Municipal Separate Storm Sewer System

NPDES Permit No. DC0000221

Draft Revised Stormwater Management Plan

Bayscaping at a RiverSmart Home

Prepared by:

District Department of the Environment

Tommy Wells, Acting Director

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Table of Contents

List of Acronyms and Abbreviations

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
EPCRA	Emergency Planning and Community Right-to-Know Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FY	Fiscal Year (October–September)
GAR	Green Area Ratio
GI	Green Infrastructure
GIS	Geographic Information System
GSA	General Services Administration
IP	Implementation Plan
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

OP	Office of Planning
PROW	Public Right-of-Way
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
SRC	Stormwater Retention Credit
SWAP	Stormwater Advisory Panel
SWEEP	Solid Waste Education and Enforcement Program
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
WLA	Wasteload Allocation
WPD	Watershed Protection Division
WQD	Water Quality Division

List of Tables

List of Figures

DISTRICT OF COLUMBIA

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

MUNICIPAL SEPARATE STORM SEWER SYSTEM DISCHARGE PERMIT

Draft Stormwater Management Plan

1 INTRODUCTION

The Government of the District of Columbia (District) submits the Draft Revised Stormwater Management Plan (SWMP) to comply with Section 3 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.

The District Department of the Environment (DDOE) compiled this Draft Revised SWMP 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), the Office of Planning (OP), and the Department of General Services (DGS).

1.1 Goals of the Revised Stormwater Management Plan

The Draft Revised SWMP outlines the District's strategy for implementing a sustainable approach to managing stormwater runoff and protecting the District waterways. The Revised SWMP goes beyond the traditional stormwater management approaches and will require the retention of stormwater volume on site with a menu of stormwater management practices through which stormwater is absorbed by the soil, infiltrated into the ground, evapotranspired by plants, and/or stored ("harvested") for use on site. This Draft Revised SWMP demonstrates the District's commitment to stormwater management.

Further, the District is currently developing a Consolidated Total Maximum Daily Load (TMDL) Implementation Plan (IP) that will set a long-term, performance-based strategic plan for addressing TMDL Waste Load Allocations (WLAs) assigned to the District's MS4. A major component of this plan will be a schedule for WLA attainment, including interim milestones and numeric benchmarks detailing incremental progress toward ultimate WLA attainment. Previous versions of the District's MS4 Permit have included a variety of numeric performance metrics for the Stormwater Management Program, such as annual implementation requirements for tree plantings, green roof installations, retrofit of impervious surface, etc. While these requirements undoubtedly led to water quality improvements, they were never conceived of as part of a larger, optimized strategic framework for stormwater management.

The Consolidated TMDL IP will provide just such a framework for the next Permit cycle. As a result, the District intends for the TMDL IP's implementation schedule, and its associated interim milestones and numeric benchmarks, to provide the basis for any numeric performance

requirements in the next MS4 Permit. This will allow the District the flexibility to achieve the necessary pollutant load reductions in the most cost-effective manner possible.

Because the Consolidated TMDL IP is still under development the details of this implementation schedule cannot be included in this public review draft of the District's SWMP. The draft Consolidated TMDL Implementation Plan will be submitted to EPA and for public review and comment in May of 2015, and elements of the final Plan will be incorporated into the final SWMP the District submits to EPA in January of 2016.

1.2 Authorized Discharges

The MS4 Permit authorizes all existing or new stormwater point source discharges to waters of the United States from the MS4 of the District. The MS4 Permit also authorizes the discharge of stormwater commingled with flows contributed by process wastewater, non-process wastewater, or stormwater associated with industrial activity, provided such discharges are authorized under separate NPDES permits. Nothing in the District's MS4 Permit prohibits the following sources when properly managed so that water quality is not impaired and that the requirements of the Clean Water Act and EPA regulations are met: clear water flows, roof drainage, dechlorinated water line flushing, landscape irrigation, diverted stream flows, rising groundwater, uncontaminated groundwater infiltration to separate storm sewers, uncontaminated pumped groundwater, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation waters, springs, footing drains, lawn watering, individual resident car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, street wash water, firefighting activities, and similar types of activities.

1.3 Limitations to Coverage

Section 402(p)(3)(B)(ii) of the Clean Water Act specifically prohibits non-stormwater entering the MS4. The MS4 Permit does not authorize the Permittee to discharge pollutants from the MS4 as described herein:

1. Non-stormwater and Phase I and Phase II Stormwater Discharges of non-stormwater (other than those listed in Part I.B. of the District's MS4 Permit) are prohibited except where such discharges are:
    A. Regulated with a General NPDES permit for Phase I or Phase II stormwater discharges, or
    B. Regulated with an individual NPDES permit.
2. All other discharges of pollutants to the MS4 system that cause or contribute to the exceedance of the District of Columbia water quality standards are prohibited and not authorized by this MS4 Permit.

1.4 Stormwater Management in the District

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.

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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.

1.4.1 Stormwater Management Program Administration

DDOE's Stormwater Management Division (SWMD) administers the District's MS4 Permit and coordinates compliance activities among District agencies. An interagency Memorandum of Understanding (MOU) dated December 2000 sets forth each agency's compliance responsibilities, Attachement 1. In 2007, DDOE executed additional independent MOUs with each agency to reflect the additional responsibilities required to comply with the District's MS4 Permit, Attachment 1. An overview of District agency responsibilities for MS4 permit compliance is shown in Table 1.

The Comprehensive Stormwater Management Enhancement Amendment Act of 2009 established the Stormwater 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. The SWAP is chaired by DDOE's Director and is a cabinet-level group of District agencies with stormwater management responsibilities. SWAP provides a forum for coordinating agency stormwater responsibilities and executive decision-making to overcome obstacles and resolve disputes. The group is required to meet at least twice per year.

In addition to SWAP meetings, the Technical Workgroup (TWG) meets monthly to provide ongoing, staff-level coordination on stormwater issues. District agencies communicate regularly outside of the TWG to facilitate the transfer of funds, provide technical assistance, implement stormwater management and GI projects, and to coordinate activities.

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Table 1 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 Green Infrastructure (GI) practices Education and outreach 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 Education and outreach GI practices in public right-of-way
DGS	GI practices on District-owned properties Pollution prevention
DPR	GI practices in District parks and at District recreation centers Pollution prevention
OP	Planning for neighborhoods, public facilities, parks, and open spaces Urban design and land use review

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1.5 Fiscal Resources

The District's Stormwater Permit Compliance Amendment Act of 2000 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. 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

Additionally, The Anacostia River Clean Up and Protection Act (Bag Law) created 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.

1.5.1 Stormwater Fee and Billing

In 2008, DDOE published regulations increasing the Stormwater Fee for the first time, since it was introduced in 2001. The increase followed the same rate structure—a flat rate for residential customers and a rate based on water usage for all other customers.

That same year, the Comprehensive Stormwater Management Amendment Act of 2008 authorized DDOE to revise the Stormwater Fee rate structure to be based on impervious areas such as roofs, driveways, patios, and parking lots. Through a rulemaking process that became effective on May 1, 2009, DDOE established a rate structure based on the equivalent residential unit (ERU), where one ERU is equal to 1,000 square feet of impervious area. Under this new structure, DC Water charged the Stormwater Fee in the following manner—residential properties received a one ERU charge per month and all other properties received a charge based on the actual amount of impervious area, converted to ERUs.

On October 29, 2010, DDOE amended 21 DCRM 556 to establish a multi-tier rate fee structure for residential properties. The tiered structure provided a more equitable distribution of the District's stormwater management costs among single-family properties than the existing structure where each residential property was charged 1 ERU regardless of the amount of impervious area on it. Under the new tiered structure, smaller single-family homes pay lower Stormwater Fees than larger single-family homes. In the same rulemaking, DDOE increased the fee from $2.57 per ERU to its current rate of $2.67 per ERU.

On July 19, 2013, DDOE finalized the Stormwater Fee Discount Program through a rulemaking. Properties are eligible to receive a discount of up to 55% off the Stormwater Fee. Discounts are calculated based on total volume of stormwater retained on site through eligible green infrastructure that retains stormwater, including green roofs, bioretention, permeable pavement, and rainwater harvesting systems.

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1.5.2 Approval of Expenses and Reimbursement Process

A District agency seeking to obtain reimbursement from the Enterprise Fund submits a proposed budget before the beginning of each fiscal year. The administrator reviews the proposed activities and verifies that they are for compliance with the MS4 Permit. Upon approval, an MOU is prepared and executed for the transfer of funds from DDOE to the agency. As each activity is implemented, the agency submits an invoice to DDOE. Invoices are used to track progress and to reconcile expenditures at the end of each fiscal year. Beginning in FY2009, procedures were put in place to allow a portion of the Enterprise Fund be used for capital projects. The District's capital budget is available across fiscal years, as a result allocation of capital funds will allow the requesting agencies to budget funds for projects that take longer than one year to complete, such as reconstruction of roads, equipment and retrofits.

1.5.3 Stormwater Management Budget

The District expends Enterprise Funds and general obligation funds to fulfill its MS4 Permit obligations. DDOE budgets Enterprise Funds solely for activities that are specific to the MS4 Permit compliance that go beyond baseline activities that occurred prior to 2000DDOE and other District agencies also allocate general funds to complete baseline municipal activities that are necessary to control pollution in MS4 discharges. The Enterprise Fund budget provides for program management, monitoring, capital construction costs, operation and maintenance (O&M) of structural controls, and non-structural controls and programs.

The projected budget for the proposed stormwater management programs is detailed in Table 2. Amounts are approximate and may vary throughout the life of the MS4 Permit.

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Table 2 Projected Five-Year Budget for MS4 Permit Activities

Permit Section	Topic	2017	2018	2019	2020	2021	2022
	General MS4 Permit Management	$3,650,000	$3,723,000	$3,797,460	$3,873,409	$3,950,877	$4,029,895
4.1	Standard for Long-Term Stormwater Management	$250,000	$255,000	$260,100	$265,302	$270,608	$276,020
4.1	Impervious Surface Retrofits, bioretention, green roofs, outfall repairs, tree canopy and other capital investments	$4,000,000	$4,080,000	$4,161,600	$4,244,832	$4,329,729	$4,416,323
4.1	Green Landscape Incentives / RiverSmart Programs	$3,700,000	$3,774,000	$3,849,480	$3,926,470	$4,004,999	$4,085,099
4.2	Operation and Maintenance of Stormwater Capture Practices	$250,000	$255,000	$260,100	$265,302	$270,608	$276,020
4.3	Management of District Government Areas	$100,000	$102,000	$104,040	$106,121	$108,243	$110,408
4.3	Enhanced Street Sweeping	$550,000	$561,000	$572,220	$583,664	$595,338	$607,244
4.4	Management of Commercial Institutional Areas	$200,000	$204,000	$208,080	$212,242	$216,486	$220,816
4.5	Management of Industrial Facilities and Spill Response	$200,000	$204,000	$208,080	$212,242	$216,486	$220,816
4.6	Stormwater Management for Construction Sites	$300,000	$306,000	$312,120	$318,362	$324,730	$331,224
4.7	Illicit Discharges and Improper Disposal	$200,000	$204,000	$208,080	$212,242	$216,486	$220,816
4.8	Flood Control Practices	$100,000	$102,000	$104,040	$106,121	$108,243	$110,408
4.9	Public Education and Public Participation	$250,000	$255,000	$260,100	$265,302	$270,608	$276,020
4.1	TMDL Wasteload Allocation Planning and Implementation	$750,000	$765,000	$780,300	$795,906	$811,824	$828,061
4.1	Trash TMDL Implementation	$600,000	$612,000	$624,240	$636,725	$649,459	$662,448
5.0	Monitoring Program	$600,000	$612,000	$624,240	$636,725	$649,459	$662,448
Total		$15,700,000	$16,014,000	$16,334,280	$16,660,966	$16,994,185	$17,334,069

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2 LEGAL AUTHORITY

2.1 The District of Columbia

The District of Columbia was created in 1791, and has served as the capital of the United States since 1800. Since January 2, 1975, the District has been governed by an elected Mayor and an elected Council in accordance with powers delegated to them by Congress in the Home Rule Act D.C. Official Code § 1-201.01 *et seq*. The District is a unique governmental entity, combining state, county, and municipal characteristics. The Home Rule Act requires the Mayor to prepare and submit to the DC Council an annual budget. However, with limited exceptions, the District may not obligate or expend funds absent annual Congressional appropriation; since, under Article 1, Section 8, Clause 17 of the United States Constitution, Congress retains plenary legislative authority over the District as the nation's capital.

2.1.1 The Council of the District of Columbia

The legislative power granted to the District by the Home Rule Act is vesting in the Council of the District of Columbia (DC Council). The DC Council is composed of a chairman elected at large and twelve members, four of whom are elected at large, and one from each of the District's eight wards. DC Council members are elected to four-year terms.

The Home Rule Act sets several limitations on the DC Council's legislative authority. The Home Rule Act specifically prohibits the DC Council from enacting certain laws that, among other restrictions, would:

- Lend public credit for private projects.
- Impose a tax on individuals who work in the District but live elsewhere.
- Make any changes to the Heights of Buildings Act of 1910.
- Pass any law changing the composition or jurisdiction of the local courts.
- Enact a local budget that is not balanced.
- Gain any additional authority over the National Capital Planning Commission, Washington Aqueduct, or District of Columbia National Guard.

Additionally, Congress reviews all legislation passed by the DC Council before it can become law and retains authority over the District's budget. The Home Rule Act provides that no act passed by the DC Council and approved by the Mayor or through veto override shall take effect until after a 30 legislative day (for acts of civil matters) or 60 legislative days (for acts of criminal matters) after transmittal to Congress. During such periods, Congress may disapprove an act of the DC Council by enacting a joint resolution of Congress.

2.1.2 Executive Power of the Mayor

As head of the District's executive branch, the Mayor has the power to draft and enact executive orders relative to the departments and officials under his jurisdiction, administer the District's

financial affairs, and supervise and direct the District's administrative boards, office and agencies. The Mayor also has the authority to veto legislation adopted by the DC Council. In the event of a Mayoral veto, the Council may override by a two-thirds vote.

The Home Rule Act requires the Mayor to submit an annual budget to the DC Council. The annual budget includes the budget for the forthcoming year a multiyear plan for all agencies and sources of funding, a multiyear capital improvements plan, a performance report comparing performance goals, an analysis statement, and a summary of the budget for public distribution. Once approved by the DC Council, the Home Rule Act requires the budget to be submitted by the Mayor to the President of the Unites States for transmission to Congress.

2.2 Summary of Legal Authority

The District has adequate legal authority to control the pollutants from entering the storm sewer system, prohibit illicit discharges and illegal dumping, control discharges from construction and industrial activities, carry out inspections and enforcement activities, and require compliance with local law and regulations. Section 2.2.1 describes the statutory and regulatory framework that proves authority to the District to perform functions required by the MS4 Permit.

