implementation Plan. Since 2001, TMDLs in the District have been developed using a variety of land-based loading and hydrodynamic models, at differing spatial scales, using best available model inputs at the time a particular TMDL was developed. These models and model inputs have been documented, compiled, and inventoried so that they can be reconciled with the model that will be used for the Consolidated TMDL Implementation Plan. Also, DDOE has continued to update and refine the GIS data layers for MS4 outfalls and the delineation of their Sewershed. These layers inform and contribute to the ongoing development of a new GIS layer for the contributing area of each TMDL water body.

In early FY 2014, the TMDL IP project team finalized the TMDL Implementation Plan Methodology document, which identified modeling requirements, the model framework, and described the methods used to calculate runoff volume, loads, and load reductions anticipated by the implementation of stormwater and pollution reduction strategies. The project team then developed and used the modeling tool to conduct a baseline analysis that is documented in the Draft Final Comprehensive Baseline Analysis. Finally, the TMDL IP project team is in the process of finalizing, development scenarios and DDOE is committed to include modeling results for planned implementation in the final Consolidated TMDL Implementation Plan.

DDOE's IP Modeling Tool tracks and accounts for pollutant load generation and load reduction for all of the pollutants of interest that have MS4 WLAs. It consists of three parts:

- *Runoff Module*: calculates the runoff volume for a typical year of rainfall using a Modified Version of the Simple Method (CWP and CSN, 2008).
- *Pollutant Load Module*: calculates the pollutant loads using event mean concentrations (EMCs), stream bank erosion calculations, and/or trash load rates in conjunction with runoff volume from the runoff module described above.
- *BMP Module*: consists of the current BMP inventory and the assumed BMP pollutant load reduction efficiencies in order to calculate load and runoff reductions provided by the BMPs.

As part of the Consolidated TMDL Implementation Planning process, the District has used the modules above to estimate runoff, pollutant loads, and reductions associated with the BMPs that have been implemented to date. Pollutant load reductions for each TMDL, water body, and pollutant are presented in the Baseline Attachment Tables 1-24 in the Draft Final Comprehensive Baseline Analysis Report. The District will continue to assess the performance of BMPs (including stormwater retention practices) by updating and running the BMP module with controls put on the ground in the appropriate reporting period. In addition to tracking load reductions by TMDL, water body, and pollutant, DDOE is considering the addition of a

summary of the modeled pollutant reductions throughout the MS4 area by major drainage basin in future annual reports.

The implementation activities of this section fulfil the reporting requirements of Section 6.2.1.g and Section 7 of the MS4 Annual Report.

The TMDL IP Methodology can be found at <http://dcstormwaterplan.org/wp-content/uploads/Final-Methodology-Document.pdf>.

The Draft Final Comprehensive Baseline Analysis Report can be found at http://dcstormwaterplan.org/wp-content/uploads/AppB_SewershedDelineations_DraftFinalCBA_0924_2014.pdf.