2.2.1 Existing Legal Authority

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 September 28, 1977 (D.C. Law 2-23; 24 DCR 792), as amended by the Soil Erosion and Sedimentation Control Amendment Act of 1994, effective August 26, 1994, (D.C. Law 10-166;41 DCR 4892; 21 DCMR §§ 500-15);

- **Post Construction Stormwater Management**: District of Columbia Municipal Regulations (DCMR) Title 21, Chapter 5 §§ 500 to 545, 599, 546, 547, and 552;

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- **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; District of Columbia Municipal Regulations (DCMR) Title 21, Chapter 5; The Illegal Dumping Enforcement Act of 1994 (D.C. Official Code § 8-901 et seq.);

- **Solid Waste Management and Recycling**: Title 21 DCMR, Chapter 7, Chapter 8 and Chapter 20;

- **Governance of the Water and Sewer Authority**: The Water and Sewer Authority Establishment and Department of Public Works Reorganization Act of 1996. (D.C. Official Code § 34-2201 et seq.);

- **Inspection and Enforcement**: Coal Tar-Based Pavement Product Ban, Comprehensive Stormwater Management Enhancement Amendment Act of 2008, effective July 1, 2009 (D.C. Official § 8-153.01); Plastic Bag Fee and Enforcement, The Anacostia River Clean-up and Protection Act, effective September 23, 2009 (D.C. Official Code §8-102 et. seq.); D.C. Official Code § 8-103.15; Department of Consumer and Regulatory Affairs Civil Infractions Act of 1985, effective October 5, 1985, as amended (D.C. Law 6-42; D.C. Official Code §§ 2-1801.01 et seq. (2007 Repl. & 2012 Supp.));

- **Green Infrastructure:** The DC Green Building Act (D.C. Official Code § 6-1451.01 et seq); Green Construction Code, effective March 28, 2014 (Title 12 DCMR (D.C. Construction Codes Supplement of 2008));

- **Trash and Litter Control:** The Sustainable DC Omnibus Amendment Act of 2014, effective January 1, 2016 (D.C. Act 20-385); The Anacostia River Clean-up and Protection Act, effective September 23, 2009 (D.C. Official Code §8-102 et. seq.);

- **Pesticide and Fertilizer Control: T**he Anacostia River Clean Up and Protection Fertilizer Act of 2012, effective April 20, 2013 (D.C. Law D.C. 19-262; D.C. Official Code § 8-104.01 *et seq.*); the Pesticide Operations Act of 1977, effective April 18, 1978 (D.C. Law 2-70; D.C. Official Code § 8-411(a) (2012 Repl.); Section 11(a) of the Pesticide Education and Control Amendment Act of 2012, effective October 23, 2012 (D.C. Law 19-191;D.C. Official Code § 8-440(a)); 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.));the Brownfields Revitalization Amendment Act of 2010 (Brownfields Act), effective April 8, 2011 (D.C. Law 18-369; D.C. Official Code § 8-631.01et seq.(2012 Repl.));and Mayor's Order 98-47, dated April 15, 1998,as amended by Mayor's Order 2006-61, dated June 14, 2006.

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2.2.2 Miscellaneous Statutory Provisions

The District has authority under various provisions that enable the Mayor to control discharges, which are outside of the scope of the above mentioned sections. For instance, the D.C. Official Code provides for authority to make agreements with other jurisdictions for drainage of the sewer system (§2-207.01, Maryland and §2-207.02, Virginia), and provides for sufficient investigation and monitoring controls as will be discussed in Section 2.2.4. The D.C. Official Code § 6-501 *et seq.* also provides authority for the Mayor to control development to minimize flood hazards.

The District has regulatory authority to control industrial discharges. The authority is provided by the District's Water Pollution Control Regulations and the District's Pretreatment Regulations (DCMR Title 21, Chapter 5 and Chapter 15), respectively.

DCMR Title 21, Chapter 15 provides extensive regulatory authority to control discharges to the wastewater system. Most importantly, the regulations provide that any sewers designated as storm sewers are included in the Wastewater System Control Regulations. Section1502 requires each significant industrial user to apply for a permit, and §1503 through §1507 specifies the controls over the permitee. Additionally, DCMR Title 21, Chapter 5 provides adequate inspection and monitoring authority.

Illegal dumping from tankers or motor vehicles is prohibited under the "Illegal Dumping Enforcement Act of 1994", D.C. Official Code §8-901 *et seq*. This Act gives the Mayor the authority to regulate all illegal dumping "into or on any land or water" of the District of Columbia from motor vehicles. The statute also prohibits the disposal of any waste "in or upon any street, lot, park, public place …"

2.2.3 Interagency Agreements and Coordination

On December 11, 2000 a MOU was executed that assigned responsibilities to District agencies under the 2000 MS4 Permit. Each agency has separate and distinct areas of responsibility within the District government, Table 1. D.C. Official Code § 1-301.01(k) (District agencies) (Repl. 2006; Suppl.2012) authorizes District agencies to enter into MOUs for orders placed with other Departments, at actual cost.

The District has the authority under D.C. Official Code §2-207.02 to allow the District to enter into agreements with surrounding jurisdictions for drainage of the sewer system. Additionally, DC Water has authority to enter into contracts with other jurisdictions for services, D.C. Official Code §34-2202.03(10).

2.2.4 Compliance with Regulations and Statutes

Regulations require *'adequate legal authority to require compliance with conditions in ordinances, permits, contracts or orders', 40 CFR §122.26(d)(2)(i)(E)(1995).* Under the Water Pollution Control Act (D.C. Official Code §8-103.01 *et seq*.) the District has sufficient authority to require compliance with this subchapter. The Mayor may subpoena pertinent information

under D.C. Official Code §8-103.15(a), and may conduct reasonable inspection of pertinent facilities and activities under D.C. Official Code §8-103.15(a-b).

The District has adequate authority to issue subpoenas and to inspect and monitor discharges under the statutes and the regulations to satisfy the CFR. The Mayor can require compliance through various penalties enunciated in D.C. Official Code §8-103.16. Violations of the subchapter or the regulations promulgated pursuant to it are a misdemeanor. Any person found guilty of a misdemeanor or under this subchapter shall be fined at least $2,500 and no more than $25,000 per violation per day or imprisoned for no more than one year, or both. The D.C. Official Code provides additional fines if the individual was previously convicted under this section, (the fine is to be no less than $2,500 and no more than $50,000 per day of violation, and no more than 2 years imprisonment). The D.C. Official Code provides for express authority to enforce this subchapter under D.C. Official Code §8-103.17. This provision of the D.C. Official Code allows the Mayor to order compliance with this subchapter "by use of any measure or combination of measures, authorized by this subchapter."

Further, the Mayor may seek an injunction under §8-103.18(a) in court of competent jurisdiction and/or a civil penalty of no more than $50,000 per violation or $250,000 for willful violation under §8-103.18(b).

Under the Wastewater Control Subchapter (D.C. Official Code §8-105.01 through §8-105.15) implemented by DC Water, the Mayor has similar authority. D.C. Official Code §8-105.08 allows the Mayor to inspect pertinent sites. D.C. Official Code §8-105.11 authorizes the Mayor to obtain an injunction. The penalty for violating this subchapter is a fine of up to $10,000 per day (D.C. Official Code §8-105.14).

The Water Pollution Control Regulations, DCMR Title 21, and D.C. Code Chapter 5 §500 through §599, provide further inspection and enforcement provisions. Sections §504-506 provides authority for the District to inspect all sites involved in land disturbing activities for sedimentation and erosion problems. Section 504 allows inspection of any site where artificial or natural erosion may be occurring. DCMR Title 21, Chapter 5, §508 states that violation under this chapter of the regulations is punishable by fine of up to $300 per violation, imprisonment of up to 10 days, or both. Additionally, D.C. Official Code §8-201 which requires lots to be connected to the wastewater system and water mains carries a fine of $1-$5 per day for lots that violate this provision.

The District's penalty provisions under the Illegal Dumping Enforcement Act, D.C. Official Code §8-901 *et seq*. give the Mayor the authority to seek criminal penalties from $5,000 to $10,000 and incarceration for up to 90 days for misdemeanor violations, and fines of up to $40,000 and imprisonment for 5 years for felony violations. Alternatively, the Mayor can seek a civil fine of up to $10,000 per violation, or up to $40,000 per violation for knowing disposals of hazardous waste. In addition to these penalties, the Mayor can seize any vehicle used in the discharge of waste, and can charge the violator three (3) times the cost of the clean-up, and the Mayor "may deny, revoke or not renew the business license, permit or motor vehicle registration" of any person who has violated the Act.

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2.2.5 Enforcement Tools

The District has sufficient authority to carry out all necessary inspection, surveillance and monitoring procedures. D.C. Official Code §8-103.04 mandates that the Mayor "regularly monitor" District waters for compliance with water quality standards, while D.C. Official Code §8-103.06(b)(5) requires monitoring of discharge permits. The Mayor is authorized to "inspect and monitor facilities, discharges, activities, equipment, waters and other items pertinent to the regulation of the quality of the waters of the District" (D.C. Official Code §8-103.15(b)). The Mayor is also given authority to "enter upon or through any premises for purpose of inspection" to determine compliance with the Wastewater System Control Act, (D.C. Official Code §8-105.08).

When water quality violations occur, DDOE can take either informal or formal action to achieve compliance. DDOE can also refer a case for Criminal Enforcement, D.C. Official Code § 8-103.16, or to the EPA.

Informal Action, D.C. Official Code § 8-103.16 (b), consists of:

1. Directive
2. Cease and Desist Orders
3. Written Notice of Violation (Warning)
4. Administrative Orders (Notice of Noncompliance, Letters of Agreement, Consent Agreements)

Formal Action can precede judicially or administratively, D.C. Official Code § 8-103.16 -17, and consists of:

1. The Civil Infraction process - D.C. Official Code § 8-103.16(f)
2. Emergency/ Special Orders - D.C. Official Code § 8-103.17(b)
3. Judicial Action- D.C. Official Code § 8-103.18(a)(2)

The District's Civil Infraction Schedule of Fines (Schedule of Fines) categorizes a substatial number of environmental regulations DDOE is authorized to enforce. Classifications are made according to the nature and severity of the violations and their potential to impact human and environmental health. Under the Schedule of Fines Class 1 and Class 2 violations are considered the most egregious and serious violations. Class 3 violations contain mixed minor/serious violations and Class 4 and Class 5 are generally minor violations. The Schedule of Fines is found in 16 DCMR Chapters 32-38.

DDOE enforcement procedures and tools are addressed in *The Environmental Enforcement Guidelines*, see Attachment 2. 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.

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2.2.6 Regulatory Requirements

On October 7, 2011 the EPA issued the third iteration of the District of Columbia's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. DC0000221 (Permit). The MS4 Permit is issued by the EPA under the Clean Water Act, and establishes the conditions under which the District may discharge stormwater to surface water bodies. 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.

The District's MS4 Permit requires development of a Consolidated TMDL Implementation Plan[1] that:

- Sets a compliance schedule for attainment of TMDL Waste Load Allocations, including benchmarks for annual pollutant load reductions.
- Sets interim milestones for TMDLs where attainment of WLAs will require more than one permit cycle.
- Demonstrates via modeling how WLAs will be attained by an ultimate compliance date.

On July 19, 2013, DDOE finalized the 2013 Rule on Stormwater Management and Soil Erosion and Sediment Control (2013 Stormwater Rule), which amended Chapter 5 (Water Quality) of Title 21 (Water and Sanitation) of the District of Columbia Municipal Regulations (DCMR)[2],[3]. Major land-disturbing activity must retain the first 1.2" of rainfall on site or through a combination of on-site and off-site retention[4]. Major substantial improvement activity must retain the first 0.8" of rainfall on site or through a combination of on-site and off-site retention[5]. A major substantial improvement activity may include a substantial improvement activity that is not associated with land disturbance. Retention is achieved with Best Management Practices (BMPs) that infiltrate, evapo-transpire, and/or harvest for non-potable use.

1 Consistent with the Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program, DDOE retains its flexibility in how it implements the CWA 303(d) Program responsibilities (including, specifically, identification of impaired waters and development and implementation of TMDLs) consistent with existing statutory and regulatory authorities and DC's priorities."

2 To view the guidance documents for the 2013 Stormwater Rule go to www.ddoe.dc.gov/swregs.

3 To view the 2013 Stormwater Rule go to: http://green.dc.gov/node/610592

4 A major land-disturbing activity is any activity that disturbs over 5,000 square feet or greater of land area.

5 A major substantial improvement activity is a substantial improvement activity and associated land-disturbing activity, including such activities that are part of a common plan of development, for which the combined footprint of improved building and land-disturbing activity is five thousand square feet (5,000ft2) or greater, and the value of the construction activity is greater than 50% of the preconstruction structure value.

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In 2010 the EPA issued a Total Maximum Daily Load (TMDL) for the entire Chesapeake Bay watershed spanning six states (New York, Pennsylvania, Delaware, Maryland, West Virginia, Virginia) and the District of Columbia. The TMDL sets a maximum loading limit for Nitrogen, Phosphorous and Sediment that each jurisdiction can release to its waters which reach the Chesapeake Bay.

In August 2010, the District, in partnership with Montgomery County, Prince George's County, the Maryland Department of Environment, and EPA Region III, established a total maximum daily load (TMDL) for trash for the Anacostia River. This was the first inter-jurisdictional TMDL for trash developed for a water body in the United States. The TMDL includes waste load allocations (WLAs) for both the District's combined sewer system (CSS) and MS4. The official TMDL document notes that the WLA for the CSS will be addressed by the long-term control plan (LTCP) currently being implemented by DC Water. The TMDL also states that WLA compliance for the MS4 will be accomplished via compliance with the District's MS4 permit.

TMDLs have been previously established for a number of pollutants of concern in the Anacostia, Potomac, and Rock Creek watersheds, including *E. coli*, organics and metals, nutrients/BOD, oil and grease, and TSS. The District's complete inventory of TMDLs can be found in the documentation for the District's Consolidated TMDL Implementation Plan at www.dcstormwaterplan.org.

2.2.7 New Legal Authority

Since the last Stormwater Management Plan was finalized in 2009 the District has gained additional legal Authority.

On July 6, 2009 former Mayor Adrian Fenty signed the Anacostia River Clean Up and Protection Act of 2009 (D.C. Official Code §8-102 et. seq.). Under this law all businesses that sell food or alcohol are required to charge 5 cents for every carryout paper or plastic disposable bag. The business retains 1 cent (or 2 cents if it offers a rebate when customers bring their own bag), and the remaining 3 or 4 cents goes to the Anacostia River Clean Up and Protection Fund.

On July 29, 2014 former Mayor Vincent Grey signed the Sustainable DC Omnibus Act of 2014 (Act Number A20-0385). Part of the Sustainable DC Omnibus Amendment Act bans the use of polystyrene food and beverage service containers by January 2016 and further requires that these service containers be made of only compostable or recyclable material by January 2017.

On January 16th, 2013, Mayor Vincent C. Gray signed the Sustainable DC Act of 2012 which included the Anacostia River Clean Up and Protection Fertilizer Act of 2012, effective April 20, 2013 (D.C. Law D.C. 19-262; D.C. Official Code § 8-104.01 *et seq.*), that limits phosphorus and nitrogen fertilizer use.

As described in Section 2.2.6, the District finalized the 2013 Rule on Stormwater Management and Soil Erosion and Sediment Control (2013 Stormwater Rule), which amended Chapter 5 (Water Quality) of Title 21 (Water and Sanitation) of the District of Columbia Municipal Regulations (DCMR) on July 19, 2013.

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Under the Comprehensive Stormwater Management Enhancement Amendment Act of 2008, effective July 1, 2009, it is illegal to sell, use, or permit the use of coal tar pavement products in the District of Columbia. Violators of this ban are subject to a daily fine of up to $2,500 (D.C. Official § 8-153.01).

2.2.8 Additional Legal Authority Needed

The District does not require any additional legal authority to implement and administer the MS4 Permit at this time.

3 SOURCE IDENTIFICATION

The District has compiled a database of the MS4 infrastructure and outfalls and completed an assessment of significant changes due to land use activities, population estimates, runoff characteristics, major structural controls, landfills, publicly owned lands and industries. The District will continue to compile and submit information about pollution sources, including significant changes in the identification and mapping of District MS4 outfalls identified as "major" or "other," and significant changes affecting the District MS4.

3.1.1 Outfalls

An outfall is the end point where a municipal separate storm sewer system discharges from a pipe, ditch or other discrete conveyance to receiving waters. Receiving waters in the District are the Potomac, Anacostia, Rock Creek and their tributaries. According to the Code of Federal Regulations (40 CFR §122.26(b)(5)), a major outfall is defined as an MS4 outfall that discharges from a single pipe with an inside diameter of at least 36 inches. The term also includes (i) discharges from a single conveyance other than a circular pipe serving a drainage area of more than 50 acres, or (ii) for MS4s that receive stormwater from lands zoned for industrial activity (based on comprehensive zoning plans or the equivalent), an outfall that discharges from a single pipe with an inside diameter of 12 inches or more or from its equivalent (discharge from other than a circular pipe associated with a drainage area of 2 acres or more).

3.1.2 Field Verification and Outfall Mapping

Outfall surveys were conducted in 2004, 2005, and 2006. The outfall inventory is constantly updated as outfalls are identified in the field and GIS layers are updated. Additionally, in 2013 DC Water inspected and assessed the condition of existing outfalls to develop a repair schedule for those outfalls. Currently, DDOE is still cross referencing and reconciling the results of the DC Water 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.

Currently, DDOE identifies 583 outfalls within the District, Table 3. The current inventory of MS4 outfalls is included in Attachment 3. A map of known outfalls is found in Figure 1. As the inventory of outfalls is verified and refined the outfall inventory will continue to change.

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Table 3 Outfalls in the District of Columbia

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

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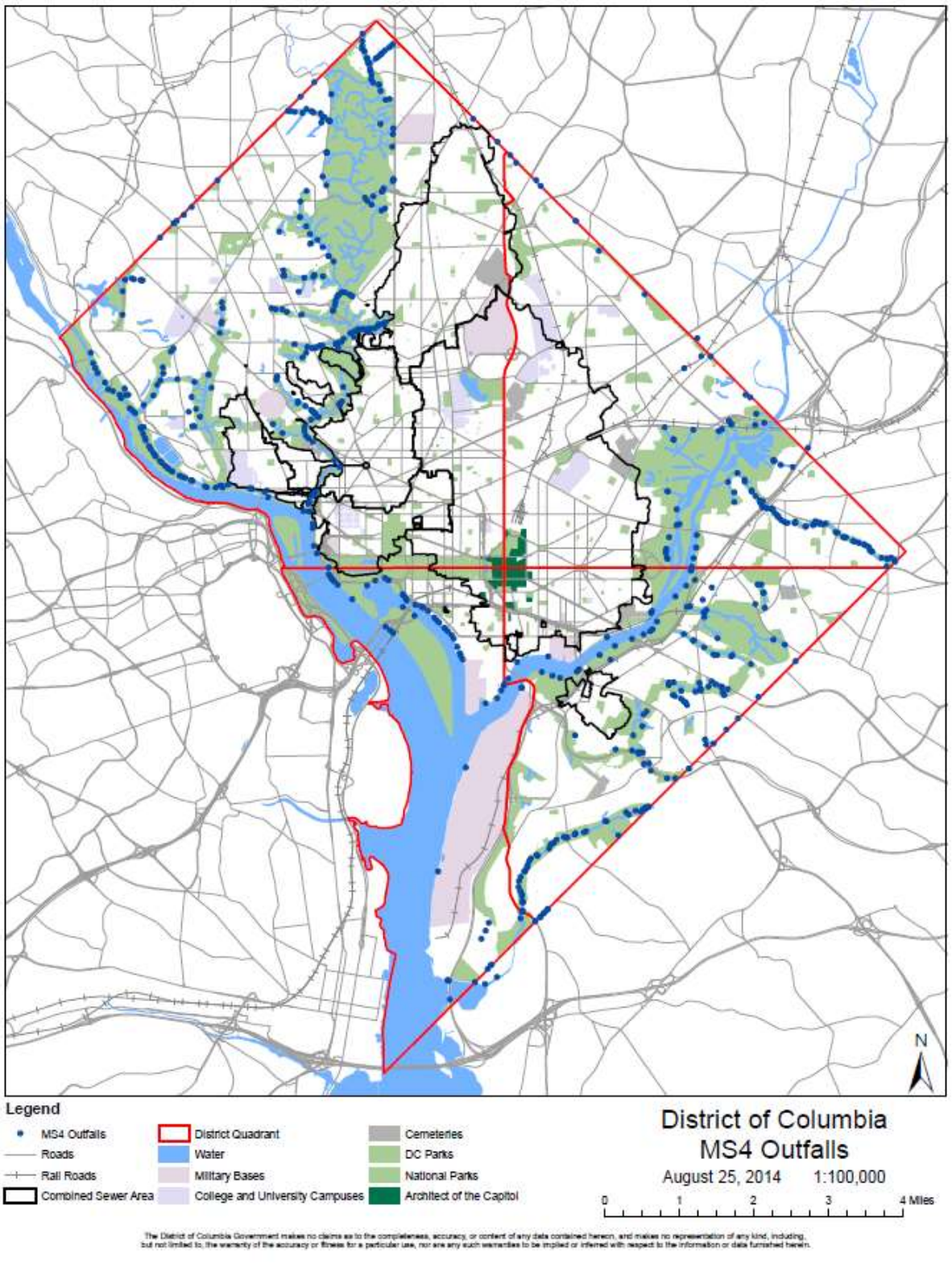

Figure 1 Known MS4 Outfalls in the District of Columbia

3.2 Significant Changes and Land Use Activities

As defined in the 2001 Annual Report, dated April 19, 2001, "significant changes" are changes that effect the MS4 System due to land use activity, population estimates, runoff charecteristics, major structural controls, publicly owned lands, industries, and landfills. "Significant changes" have the potential to revise, enhance, or modify the phsyical, legal, institutional, or administrative situation of the above elements.

3.2.1 Population and Projected Growth

The Bureau of the Census reported in the 2010 Census of Washington, DC that the population of the District of Columbia was 601,723 people. The population estimate for 2013 is 646,449 people. The District gained approximately 74,390 people since the last census in 2000. Additional details of the 2010 U.S. Census for the District can be found at http://www.census.gov/.

3.2.2 Land Use Activities

The District is highly urbanized, with little available land for green field development. As shown in the table below, only 2% of the District is vacant. All new development and redevelopment of existing areas is subject to the District's stormwater and erosion and sediment control regulations and review by DDOE. Figure 2 details the land use types in the District of Columbia. Figure 3 maps the land cover in the District and Figure 4 maps the parks, open land, and public lands within the District.

3.2.3 Runoff Characteristics

The District uses runoff coefficients published by the Chesapeake Stormwater Network (CSN, 2008), shown below in Table 4. The District's Consolidated TMDL Implementation Plan uses composite runoff coefficients for each area modeled. The composites are developed by weighting the relative presence of each soil and land cover type, and the appropriate runoff coefficient.

Table 4 Reference Runoff Coefficients from Schueler (1987)

	Impervious Land cover Types (all)	Turf	Forest
HSG A Soils	0.95	0.15	0.02
HSG B Soils	0.95	0.20	0.03
HSG C Soils	0.95	0.22	0.04
HSG D Soils	0.95	0.25	0.05

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No significant changes in land use activities have been identified. As a result, no significant changes in runoff characteristics were identified in the MS4 drainage area.

3.2.4 Major Structural Controls

Structural controls, also referred to as Best Management practices or BMPs, are engineered controls built to manage or alter flow, velocity, duration, and water quality of runoff by physical means. These practices can reduce stormwater volume and peak discharge rate, as well as reducing the magnitude of pollutants in the discharge water. DDOE tracks BMPs on private property and in the Public Right-of-Way in the District from its plan review database. The review database contains projects that are regulated through the submission of stormwater management plans because they have disturbed over 5,000 square feet. Figure 5 contains a map showing the location of BMPs approved for construction from years 2000 to 2014. Figure 6 contains a map of green roofs installed in the District.

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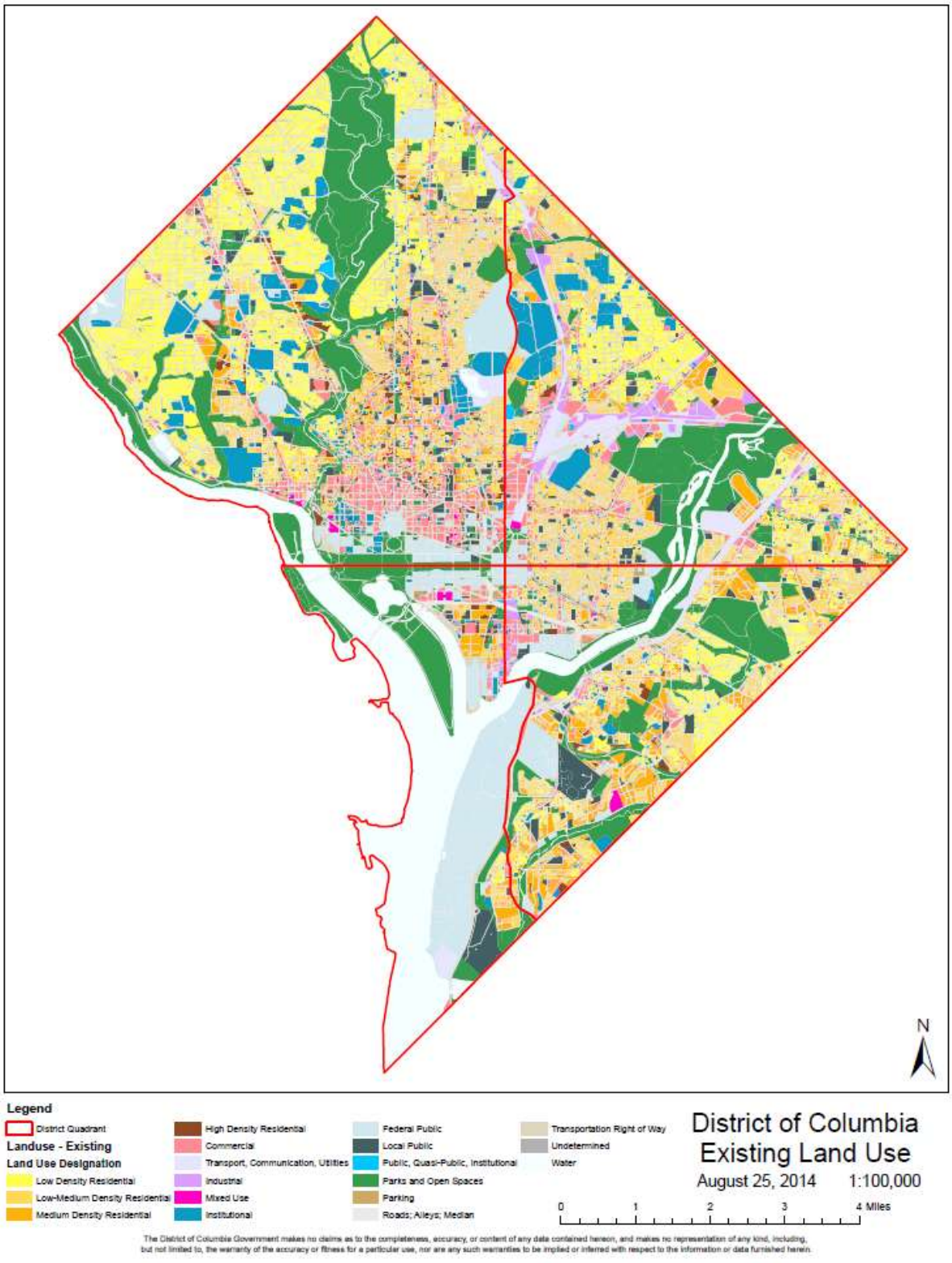

Figure 2 Existing Land Use in the District of Columbia

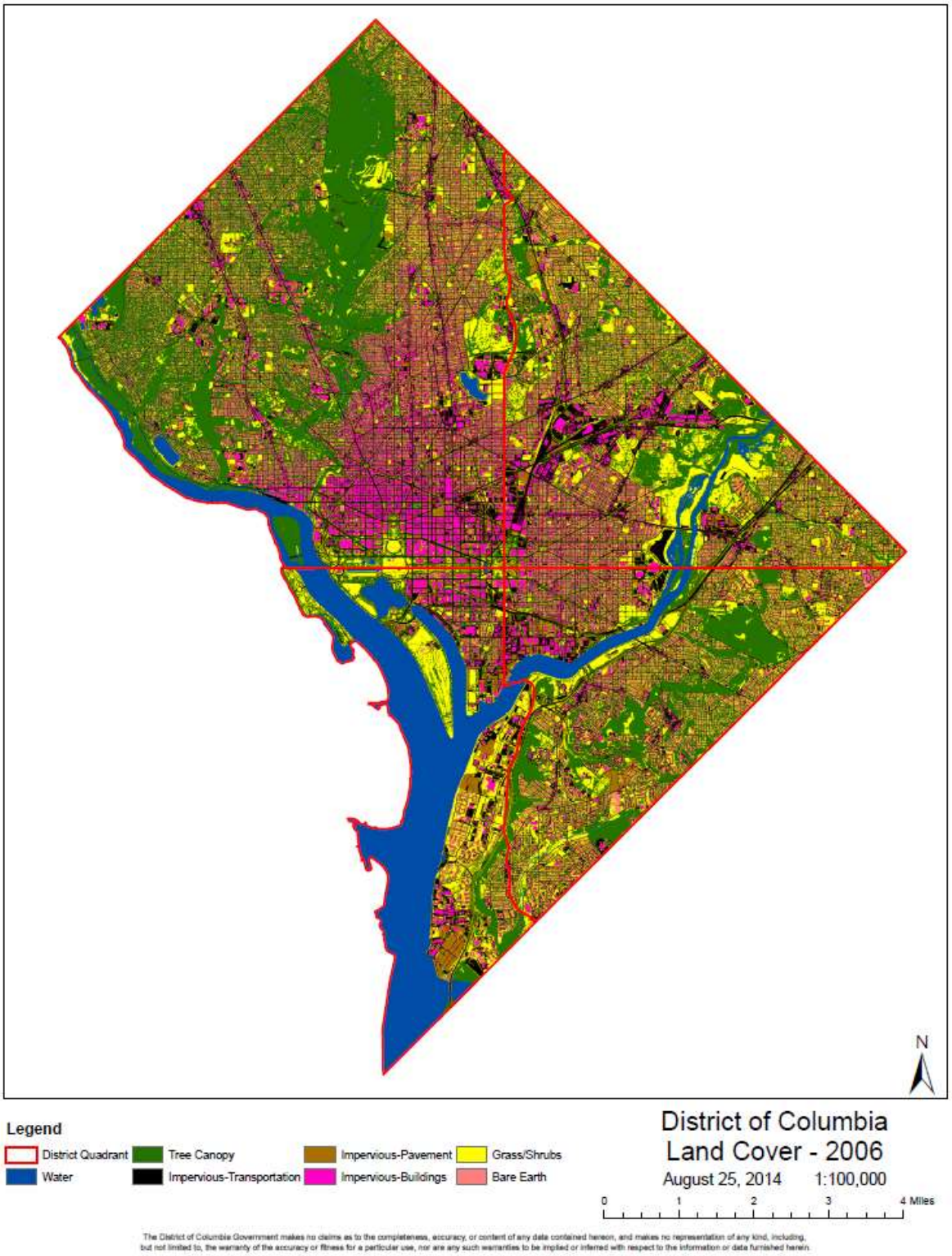

Figure 3 Land Cover in the District of Columbia

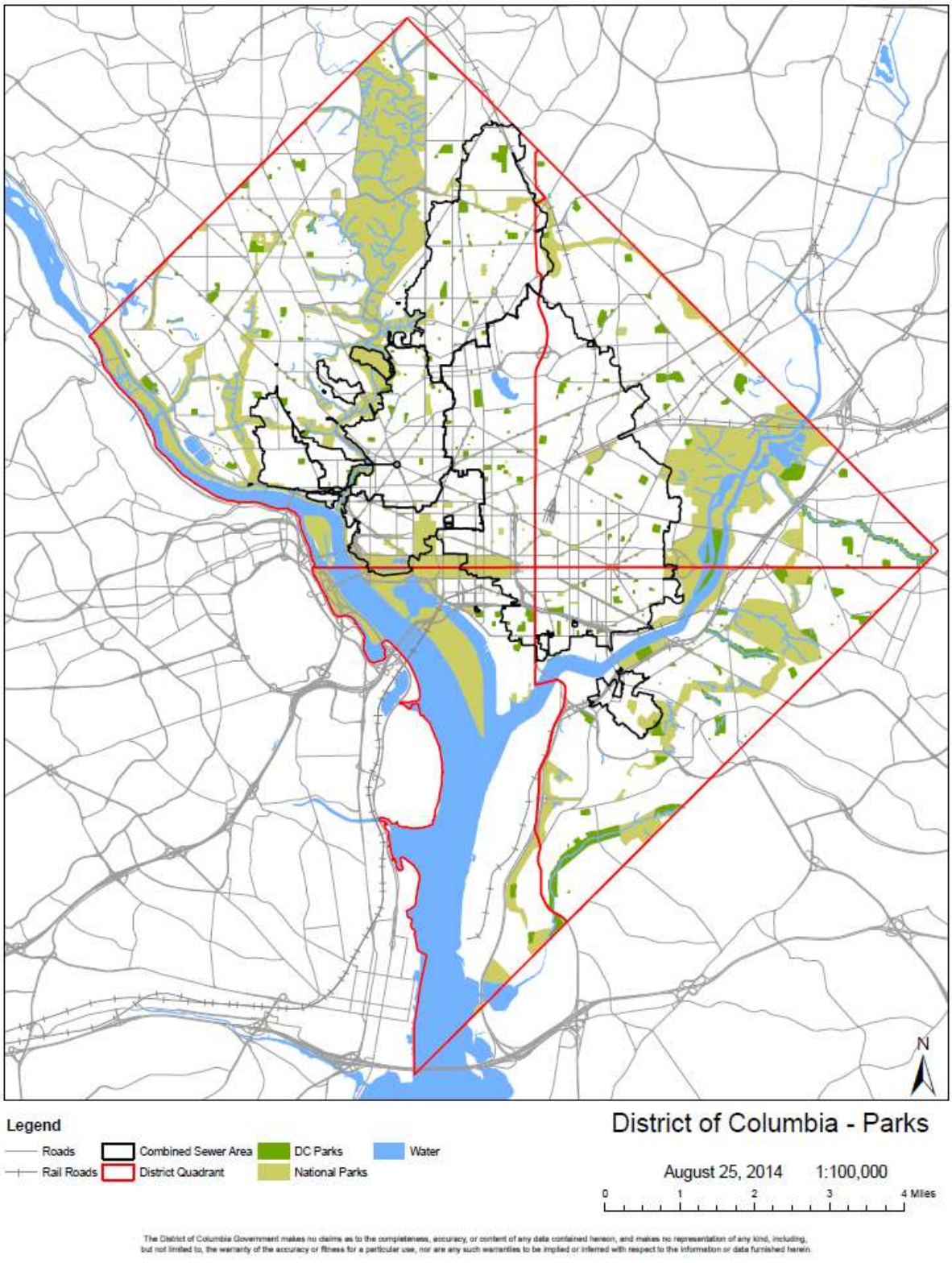

Figure 4 Parks and Public Lands within the District of Columbia

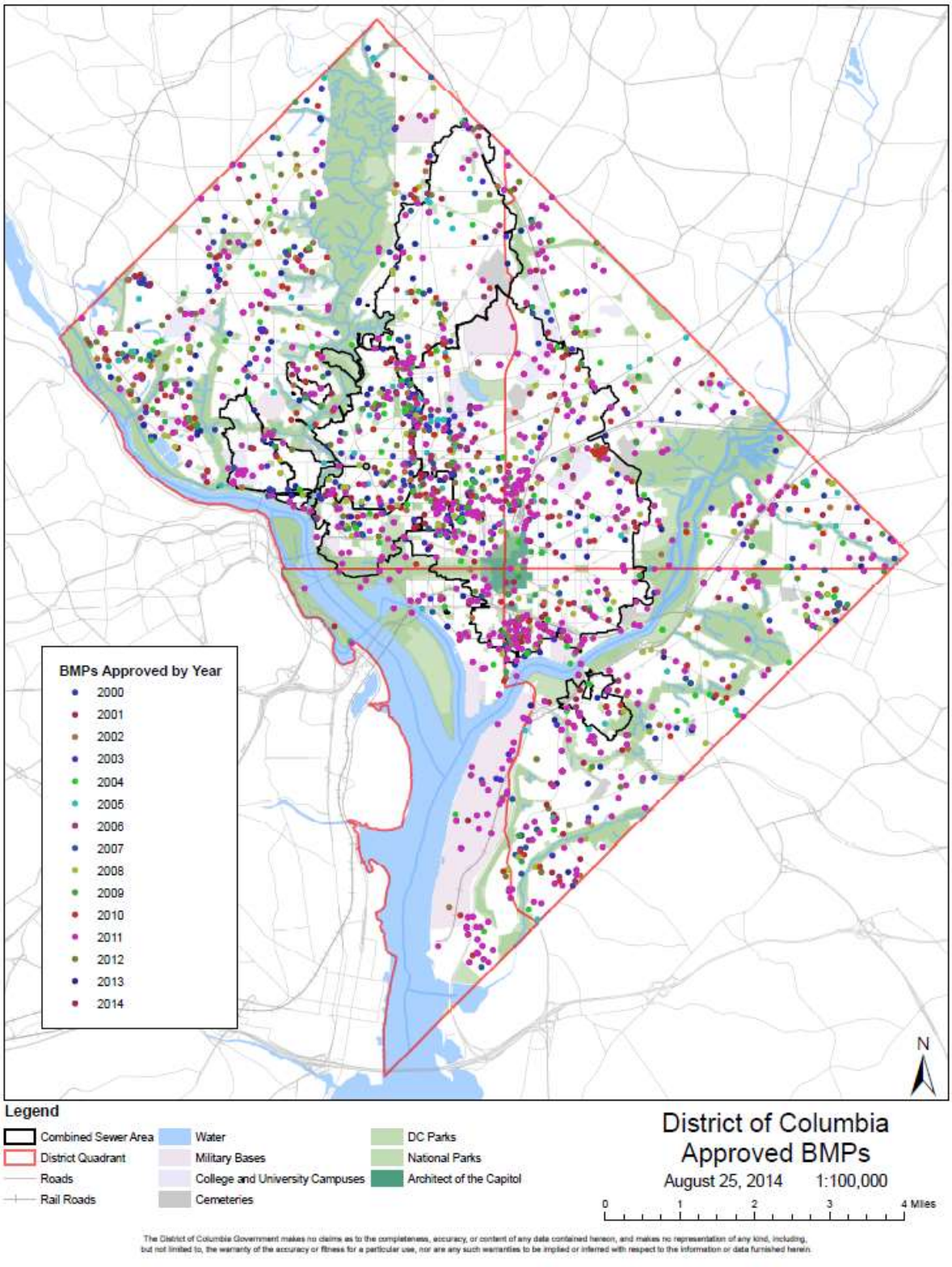

Figure 5 Approved BMPs by Year in the District of Columbia

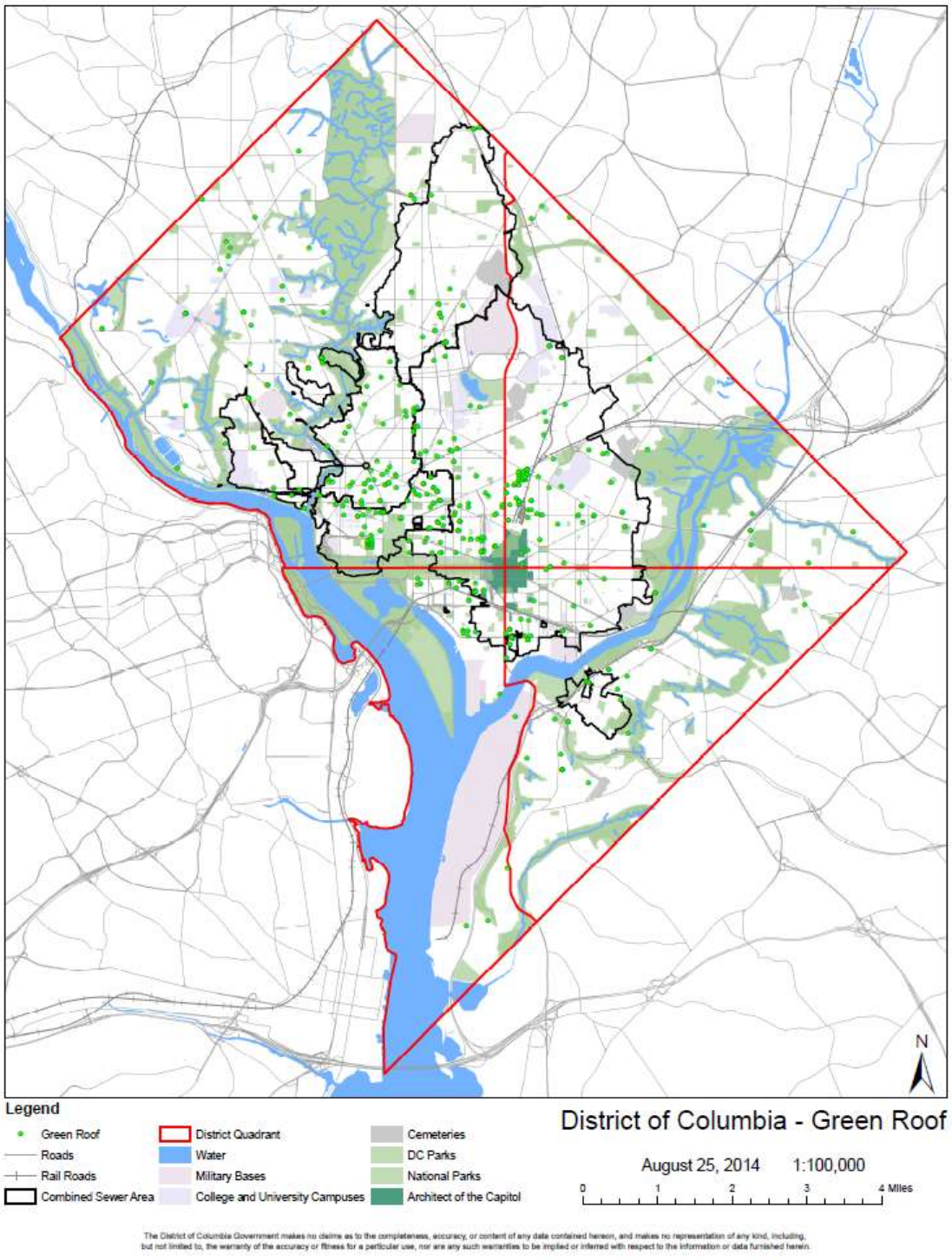

Figure 6 Green Roofs Installed in the District of Columbia

3.3 Sources of Discharge to the MS4

The District has a program to inspect and track critical sources of stormwater pollution. The District has identified the following facilities that have the potential to contribute to pollutant loading in the MS4:

- Landfills and solid waste transfer stations
- Resource Conservation and Recovery Act- Hazardous Waste Treatment Storage and Disposal Facilities (RCRA-TSDF)
- Resource Conservation and Recovery Act – Small Quantity Generator (RCRA-SQG) and Large Quantity Generator (RCRA- LQG)
- Industrial facilities with a discharge to the MS4
- Industrial Facilities subject to Superfund Amendments and Reauthorization Act (SARA) Title III or the Emergency Planning and Community Right-to-Know Act (EPCA)
- Facilities with NPDES Permits

DDOE 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 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. 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, Attachment 4.

Information for this database is collected from periodic site verification and GIS analysis. Updates to the database include location, facility name, description of services, contact person and phone numbers, and other pertinent information. Field verified information undergoes further GIS analysis to determine what Sewershed and particular outfalls are related to the locations of the facilities. The database framework also allows for relating compliance inspection information for each facility. The database can be searched based on services, possible potential pollutants, outfalls, sub-watersheds, wards, and zip codes. DDOE will continue to update the database.

3.3.1 Landfills or Solid Waste Transfer Stations

There are no active landfills within the District. Two solid waste transfer stations, Benning Road and Fort Totten, are owned and operated by the District. Four privately owned solid waste transfer facilities and two private owned construction and demolition facilities also operate within the District.

Benning Road and Fort Totten accept a limited variety of materials collected by commercial and institutional haulers. Haulers must be licensed and certified with the DC Department of Consumer and Regulatory Affairs and are required to pay fees, based on material type and tonnage, by credit card at the point of sale. District residents can dispose of solid waste, household hazardous waste and unwanted electronic equipment at the Fort Totten Transfer Station.

The majority of trash, yard waste, and associated materials collected residentially or commercially at the agency's transfer stations, are disposed at Fairfax County's Energy Resource Recovery Facility in Lorton. Recycling materials are taken to a near-by Maryland facility where they are sorted and processed to be reused as raw materials.

3.3.2 Resource Conservation and Recovery Act- Hazardous Waste Treatment Storage and Disposal Facilities

Resource Conservation and Recovery Act- Hazardous Waste Treatment Storage and Disposal Facilities **(**RCRA-TSDF) facilities are responsible for the ultimate disposal of hazardous waste. The District's only active regulated RCRA-TSDF, located in the MS4, is the U.S. Naval Research Laboratory located in southwest, Washington, DC. The Naval Research Laboratory EPA Identification number is DC8170024311.

3.3.3 Resource Conservation and Recovery Act – Small Quantity Generator (RCRA-SQG) and Large Quantity Generator (RCRA- LQG)

DDOE maintains a database of different types of businesses registered as Resource Conservation and Recovery Act – Small Quantity Generator (RCRA-SQG) and Large Quantity Generator (RCRA- LQG). The database is updated frequently by DDOE and DCRA. DDOE staff conducts inspections to verify compliance with environmental protection regulations and DCRA surveys neighborhoods to detect businesses that are not properly licensed.

RCRA-SQG facilities generate more than 100 kilograms, but less than 1000 kilograms of hazardous waste per month. RCRA- LQG facilities generate 1,000 kilograms per month or more of hazardous waste, more than 1 kilogram per month of acutely hazardous waste, or more than 100 kilograms per month of acute spill residue or soil.

Any business that has the potential to generate hazardous waste is required to register as a generator with DDOE, obtain an EPA Identification (ID) number and become a registered RCRA-SQG or RCRA-LQG. Upon registering with DDOE, such businesses must obtain copies of regulations that outline handling, storage, and spill control requirements at their facilities.

3.3.4 Industrial Facilities Subject to SARA

The District tracks industrial facilities that are subject to regulation under CERCLA, as amended by SARA. SARA Title III, also known as EPCRA, requires facilities to report on the storage, use or release of certain chemicals and provide information about potentially dangerous

chemicals being made available to the public. EPA makes this information available through the CERCLIS database, Table 5.

Table 5 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
DCN000306841	THE LAUNDRY BASKET	N

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EPA CERCLISID	Site Name	Federal Facility
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).

3.3.5 Facilities with Individual NPDES Permits

The US EPA issues the NPDES permits in the District. Table 6 details the facilities with NPDES Permit coverage in the District.

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Table 6 NPDES Permits Issued for the District of Columbia

Permit No.	Facility Name	Type	Effective Date	Expiration Date
DC0021199	D.C. Water and Sewer Authority (DC Water), Blue Plains AWTP	Major	9/30/2010	9/30/2015
DC0022004*	NRG (previously known as Gen*On* Potomac River LLC)	Major	4/20/2000	4/19/2005
DC0000221	MS4 -Government of the District of Columbia	Major	10/07/2011	10/07/2016
DC0000094*	PEPCO-Potomac Electric CO, Benning Road	Major	6/19/2009	6/18/2014
DC0000019*	WASH Aquedeuct-Dalecarlia Plant	Major	10/20/2008	11/19/2013
DC0000248	JFK Center for Performing Arts	Minor	6/06/13	6/05/2018
DC0000345	National World War II Memorial	Minor	5/01/2010	4/30/2015
DC0000141	Naval Station Washington	Minor	1/22/2010	1/22/2015
DC0000175	Super Concrete Corporation	Minor	1/06/2013	1/05/2019
DC0000337	Washington Metropolitan Area Transit Authority (WMATA)	Minor	4/20/2012	4/20/2017
DC0000035	GSA West Heating Plant	Minor	5/25/2012	5/24/2017

Note: The facility stopped discharging process or waste water but has not formally applied to EPA to terminate the permit. EPA has administratively extended the permit because the facility applied for permit renewal within the required time.

4 DISCHARGE CHARACTERIZATION

This section addresses the requirements for reporting the physical and chemical characteristics of municipal stormwater runoff in the District. These requirements are set forth in 40 CFR §122.26(d)(2)(iii), Characterization Data. The District has been monitoring the Anacostia, Potomac and Rock Creek watersheds since the issuance of the 2000 MS4 Permit.

4.1 Potential Impacts of Stormwater Runoff

Pollutants entering the waters of the District through its stormwater system impact both the small streams of the District and their receiving waters, *i.e.*, the Potomac River and the Anacostia River. Water bodies in the District are typically organized by three major drainage basins in which they occur; the Anacostia River, the Potomac River, and Rock Creek. This section contains a list of the water bodies in the District that receive discharges from the MS4 system. All of these water bodies have been inventoried and assessed in DDOE's 2014 Integrated Report with the following characterization of use support: "*The evaluation found that the designated uses that directly relate to human use of the District's waters were generally not supported. The uses related to the quality of habitat for aquatic life were not supported. No water body monitored by the Water Quality Division (WQD) fully supported all of its designated uses.*" The Integrated Report provides further detail on the specific Pollutants of concern that have been identified for each water body.

Additionally, these water bodies have approved TMDLs for one or more pollutants of concern, and are included in the draft Consolidated TMDL Implementation Plan currently being developed by DDOE:

Anacostia River

- Fort Chaplin tributary
- Fort Davis tributary
- Fort Dupont tributary
- Fort Stanton tributary
- Hickey Run
- Kingman Lake
- Lower Beaverdam creek
- Nash run
- Pope branch
- Texas Avenue tributary
- Watts Branch

Potomac River

- Battery Kemble creek
- C&O Canal
- Dalecarlia tributary
- Foundry branch
- Oxon run
- Tidal Basin
- Washington Ship Channel

Rock Creek

- Broad branch
- Dumbarton Oaks tributary
- Fenwick branch
- Klingle Valley run
- Luzon branch
- Melvin Hazen tributary
- Normanstone creek
- Pinehurst branch
- Piney branch
- Portal branch
- Soapstone creek

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Sampling and analysis under the terms of this MS4 Permit, and through elements of a long term monitoring program, will help to provide valuable information regarding actual pollutant impacts within the District. Potential impacts of stormwater runoff are discussed at length in EPA's *Guidance Manual for the Preparation of Part 2 of the NPDES Permit Applications for Discharges from Municipal Separate Storm Sewer Systems,* 1993. Specific degradation effects depend on the characterization of the MS4 discharge into the waters of the District, pollutants affecting the beneficial use of the waters, and the quantity and quality of runoff as dictated by rainfall patterns and local land use.

4.2 Use of the Characterization Data

Characterization data is used to identify the source of pollutants and predict the impact of stormwater runoff on the receiving water. The Current monitoring program identifies 6 monitoring locations split between three watersheds, Rock Creek, Potomac River, and Anacostia River. Each year the District submits, via NetDMR, the characterization data for each monitoring location. The sampling plan was consistent with the monitoring requirements set forth at 40 CFR §122.26 (d) (2) (iii).

4.3 Stormwater Sampling and Analysis Procedures

Data collection procedures for stormwater runoff at the monitoring stations were developed and executed in accordance with 40 CFR §122.21(g)(7), *Effluent Characteristics.* This portion of the NPDES regulations describes representative storm conditions and sampling protocols. The EPA publication, *Stormwater Sampling Guidance Document*, also provided examples of approved stormwater sampling protocols. Additionally, analysis of all discharge samples was conducted in accordance with EPA approved analytical methods as defined in 40 CFR Part 136, *Guidelines for Establishing Test Procedures for the Analysis of Pollutants.*

Section 122.21(g)(7) specifies that grab samples must be used for pH, temperature, cyanide, total phenols, residual chlorine, oil and grease, fecal coliform and fecal streptococcus. Additionally, biological oxygen demand (BOD), chemical oxygen demand (COD), and volatile organic compounds (VOC) were analyzed from grab samples. Grab samples were collected for all sampled storm events.

For other pollutants, discrete samples were collected during the storm event and flow weight composites were conducted at the laboratory. Stormwater samples are collected using automatic samplers when a designated level of flow was reached in the monitoring station pipe. The automatic samplers are programmed to collect flow proportioned composite samples.

At the completion of the sampling period, the storm event is assessed to determine if the criteria has been met. If the storm met the designated criteria, the collected samples are packed in ice at the end of the three-hour sampling period (or shortly thereafter, so as to not exceed the holding time for the parameter to be analyzed), and transported directly to the laboratory.

4.4 Summary of Regulatory Requirements

Section 4.5 discusses quantitative and qualitative data requirements for the collection of stormwater discharge at the selected monitoring stations. These outfalls were selected as

representative of commercial, industrial, and residential land use activities as described in 40 CFR §122.26(d)(2)(iii)(A). Criteria for discharge sampling at these sites are defined in the following regulations:

- Acceptable storm conditions [122.26(d)(2)(iii)(A)(1)]
- Sampling Protocol [122.21(g)(7)]
- Analytical parameters [122.26(d)(2)(iii)(A)(3)]
- Narrative descriptions and results of the three required sampling rounds are provided [122.26(d)(2)(iii)(A)(2)]

Event mean concentrations (EMC) were determined from analyses of flow weighted composite samples collected from the designated monitoring points. Section 4.6.2 provides estimates of the annual pollutant load of cumulative discharges during a storm event, as required in 40 CFR §122.26(d)(2)(iii)(B). Seasonal pollutant loads were also calculated.

Section 4.5.2 provides a proposed schedule for estimating the seasonal pollutant load and representative EMC for constituents found in the discharge at the six proposed monitoring sites. Requirements for the estimated schedule are prescribed in 40 CFR §122.26(d)(2)(iii)(C).

4.5 Quantitative and Qualitative Data Requirements

4.5.1 Selection of Representative Sampling Sites

The District has identified six outfall locations that will serve as the representative sampling sites in the next MS4 Permit, Table 6. Criteria described in EPA's *Guidance Manual for the Preparation of Part I of the NPDES Permit Applications, April 1991* were used in the selection process. The six outfalls were selected in accordance with 122.26(d)(2)(iii)(A) based on representative land use (commercial, residential and industrial), drainage area, and hydraulic conditions present at the storm sewer lines upstream from the outfalls.

The District is currently developing a Revised Monitoring Program to comply with the requirements of Section 5.1 of the MS4 Permit. As part of this effort, the location of outfall monitoring locations for wet weather monitoring may change. The draft Revised Monitoring Program will be completed by May of 2015.

Sampling and flow meter equipment will be installed at the proposed monitoring stations as shown in the table below. Each of the six sites will be monitored for three wet weather events per year using the regulatory requirements referenced in Section 4.4. In addition, rain duration and intensity data will be collected for the sampled storm events and will be used with sub-basin areas and pollutant concentrations present to determine system wide event mean pollutant concentrations (EMC) and annual pollutant loads for the District's MS4.

Table 7 Proposed Monitoring Stations for Storm Event Sampling

Monitoring Stations	Watershed	Drainage Area (Acres)	Land Use
Oxon Run	Potomac River	103	Residential Commercial
Gallatin & 14th street, NE	Anacostia River	620	Commercial Residential
Ft. Lincoln Newtown	Anacostia River	230	Industrial Commercial
Battery Kemble	Potomac River	130	Residential
Soapstone Creek	Rock Creek	330	Residential
Walter Reed/ Ft. Stevens Drive	Rock Creek	98	Residential Commercial

4.5.2 Criteria for Stormwater Discharge Sampling

The regulations require that stormwater runoff at each of the six outfalls be sampled from three storm events. An allowable storm event defined in 40 CFR §122.21 (g)(7) must meet the following:

- The storm event must contain greater than 0.1 inches of precipitation.
- Each storm event must be at least 30 days apart from a previously sampled storm.
- Each storm event must be preceded by a period of 72 hours during which no more than 0.1 inch of precipitation has been recorded.
- The rainfall intensity of each storm event must be within 50% of the average median rainfall volume and duration for the region.

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. Monthly summaries from 1981 to 2010 from the National Airport (DCA) data collection station were used to determine the average monthly precipitation. For this data set the average monthly precipitation in the District was 3.32 inches. To view the complete data set go to: http://www.weather.gov/media/lwx/climate/dcaprecip.pdf.

Table 8 provides information on the amount of precipitation for the Washington DC area from January 2010 to September 2014. The average number of days with storm events greater than 0.10 is 6.

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Table 8 Precipitation Record for the District of Columbia

Year	Month	Rainfall (inches)*	Number of Days in Month with Storms >0.10 inches	Monthly Average from 1981-2010 (inches)
2010	January	1.56	4	2.81
	February	2.72	6	2.62
	March	3.55	7	3.48
	April	1.5	5	3.06
	May	2.4	8	3.99
	June	1.87	4	3.78
	July	5.17	6	3.73
	August	2.59	6	2.93
	September	6.02	5	3.72
	October	3.4	4	3.4
	November	2.22	5	3.17
	December	1.78	3	3.05
Total		34.78	63	39.74
2011	January	2.25	4	2.81
	February	2.12	6	2.62
	March	4.4	7	3.48
	April	3.2	7	3.06
	May	1.7	5	3.99
	June	1.68	4	3.78
	July	3.03	5	3.73
	August	8.92	9	2.93
	September	8.84	9	3.72
	October	3.91	9	3.4
	November	1.94	4	3.17
	December	4.9	6	3.05
Total		46.89	75	39.74
2012	January	2.19	6	2.81
	February	2.33	4	2.62
	March	1.02	5	3.48
	April	1.92	4	3.06
	May	3.28	7	3.99
	June	2.38	4	3.78
	July	2.81	7	3.73
	August	2.78	8	2.93

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Year	Month	Rainfall (inches)*	Number of Days in Month with Storms >0.10 inches	Monthly Average from 1981-2010 (inches)
	September	4.29	7	3.72
	October	5.82	6	3.4
	November	0.6	1	3.17
	December	3.03	6	3.05
Total		32.45	65	39.74
2013	January	2.53	5	2.81
	February	1.67	5	2.62
	March	2.8	4	3.48
	April	2.76	5	3.06
	May	2.82	4	3.99
	June	9.97	10	3.78
	July	4.43	8	3.73
	August	1.34	3	2.93
	September	1.22	3	3.72
	October	6.25	5	3.4
	November	2.92	5	3.17
	December	5.53	9	3.05
Total		44.24	66	39.74
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
Total		34.78	59	30.12
Average		3.39	5.75	3.32

Data obtained from Ronald Reagan National Airport; Source: NOAA, National Weather Service and Accuweather.

During months with rainfall and snowfall, a conversion factor (10 in. snow = 1 in. rain) was used to calculate values.

4.5.3 Narrative Descriptions of Storm Event

CFR 40 §122.26(d)(2)(iii)(A)(2) states that "a narrative description shall be provided of the date and duration of the storm event(s) sampled, rainfall estimates of the storm event which generated the sampled discharge and the duration between the storm event sampled and the end of the

previous measurable (greater than 0.1 inch rainfall) storm event." Measurements describing the peak intensity of the storm, if available, should also be reported (EPA, *Guidance Manual for the Preparation of Part 2 of the NPDES Permit Applications for Discharges from Municipal Separate Storm Sewer Systems, 1992).*

Table 9 provides a summary of the precipitation accumulation and duration, and, time to the previous events for the rainfall events sampled from 2010- 2014.

Table 9 Storm Event Characteristics

Date	Precipitation (inches)	Storm Duration (hours)	Time to Previous Measurable Rainfall (approx. days)
6/17/2009	1.10	24.0	6.0
9/26/2009	0.71	9.0	16.0
10/15/2009	0.57	12.0	18.0
12/8/2009	1.59	13.0	9.0
12/13/2009	0.43	13.0	4.0
1/17/2010	0.68	5.5	9.0
1/21/2010	0.11	4.5	4.3
3/12/2010	0.61	4.5	16.0
3/22/2010	0.53	3.0	8.0
3/26/2010	0.29	10.0	3.5
4/21/2010	0.22	9.5	7.5
5/11/2010	0.11	3.5	7.0
5/11/2010	0.11	3.5	8.0
7/10/2010	1.17	8.5	11.0
10/14/2010	1.26	7.0	9.0
11/30/2010	0.10	5.0	12.0
1/26/2011	1.52	24.0	6.0
3/6/2011	1.39	7.0	5.0
4/5/2011	0.42	7.0	4.0
4/5/2011	0.42	7.0	5.0
4/8/2011	0.35	7.0	3.0
4/12/2011	0.19	3.0	3.5
5/4/2011	0.56	10.0	9.5
7/8/2011	0.60	9.0	4.0
7/8/2011	0.60	2.0	5.0

Date	Precipitation (inches)	Storm Duration (hours)	Time to Previous Measurable Rainfall (approx. days)
8/3/2011	0.28	8.0	7.0
9/20/2011	0.16	3.0	11.0
10/19/2011	0.40	6.0	4.5
11/16/2011	0.30	9.0	17.0
11/29/2011	0.41	5.0	5.8
12/6/2011	0.24	7.0	5.8
1/27/2012	0.63	6.0	6.0
2/16/2012	0.15	5.0	4.0
1/14/2013	0.48	13.0	16.0
2/8/2013	0.20	7.0	8.0
4/12/2013	0.80	8.0	7.0
6/6/2013	0.85	7.0	3.5
8/1/2013	0.37	5.0	4.0
8/23/2013	0.11	3.0	5.0
11/26/2013	1.46	8.0	7.0
12/6/2013	0.63	17.0	8.0
1/10/2014	1.44	36.0	4.0
4/7/2014	0.38	10.0	7.5
4/25/2014	0.39	3.0	10.0
6/4/2014	0.42	5.0	7.0

Precipitation data obtained from Ronald Reagan National Airport. Source: www.accuweather.com and www.weather.gov

During months with rainfall and snowfall, a conversion factor (10 in. snow = 1 in. rain) was used to calculate total precipitation amount.

4.5.4 Chemicals/Water Quality Parameters to be measured

Each composite and grab stormwater sample will be analyzed at the laboratory for the parameters defined in the Quality Assurance Project Plan (QAPP). The QAPP contains the list of parameters, the detection limits, and EPA-approved methods utilized for monitoring activities. The QAPPs for trash monitoring and MS4 monitoring are included as Attachment 5.

DDOE maintains the records of monitoring information including:

- Description of Sampling
  - Location/Collection Time
  - Sampling Collection

  - Field Test
  - Contractor personnel who collected samples

- Storm Event Data
  - Date and duration of the storm events samples
  - 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

- Sampling Difficulties/Field Notes
- QA/QC Review and Clarification
  - Field Test Results
  - Laboratory Results Tables
  - Atlantic Coast Laboratories Data
  - Lancaster Laboratories Data
  - Triangle Laboratories Data
  - Martel Laboratories Data

Monitoring results for the wet and dry weather sampling events will be reported via NetDMR to EPA every year.

4.6 Estimation of System Wide Event Mean Concentrations, Annual Pollutant Loads and Seasonal Loads

System wide EMC and annual pollutant load calculations were conducted following procedures described in EPA's *Guidance Manual for the Preparation of Part 2 of the NPDES Permit Application for Discharges from Municipal Separate Storm Sewer Systems, (EPA, 1992)*.

4.6.1 Annual Pollutant Loading Calculation

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).

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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:
EMCj = Event Mean Concentration of Storms
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).

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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)

The EMCs of the pollutants of concern were determined based on analysis of samples collected between 2013 and 2014. The pollutants of concern calculated EMCs and annual pollutant loading are presented in Attachment 6.

4.7 Seasonal Pollutant Loading Calculation

Under normal conditions precipitation in the District is evenly distributed over the year, and there are no significant differences from month to month. In general, seasonal variations in water quality may be isolated by considering warmer months versus colder months. Contributing factors to seasonal variations in water quality include:

- Water quality problems such as depressed dissolved oxygen levels or the presence of nuisance algae blooms, are typically greatest during the warmer months.
- The seasonal introduction of specific pollutants to the MS4 including, but not limited to, salts from road maintenance in the winter, herbicides and pesticides from lawn application in the spring and summer, runoff from car washing activities in the summer and organic materials such as grass and leaves during the summer and fall.
- Greater recreational and irrigation use of water during the warmer months.

The eight-month period of March 1 through October 31 was identified in the 1998 Part 2 application as a season of interest and used for the calculation of seasonal loads. Seasonal pollutant loading was estimated utilizing Equation 1, with the average seasonal precipitation value of 27.57 inches.

4.8 Collection of Representative Data for Proposed Monitoring Program

The District has laid the groundwork for a long term monitoring program under the current NPDES Permit.

The current MS4 Permit specifies an interim wet weather monitoring program with sampling stations for the three watersheds of the District: the Anacostia River, Rock Creek and the Potomac River, at two (2) stations for each of the watersheds. These six stations are currently monitored annually to assess the adequacy of the District's SWMP. The District is currently

collecting samples to monitor for nine (9) parameters, table 10. The District is also currently developing a Revised Monitoring Program, which will describe the District's long term monitoring program to address MS4 Permit requirements. The parameters of concern are being reevaluated as part of this process. The draft Revised Monitoring Program is due to EPA in May 2015.

Table 10 Monitoring Parameters

Parameter
E. coli
Total nitrogen
Total phosphorus
Total Suspended Solids
Cadmium
Copper
Lead
Zinc
Trash

Monitoring frequency for chemical/physical parameters shall be taken by at least three times per year at a minimum. The sampling will be conducted in accordance with 40 C.F.R. § 122.21(g)(7). All chemical analyses will be performed in accordance with analytical methods approved under 40 C.F.R. Part 136.The sampling equipment will remain the same as those used in the previous monitoring reported above.

4.8.1 Goals of the Monitoring Program

The monitoring program was established during the current MS4 Permit. The goals of the monitoring program are as follows:

- To identify the characteristic discharges of the outfalls of the MS4 system through dry and wet weather screening.
- To continue to evaluate the discharge with respect to specific pollutants and their impacts on the full range of chemical, physical, and biological water quality.

The Revised Monitoring Program will be implemented upon EPA approval of DDOE's draft Revised Monitoring Program, due in May of 2015.

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4.8.2 Evaluating the Performance of Specific Controls

Although theoretical pollutant removal efficiencies are well known for certain BMPs under certain conditions, site-specific conditions may inhibit or enhance the effectiveness of actual controls as implemented.

RiverSmart Washington is a watershed wide retrofit project. When construction is finished in spring 2015, runoff from over six acres of PROW pavement will be retained. To access the effectiveness of the project the total volume reduction will be monitored and measured. More information about RiverSmart Washington can be found in Section 5.1.1.2.

The efficiencies of several trash reduction BMPs were assessed and included in the Anacostia River Watershed Trash TMDL Implementation Strategy, submitted to EPA on January 22, 2013.

4.8.3 Construction of a Water Quality Database

DDOE maintains and updates a MS Access database containing MS4 outfall monitoring data for stations and parameters required in each MS4 Permit. After outfall monitoring occurs, DDOE receives results in spreadsheet format from the laboratory that performed the analyses. DDOE staff review these data using established quality control procedures and analyzes them to prepare Discharge Monitoring Reports and estimate pollutant loadings. On an annual basis, these laboratory result spreadsheets are compiled and added to the long-term MS4 outfall monitoring database. The production database currently contains records from June 1, 2001 through August 23, 2013 and is in the process of being appended with data from 2014 monitoring information.

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5 PROPOSED MANAGEMENT PROGRAMS

The District is proposing the following management programs for reducing runoff contamination and protecting water quality. The programs are designed to address runoff from the various types of existing land uses in the District. These management programs will continue to be implemented, assessed, evaluated and upgraded throughout the next MS4 Permit cycle by the MS4 Task Force agencies, the federal government, non-profit organizations, educational institutions and District residents. Once the Consolidated TMDL Plan is finalized these program will be evaluated upgraded accordingly. Improvements will continue to be made as needed to ensure effective control of pollutant discharges from the MS4.

Since the submission of the 2009 SWMP, there have been significant additions and amendments to the District's regulatory framework, including the 2013 Stormwater Rule, the Green Area Ratio, the Stormwater Fee Discount Program (RiverSmart Rewards), Anacostia River Clean Up and Protection Act (Bag Law), the Sustainable DC Act of 2012, the Sustainable DC Omnibus Amendment Act of 2014, and the Comprehensive Stormwater Management Enhancement Amendment Act of 2008 (Coal Tar Ban). More information about these regulatory and legal changes can be found in Section 2.

Additionally, several policy and procedural documents have been created to provide performance metrics and guidance on the implementation of District programs. These include; The 2013 Stormwater Guidebook, the District Stormwater Retrofit Plan, and the Green Area Ratio (GAR) Guidebook.

5.1 Management Plan for Commercial, Residential, Federal and District Government Areas

The management plan for commercial, residential, federal and District government areas includes programs for: source controls and maintenance, maintenance of public streets and roadways; flood management; pollution prevention; control in the application of pesticides and fertilizers; illicit discharge and detection; inspection and enforcement, education and outreach, and field screening and monitoring.

5.1.1 Stormwater Control Measures

The District's current approach to stormwater management in commercial, residential, federal and District government areas focuses substantially on the implementation of stormwater runoff-reducing green infrastructure (GI). The District uses a combination of regulations for development and substantial improvement projects, direct public investments, and financial incentives to promote GI.

5.1.1.1 Stormwater Management Regulations

On July 19, 2013, DDOE finalized the 2013 Stormwater Rule which amended Chapter 5 (Water Quality) of Title 21 (Water and Sanitation) of the District of Columbia Municipal Regulations (DCMR).[6,7] Under the new regulations major land-disturbing activity must retain the first 1.2" of

6 To view the guidance documents for the 2013 Stormwater Rule go to www.ddoe.dc.gov/swregs.

rainfall on-site or through a combination of on-site and off-site retention[8] and major substantial improvement activity must retain the first 0.8" of rainfall on-site or through a combination of on-site and off-site retention.[9] Retention is achieved with Best Management Practices (BMPs) that infiltrate, evapo-transpire, and/or harvest stormwater runoff for non-potable use.

The stormwater management regulations will be a critical driver of retrofits as the vast majority of development projects in the District involve the redevelopment of existing impervious surfaces that were previously developed without strong stormwater management controls. 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. As more sites are retrofitted through regulated development, the District will gradually be transformed into a "spongier" landscape with healthier streams and rivers.

DDOE continues to provide training sessions on the 2013 Stormwater Rule. These sessions focus on topics such as general compliance with the regulations, in-depth compliance with specific aspects of the rule (such as the MEP process for the PROW), and the basics of the SRC trading program and RiverSmart Rewards discount program. Training sessions are scheduled throughout the year and are advertised to SWMD's stakeholder list. They are open to the public and to other DC agencies. DDOE also holds internal training sessions that address any ongoing questions that DDOE staff have about implementing the new regulations.

The federal government is a significant landowner in the District. While it is exempt from many regulations, it must comply with the 2013 Stormwater Rule. The District will continue to explore additional opportunities to improve sediment and erosion control activities on Federal property.

On June 24, 2013, The District finalized the Green Area Ratio (GAR). The GAR is a zoning regulation that integrates sustainable landscape elements into parcel site design to address these environmental consequences. The GAR sets minimum lot-coverage standards for landscape and site design features to promote greater livability, ecological function, and climate adaptation in the urban environment. The GAR assigns a weighted score to a building based on the types of landscape and site design features that are implemented and the amount of area they cover. The minimum required GAR score needed to reach compliance differs by zoning district. This score is based on an assessment of the square footage of landscape elements that can be incorporated with each type of land use.

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 as well as additions and interior renovations where the cost of work exceeds 100% of the assessed building value. The District developed the GAR Guidebook to provide technical guidelines to aid building permit applicants, Certified Landscape Experts, and property owners in complying with

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7 To view the 2013 Stormwater Rule go to: http://green.dc.gov/node/610592
8 A major land-disturbing activity is any activity that disturbs over 5,000 square feet or greater of land area.
9 A major substantial improvement activity is a substantial improvement activity and associated land-disturbing activity, including such activities that are part of a common plan of development, for which the combined footprint of improved building and land-disturbing activity is five thousand square feet (5,000ft2) or greater, and the value of the construction activity is greater than 50% of the preconstruction structure value.

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the requirements of the GAR zoning regulation. The GAR Guidebook and forms can be found at http://green.dc.gov/node/619622.

5.1.1.2 District Direct Investment in Retrofits

To support the implementation of the MS4 Permit, the District collects a Stormwater Fee from all properties with impervious surfaces. The Stormwater Fee is charged based on the size of a property's impervious surface. The Stormwater Fee provides a dedicated funding source for compliance with the District's MS4 Permit and includes funding to implement stormwater retrofit projects primarily on public property. These projects include installing green roofs, roadside bioretention, planting trees and other stormwater control practices that increase stormwater retention and help the District meet the retrofit requirement.

Tree Planting

The District adopted a tree canopy of 40 percent canopy coverage by 2032 in an effort to set a clear target for achievement to help improve the air and water quality in DC. The goal was chosen because it will help the District focus on improving the canopy because the goal is specific, measurable, achievable, realistic, and time oriented.

DDOT's Urban Forestry Administration (UFA) manages the city's street tree planting program. UFA continues to the current tree planting rate of at least 4,150 annually in the MS4 Sewershed. Trees are planted in the manner that will achieve optimal survival rate within the District of Columbia by using industry standards such as the International Society of Arboriculture Best Management Practices for Planting.

In FY2013 the District released a Draft Tree Canopy Plan which contains a plan to increase the District's tree canopy. Several comments, including comments from EPA, were received and the District is updating the Draft Tree Canopy Plan in response. This plan can be found at http://ddoe.dc.gov/treecanopyplan.

Retrofit Projects in the Public Right-of-Way

The Public Right-of-Way (PROW) occupies approximately twenty five percent (25%) of the impervious area of the District of Columbia, which makes it one of the most significant sources of stormwater runoff impacting District water bodies. PROW projects provide many opportunities to incorporate GI to manage stormwater runoff. Given the unique constraints that routinely exist, PROW projects are required to achieve the 1.2" retention capacity to the maximum extent practical (MEP). The Stormwater Management Guidebook outlines the process that a PROW project will follow to demonstrate that opportunities to achieve stormwater retention have been utilized to the MEP.

The DDOT Stormwater program has been increasing efforts to retain stormwater runoff from the PROW. DDOT issued Green Infrastructure (GI) Standards in April 2014 to use on all public and private projects. DDOT is transitioning major construction projects to meet the new stormwater regulations and reviewing private development projects for retrofit opportunities in the PROW.

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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.

DDOE is currently working with DDOT, DGS, and private developers to identify large redevelopment projects that include complete sidewalk curb and gutter construction, in order to incorporate bioretention in the tree space area. DDOT has been increasing use of stormwater treatment, retention, and GI infrastructure 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 have completed design and will start construction in FY15 which were not required to meet the new stormwater regulations. The Klingle Trail project includes a permeable pavement trail and several bioretention areas and swales to capture runoff before it flows into Klingle 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 CSO. 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 CSO 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.

The District's **Green Alley Projects** are designed to reduce the quantity and improve the quality of storm water within the PROW. Although alleys constitute a significant portion of impervious surface, most do not have storm water controls, such as water quality catch basins or grate inlets. To mitigate this, Green Alleys use sustainable design and GI that reduce the amount of storm water and pollutants entering the sewer system by increasing water infiltration and treatment on site. The District Department of Transportation (DDOT) constructs Green Alleys by removing gravel, impervious concrete, or asphalt surfaces and replacing them with a permeable surface such as pervious concrete, porous asphalt or permeable pavers in areas where the storm sewer and sanitary sewers are separated.

The RiverSmart Washington 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 CSO area, 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.

5.1.1.3 Retrofit Incentive Programs

The District also leverages the stormwater fund by utilizing incentive programs to help residents, non-profits organizations and commercial properties implement stormwater projects that typically include retrofits to impervious surfaces. District incentive programs are:

- RiverSmart Subsidy Programs – Provides subsidies to homeowners and larger property owners who install stormwater retention practices such as green roofs, rain barrels, and rain gardens.

- RiverSmart Rewards – Provides a discount on stormwater fees for properties that retain stormwater runoff from impervious or compacted surfaces.

- Stormwater Retention Credit (SRC) Trading – Allows property owners that voluntarily install stormwater retention practices and regulated projects that install retention capacity that exceeds the required volume to create SRCs that can be sold to meet up to 50% of a regulated projects retention obligation.

These programs provide layered incentives that potentially provide a reasonable return on investment that will spur voluntary retrofits of impervious surfaces.

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DDOE's RiverSmart programs help to reduce stormwater runoff that harms the District's waterways and the Chesapeake Bay. RiverSmart programs provide financial incentives to help District property owners (residential, District, and commercial) install green infrastructure such as rain barrels, green roofs, rain gardens, permeable pavement, shade trees, and more. These practices allow rainwater to stay on site and soak into the ground, where natural processes help remove pollutants. More information about each RiverSmart Subsidy Program can be found at http://ddoe.dc.gov/riversmart.

RiverSmart Homes, launched in 2008**,** is an incentive program designed to encourage residential property owners to adopt stormwater management practices that will reduce non-point source pollution from their properties. The program provides funding to assist homeowners in implementing rain barrel installation, rain garden creation, landscaping with native plants, planting shade trees, and reducing impervious surfaces. The RiverSmart Homes program involves partnerships among residents, businesses, non-profits, and government to successfully reduce stormwater runoff, improve local water quality, increase awareness about stormwater challenges, and encourage community participation in improving the environment.

Between 2009-2014 the RiverSmart Homes team completed over 5,627 stormwater audits on private, residential properties. Those audits resulted in 2,863shade trees planted, 608 rain gardens installed, 753 BayScapes created, 145 pervious paver projects completed, and 3,593 rain barrels installed. Under Sustainable DC Plan targets, RiverSmart is a part of the plan to use 75% of the District's landscape to capture rainwater for filtration or reuse.

RiverSmart Schools offers District schools technical support, professional development, field trips, community planting events, and assistance with installing GI practices. 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.

Between 2009 and 2014, the RiverSmart Schools Program accomplished the following:

- Provided over 175 teachers with a 20-days workshop on RiverSmart schools site usage and programming.
- Conducted 150 classroom visits and provided 100 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. Approximately 400 kids from twenty (20) schools participate in 80 Community Work Days.
- Completed the construction of twenty (20) RiverSmart Schools projects. These schoolyard greening projects are located at:
    - Latin American Montessori Bilingual PCS, Ward 4, Rock Creek, MS4 Sewer system
    - Mary McLeod Bethune Day Academy PCS, Ward 5, Anacostia River, MS4
    - British School of Washington, Ward 2, Rock Creek, CSO
    - Washington Yu Ying PCS, Ward 5, Anacostia River, MS4

- Seaton Elementary School, Ward 6, Anacostia River, CSO
- H.D. Cooke Elementary, Ward 1, Anacostia River, CSO
- DuPont Park Adventist School , Ward 7, Anacostia River, MS4
- Langdon Education Campus, Ward 5, Anacostia River, MS4
- Maury Elementary, Ward 6, Anacostia River, CSO
- St. Columba's Nursery School, Ward 3, Potomac River, MS4
- Walker Jones Education Campus, Ward 6, Anacostia River, CSO
- Phelps High School, Ward 5, Anacostia River, MS4
- The SEED PCS, Ward 7, Anacostia River, MS4
- Hardy Middle, Ward 2, Rock Creek, CSO
- Kelly Miller, Ward 7, Anacostia River, MS4
- Elsie W. Stokes Community Freedom PCS, Ward 5, Anacostia River, MS4
- Center City PCS, Trinidad Campus, Ward 5, Anacostia River, CSO
- Benjamin Banneker Academic HS, Ward 1, Anacostia River, CSO
- John Tyler Elementary School, Ward 6, Anacostia River, CSO
- Brent Elementary School, Ward 6, Anacostia River, CSO

RiverSmart Communities 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 of up to 60 percent 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 percent of the project cost.

Between 2011-2013, RiverSmart Communities audited 115 properties, ten of which were approved for funding and had BMPs installed. The cumulative treatment area for all ten sites equals 47,310 square feet.

RiverSmart Rooftops, also known as the Green Roof Rebate Program , offers rebates for all properties that install green roofs. Properties of all sizes including residential, commercial and institutional are encouraged to apply. For buildings with a footprint of 2,500 square feet or less, funds are available to defray the cost of a structural assessment. Additional funding may be available for features that further advance environmental goals. A current inventory of green roofs in the District can be found at http://ddoe.dc.gov/publication/inventory-green-roofs.

RiverSmart Rebates offers a series of rebates for trees, rain barrels, rain gardens, and impervious surface removal. Any D.C. single family homeowner is eligible to apply for the rebates, and homeowners that have already participated in the RiverSmart Homes program can also take advantage of the rebates.

RiverSmart Rewards is DDOE's Stormwater Fee Discount Program. The program began July 19, 2013 upon promulgation of regulations (Title 21 DCMR, Chapter 5, §557-563 and 559) establishing the program.

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.

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.

Stormwater Retention Credit Trading Program provides an incentive for voluntary green infrastructure that reduces stormwater runoff. Property owners trade their Stormwater Retention Credits (SRCs) in an open market to others who use them to meet regulatory requirements for retaining stormwater. Revenue creates incentives to install green infrastructure that protects rivers and provides other benefits.

5.2 Maintenance Activities for Pollution Source Controls

Regular maintenance improves the performance of the stormwater facilities for source control by preserving the capacity of the facilities to infiltrate or detain stormwater. Maintenance also ensures the effectiveness of pollutant removal. DDOE conducts regular inspections for District, federal or privately owned facilities.

DDOE's 2013 Stormwater Management Guidebook (2013 SWMG), finalized on July 19, 2013, provides technical guidance on complying with the 2013 Stormwater Rule. The District included operation and maintenance requirements for retention practices and non-retention BMPs in the 2013 SWMG, which can be found at http://ddoe.dc.gov/swguidebook.

The 2014 DDOT GI Standards contain operation and maintenance schedules for projects in the PROW. The 2014 DDOT Green Infrastructure Standards can be found at http://ddot.dc.gov/publication/ddot-green-infrastructure-standards-2014.

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5.3 Management Plan for Streets and Roadways

5.3.1 Street Sweeping Activities

Residential and arterial street sweeping are DPW's primary means of improving stormwater quality. Street sweeping activities include the use of mechanical sweepers to clean streets and paved alleys, manual street cleaning crews and mechanized vacuum carts. Debris collected from the street sweeping program is handled as standard municipal solid waste, and the debris is deposited at one of two municipal waste transfer stations located at 4900 Bates Road, NE or at 3200 Benning Road, NE.

During spring, summer and fall, DPW conducts scheduled, signed, mechanical street sweeping in densely populated residential neighborhoods with high-volume pedestrian traffic. Mechanical street sweeping is suspended during the winter months for public safety concerns. Sweepers emit a fine spray of water to keep dust down as they sweep; when the temperature is at freezing or below, sweeping is discontinued to prevent freezing and pedestrian or vehicles accidents. Among the greatest impediments to street sweeping are illegally parked vehicles during scheduled sweeping hours. DPW has recently implemented Sweepercam, a program designed to improve compliance with weekly parking restrictions for scheduled street sweeping. When a vehicle blocks a sweeper from reaching the curb lane, three spaces are missed as the sweeper must go around the illegally parked vehicle. The Sweepercam program uses license plate recognition technology to enable sweeper operators to photograph vehicles illegally parked in the curb lane of residential and commercial streets during sweeping hours. The camera, which is installed onto the sweeper, photographs the illegally parked vehicle, its license tag and its position on the street. The registered owner may then receive the photographs and a ticket in the mail. The Sweepercam program is intended to increase awareness among District residents to comply with street sweeping schedules. It is expected that this program will allow for more effective sweeping operations.

5.3.1.1 Snow and Ice Removal

DPW is the lead agency to clear snow and ice from District roadways and bridges. DPW/DDOT clears and makes safe approximately 2,295 lane miles, bridges, overpasses and ramps. DPW works closely with the Mayor and other District agencies when deciding to declare and enforce snow emergencies. If a snow emergency is declared, residents must immediately relocate any vehicles parked on snow emergency routes.

DPW applies brine solution, salt and plowing, based upon the amount and type of precipitation expected. Brine solution for snow operations is used to pre-treat the roadway pavement before a typical snowstorm. The use of a brine solution will reduce by up to 30% the use of traditional rock salt on pavements during snow events, which will significantly minimize the impact on stormwater runoff. If a storm event misses or changes direction after pretreatment of roadway surfaces, the water in the brine solution will evaporate and the salt residue will eventually wash off.

Brine is made at DDOT's Farragut Street Salt Dome Facility at 401 Farragut Street, NE and there are holding tanks at the other salt dome facilities. To deploy the brine solution, DPW

purchased one new liquid spray tank. Table 11 shows the location of the salt dome facilities located in the District, indicating the capacity of each facility and the location per Sewershed.

Table 11 Salt Storage Facilities

Salt Domes	Area	Capacity
Brentwood Road and W Street, NE	CSO	13,000 tons
113 Potomac Avenue, SW	MS4	5,000 tons
3890 Fort Drive, NW	MS4	4,500 tons
401 Farragut Street, NE	MS4	18,000 tons
3400 Water Street, NW (under Key Bridge)	MS4	100 tons

The salt storage facilities include berms to control water runoff from salt storage and loading areas. The runoff is directed to several inlets that lead to a retention facility where pollutants settle out before the stormwater is released to the MS4.

The snow removal program includes the following requirements aimed at minimizing stormwater pollution:

- Snow is not dumped directly adjacent to or into waterways during or in advance of snow emergency, unless directed by Federal Authorities.
- Dumping of snow in areas in adjacent to water bodies, wetlands, or drinking water sources is not part of the District's snow management plan, and is avoided except as necessitated by extreme emergencies.
- The District does not have snow pile areas identified but, if required, would use park land or federal lands with federal agency approval, upland and away from streams or rivers.
- Winter storm plans are evaluated and updated as necessary to provide optimum ice and snow control while minimizing pollutant discharge.

Measurable Outputs:

- Continue to street streets and roadways to reduce stormwater pollution.
- Continue to minimize the amount of salt used on roadways.
- Continue to manage the snow removal plan to protect waterways.

5.4 Management Plan for the Solids and Floatables Reduction Program

Solid and floatable materials include sediment, debris, trash, and other suspended or settleable solids. They come mainly from street litter that ends up in the District's catch basins and sewers. Solids and floatables can be discharged into surrounding waters during rain events. The proposed solids and floatables control program focuses on using preventive measures to help reduce the amounts of solids and floatable materials which may enter the MS4. These preventive measures include use of skimmer boats, catch basin cleaning, street sweeping and leaf collection.

5.4.1 Leaf and Tree Collection

DPW collects leaves from residential neighborhoods each autumn to prevent clogging of catch basins that could result in localized street flooding during heavy rain events. Seasonal leaf collection also reduces the potential for accidents and injuries resulting from slippage on wet leaves. DPW collects between 6,000 and 8,000 tons of leaves between November and January each year. Most of the leaves are collected by vacuum trailers and are composted. Residents can call 311, the Mayor's Citywide Call Center, between March and October to request compost. Compost also can be obtained between March and October at the Fort Totten Trash Transfer Station (4900 Bates Road, NE, weekdays from 1 pm to 5 pm and Saturdays from 8 am to 3 pm).

DPW mails a Leaf Collection Brochure that contains the annual leaf collection schedule to residents who receive trash and recycling services from the District. DPW's Leaf Collection Brochure provides updated information about the collection cycles per ward. DPW also has developed a web-based GIS tool that allows District residents to obtain the leaf collection status of their neighborhood by address. This tool can be accessed at the www.dc.dpw.gov website. DPW will continue with the collection of leaves and public education throughout the life of the revised Permit.

5.4.2 Preventive Maintenance of the MS4 Conveyance

DCWater is responsible for the operation and maintenance of the sewer network infrastructure, while DDOT is responsible for maintenance of the road systems. Storm drain maintenance activities include responding to reports of blockages or defects, catch basin cleaning and maintenance, and ensuring that the outlet structures of the MS4 remain clear. These inspections are conducted on a daily, weekly or monthly basis according to the inspection schedule. The Department of Maintenance Services within DC Water performs corrective maintenance on pumping stations in response to work order requests from the operational staff.

In 2013 DC Water inspected and assessed the condition of existing outfalls, and developed a repair schedule for those contributing to negative water quality, as required by the MS4 Permit. Field inspections were performed on all known MS4 outfalls. The condition of each outfall's streambank, discharge pool and structure was assessed for its contribution to water quality degradation. A scoring system was developed and implemented to rate outfall streambank/pool erosion, structure defects and structure criticality. Outfalls were sorted based on highest to lowest total score. Through this scoring and sorting process, approximately 80 out of 673 total outfalls were identified as contributors to water quality degradation and evaluated for inclusion in the MS4 Outfall Repair Schedule.

The Outfall Repair Schedule was released for public comment. DC Water and DDOE will revise the document in response to the comments. Additionally, DDOE is still cross referencing and reconciling the results of the DC Water Outfall Repair Schedule and anticipates slight adjustments to outfall numbers through continued inspections and desktop analyses. The Draft Outfall Repair Schedule and Report can be viewed at http://ddoe.dc.gov/draftoutfallreport.

5.4.3 Skimmer Boats

DC Water implements a five day a week floatable reduction program by utilizing skimmer and support boats on the Potomac and Anacostia Rivers to remove floatable debris and trash from the rivers. The boat docking area and roll-off containers are located on the west bank of the Anacostia River in the vicinity of M and 14th Streets, SE. Since 2003 the skimmer boats have removed a total of 6,696 tons of debris from District water bodies. The average annual removal from 2003-2014 is 558 tons.

DC Water will continue to use skimmer boats on the Potomac and Anacostia Rivers.

5.4.4 Anacostia River Clean Up and Protection Act of 2009

The Anacostia River Clean Up and Protection Act of 2009, commonly referred to as the District's Bag Law, requires businesses that sell food or alcohol to charge five cents for each disposable paper or plastic bag distributed with any purchase. The law took effect January 1, 2010 and was the first of its kind in the United States. The law was passed after a trash study found that plastic bags were one the largest sources of litter in the Anacostia River. The law's ultimate goal is to change consumer behavior by reducing the amount of disposable bags that people use in order to reduce the volume of trash in the District's waterways.

Regulated businesses retain one cent of the five-cent fee (or two cents if they offer a rebate to customers who bring their own bag), and the remaining three or four cents goes to the Anacostia River Clean Up and Protection Fund, a special-purpose fund managed by DDOE. The money deposited into the fund is used to implement watershed education programs, stream restoration projects, and trash collection projects and to purchase and distribute reusable bags. As of September 2013, the Bag Law has raised over $7.4 million in bag fees.

Below are just a few projects that Bag Law funds have been used for:

- **Surveys:** In 2012-2013, DDOE commissioned a series of surveys to measure the impact of the Bag Law, on reducing litter, and to assess the effectiveness of the law in reducing disposable bag consumption.
- **Trash Collection:** The District has implemented several innovative design solutions for removing trash from local waterways. A total of six trash traps have been installed using funds from the Bag Law. These trash trap devices are instrumental in preventing trash and debris from reaching the main stem of the Anacostia River.
- **Education/Outreach:** In 2011, OpinionWorks, a public opinion research firm, conducted a series of focus groups, one-on-one interviews with admitted litterers, a District-wide public opinion poll, and interviews with 50 businesses in order to better understand littering behavior. The findings from this study led to the development of the Trash-Free Potomac Anti-Littering Campaign, an anti-littering campaign for the Potomac River watershed. In 2013, DDOE provided a grant to the Alice Ferguson Foundation to conduct a roll-out of the Trash–Free Potomac Anti-Littering Campaign across the District's portion of the Anacostia watershed. The foundation will be working with local businesses, community and recreation centers, schools and other District government agencies to post anti-littering materials. Examples of the materials include posters and

reusable bags, among others. In addition, as part of the grant, the foundation will be conducting on-line behavioral surveys, trash counts and visual behavioral studies in neighborhoods in the Anacostia watershed. Through these studies, the foundation will be gathering data on how much the anti-littering campaign has affected littering behavior.

- **Meaningful Watershed Education Experiences (MWEE):** DDOE has the responsibility of providing a "meaningful watershed education experience" (MWEE) related to a stream or the Chesapeake Bay for students in the District of Columbia Public Schools (DCPS) before high school graduation. Through a DDOE grant, the Living Classrooms of the National Capital Region (LC-NCR) will engage third, fourth and fifth grade classes in hands-on, educational experiences, linking the students to the Potomac River, Anacostia River and Chesapeake Bay watersheds. Over the two year grant period, LC-NCR will work with 18 classes from DC Public Schools located in Wards 7 and 8, reaching approximately 180 students.
- **Stream Restoration:** The restoration of Nash Run, a non-tidal tributary in the upper-Anacostia watershed, will include natural channel design to assist with habitat improvement and pollutant removal to improve the health of receiving waters downstream. A large trash-capture device will also be installed at the head of the restored reach.
- **RiverSmart Homes:** This program offers technical and financial assistance to homeowners that wish to control the amount of stormwater pollution leaving their properties. Homeowners in the District of Columbia are eligible to receive up to $1,200 to install rain gardens, plant native species, or install permeable pavement. In addition to this grant, RiverSmart Homes offers assistance for the installation of rain barrels and shade trees.
- **Green Roof Subsidy Program:** Green roofs hold and delay rainfall, effectively preventing rainwater from becoming stormwater and reducing combined sewer overflow events. In addition, green roofs filter air pollutants from the rainwater, save energy in buildings, and help to reduce the urban heat island effect. DDOE's Green roof rebate program provides base funding of $5 per square feet for the installation of a green roof for residents and building owners in the District. The program funds green roofs of any size atop buildings, garages, sheds, and other structures. To date, the program has funded several types of roofs ranging in size from 200 square feet to 25,000 square feet. Implementation of the program is managed by the Anacostia Watershed Society (AWS).

DDOE began active enforcement of the law in December 2010, after conducting almost a full year of extensive compliance assistance and educational outreach about the law's requirements. Table 12 provides an overview of enforcement statistics by fiscal year.

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Table 12 Bag Law Enforcement Statistics

	Inspections	Notices of Violation	Notices of Infraction
FY11	336	188	13
FY12	466	217	29
FY13	587	226	34
FY14	564	165	49
Totals	**1,953**	**796**	**125**

DDOE inspectors check businesses for compliance with the Bag Law primarily through "secret shopping," in which inspectors do not identify themselves as such. DDOE has determined this to be an efficient and accurate way to ascertain whether a business is in compliance. Items purchased during inspections are paid for with fees collected through the Anacostia River Clean Up and Protection Fund.

In 2011, DDOE established an agreement with the DC Office of Aging (DCOA) to transfer goods purchased during Bag Law inspections to the DCOA's Senior Wellness Centers throughout the District. The Wellness Centers provide these items to senior citizens who use the facilities. As of September 30, 2013, DDOE inspectors have purchased 670 nonperishable items, worth $1,280.74, in order to check compliance with the Bag Law.

In 2012-2013, DDOE commissioned a series of surveys to measure the impact of the Bag Law on reducing litter and to assess the effectiveness of the law in reducing disposable bag consumption. An independent research firm, OpinionWorks, developed and conducted the surveys, in partnership with the Alice Ferguson Foundation and the Anacostia Watershed Society. DDOE provided a grant for the project, funded by fees collected under the Bag Law.

The study found that both residents and businesses have significantly reduced their disposable bag use. 80% of residents reported using fewer disposable bags and 79% of businesses reported providing fewer disposable bags to customers. The study also found that substantial majorities of residents and businesses support the bag fee: 83% of residents and 90% of businesses either support or are indifferent to the Bag Law, with only 16% of residents and 8% of businesses feeling bothered by the law. In addition, both residents and businesses report seeing much less plastic bag litter throughout the District. Specifically, 67% of residents and 68% of businesses reported seeing less plastic bags found as litter toward versus three of four years ago. For more information on the surveys, please visit: www.green.dc.gov/bags

In order to ease implementation of the Bag Law, DDOE staff spent the first year after the law took effect conducting extensive outreach to District businesses and residents and to bag manufacturers and distributors. DDOE designed and distributed cash register decals and window flyers with a *Skip the Bag, Save the River* logo for businesses to display. DDOE outreach staff created television and radio advertisements to raise public awareness, and DDOE partnered with

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local businesses, including pharmacies and major supermarket chains, to distribute reusable bags to customers. DDOE also created a *Skip the Bag, Save the River* website (www.green.dc.gov/bags), which includes links to the law and regulations, a tip line for reporting problems, outreach materials targeted to businesses, media releases, and a Frequently Asked Questions page about the law.

In 2013, DDOE partnered with the Department of Motor Vehicles (DC DMV) to promote the District's commemorative *Save the River* license plate. As a result of this partnership, DC DMV service centers display a short video about the commemorative license plate to residents waiting for licensing services. The video is also available on DDOE's website at http://green.dc.gov/service/support-anacostia-river-cleanup-and-protection-fund.

5.4.5 The Sustainable DC Omnibus Act of 2014

The Sustainable DC Omnibus Act of 2014, signed by former Mayor Vincent Gray on July 20, 2014, bans the use of expanded polystyrene, commonly known as Styrofoam™, food and beverage service containers by January 2016 and further requires that these service containers be made of only compostable or recyclable material by January 2017. The ban does not affect sales of prepackaged foods or prepackaged foam products, such as packages of styrofoam cups for private use. The ban targets restaurants, such as those which offer carry-out services, from serving food in foam containers. The ban was proposed after a 2008 study conducted on the Anacostia River revealed expanded polystyrene to be one of the most common types of trash found.

The District is working in 2016 to develop regulations and conduct outreach to businesses about the ban. DDOE is currently working with the DC Department of Health (DOH) on developing an inspection program to target District businesses that may use expanded polystyrene products. The ban officially takes effect on January 1, 2016.

Subsequent to implementation of the ban, DDOE will report on the number of inspections that take place on an annual basis, as well as the annual number of notices of infraction issued to District businesses.

5.4.6 Catch Basin Cleaning Activities

DC Water is responsible for cleaning and maintenance of catch basins located in the MS4 and CSS areas of the District, and DDOE organizes storm drain labeling. There are approximately 25,000 catch basins throughout the District, and in FY14 DC Water performed 29,313 individual catch basin clean-outs. In the MS4 part of the District, typical catch basins are replaced with water quality or environmental catch basins when the streets undergo total reconstruction, which remove more pollutants than conventional catch basins. The District's catch basins are cleaned on a once-a-year scheduled basis but additional cleaning is done in response to customer requests. Repair tasks vary from resetting the tops of the catch basins to redesigning the catch basin to avoid damage.

In July 2013 DDOE and DC Water submitted an Optimal Plan for Catch Basin Cleaning, Inspection, and Repair Report to EPA Region III. This document was posted to the DC Register

for public comment and submitted to EPA for review and approval. In July 2014 EPA submitted official comments for each plan. DC Water and DDOE are currently revising the plans in response to those comments. Upon EPA approval the District will begin implementing the recommendations of the plan.

Additionally, DDOE uses the catch basin GIS layer provided by DC Water to track and organize volunteer storm drain stenciling events. Storm drain stenciling events are conducted on a subwatershed basis in the Spring and Summer months.

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.

5.4.7 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.

Measurable Outputs:

- Conduct inspections of regulated businesses.
- Continue to conduct targeted outreach with businesses, residents and visitors to the District.
- Continue to clean catch basins and implement the Optimal Catch Basin Cleaning, Inspection, and Repair Report upon its finalization.
- Continue to remove trash and debris from the Anacostia River.

5.5 Management Plan for Trash and Litter Reduction

In August 2010, the District, in partnership with Montgomery County, Prince George's County, the Maryland Department of Environment, and EPA Region III, established a total maximum daily load (TMDL) for trash for the Anacostia River. This was the first inter-jurisdictional TMDL for trash developed for a water body in the United States. The TMDL includes waste load allocations (WLAs) for both the District's combined sewer system (CSS) and MS4. The official TMDL document notes that the WLA for the CSS will be addressed by the long-term control plan (LTCP) currently being implemented by DC Water. The TMDL also states that WLA compliance for the MS4 will be accomplished via compliance with the District's MS4 permit. The Anacostia River Trash TMDL can be viewed at http://green.dc.gov/publication/trash-tmdl-anacostia-final. On January 22, 2013, DDOE submitted the Draft Anacostia River Watershed Trash TMDL Implementation Strategy, via the 2012 MS4 Annual Report, to EPA Region III. The Anacostia Trash TMDL Implementation Strategy can be viewed at http://green.dc.gov/sites/default/files/dc/sites/ddoe/page_content/attachments/Draft_Strategy_For_Public_Input.pdf.

Under the previous permit cycle, the District commited to taking a multi-pronged approach to reducing trash loads from entering the Anacostia River by 103,188 pounds per year. This number is the equivalent of the WLA assigned to the District's MS4 under the Anacostia River trash TMDL. In addition, the District will strive to implement as many of the practices below as possible throughout the city. The following is a full list of structural and non-structural controls the District will continue to utilize under the next permit cycle to meet its MS4 permit requirements:

1. In-stream and end-of-pipe best management practices (e.g., trash traps)
2. Skimmer boat activities
3. Stream and river cleanup activities
4. Roadway and block cleanup activities
5. Street sweeping of environmental hotspots
6. Education and outreach
7. Regulatory approaches (e.g., Bag Law and Styrofoam ban)

The District plans to continue to implement and maintain existing practices, as well as look for new opportunities to implement more of these practices, or new and innovative ones. The District's goal is to continue to implement the tools necessary to reduce trash loads to the Anacostia River by 103,188 pounds per year. The District will track and report implementation annually, and DDOE will report on new practices along with their respective load reduction calculation methodologies as they are implemented. DDOE will continue to collect empirical data on all end-of-pipe BMPS and adjust efficiencies for future TMDL planning purposes.

Measurable Outputs:

- Continue to monitor for trash.
- Implement trash reducing BMPs.
- Track and report trash loads.

5.6 Flood Control Projects

The District of Columbia has enacted and implemented the floodplain regulations required for participation in the National Flood Insurance Program (NFIP). NFIP is based on a mutual agreement between the federal government and the community (e.g., District of Columbia). Federally backed flood insurance is made available in those communities that agree to regulate development in their mapped floodplains. If the communities do their part in making sure future floodplain development meets certain criteria, the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) who is the NFIP administrator will provide flood insurance for properties in the community.

The District Department of the Environment (DDOE), as the floodplain administrator, coordinates the District's participation in the NFIP, and works with FEMA and District agencies on implementation. DDOE's floodplain management program has regulatory authority and provides technical assistance to District property owners and other interested parties on issues such as the NFIP, floodplain management, flood insurance, floodplain development

requirements, floodplain mapping, and flood mitigation. More information: http://ddoe.dc.gov/service/floodplain-management.

5.7 Pollution Prevention

The District has taken significant steps to enhance its pollution prevention program since the current Permit term. Since May 2013, the District has focused efforts on staff training and awareness of pollution prevention requirements and has continued to improve interagency coordination.

In cooperation with sister agencies, DDOE has conducted nine training sessions with staff from the three District agencies whose facilities were inspected by EPA, including the Office of the State Superintendent of Education (incorrectly identified as the Department of General Services in EPA's inspection report), the District Department of Transportation (DDOT), and the Department of Public Works (DPW). These training sessions have included classroom instruction on overall goals and requirements of the Permit, as well as on-site walk-throughs with hands-on training in spill prevention and clean up. DDOE has conducted six pollution prevention training sessions across other District agencies, with the same mixture of classroom instruction and hands-on training. Classroom training provided the following information:

- An overview of the MS4 Permit and pollution prevention goals
- Awareness of the connection between the actions of facility staff, the cleanliness at District facilities, and the impacts on the health of local waterways
- Discussions on improved fleet maintenance and operating procedures to better identify leaking vehicles, clean or contain leaks, and repair vehicles
- Discussion of the challenges to maintain an aging fleet and increase awareness of the vehicles that are more likely to be potential pollutant sources
- Use of videos and classroom discussion to teach identification of potential pollutants, secondary containment, maintenance procedures, and staff roles and responsibilities.

DDOE has also worked with sister agencies to develop, implement and update stormwater pollution prevention plans (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.

Additionally, DDOE has also strengthened cooperation with the agencies identified in EPA's inspection report through frequent coordination meetings and ongoing discussions on improving operating procedures for pollution prevention. This collaborative effort has included a significant focus on the development or improvement of Stormwater Pollution Prevention Plans for sister agencies. Simultaneously, DDOE has worked to enhance and improve its network of responsible points of contacts from sister agencies.

Guidance on good housekeeping practices and SWPPPs can be found in Appendix Q of the 2013 SWMG at http://ddoe.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/Appendix%20Q%20%20pollution%20Prevention%20Through%20Good%20Housekeeping.pdf.

Measurable Outputs:

- SWPPPs will be finalized for the remaining agencies.
- DDOE will continue to conduct regular stormwater inspections at District facilities to ascertain whether they are in compliance with Federal and District regulations.
- DDOE will provide on-going training sessions to Agency staff.
- DDOE will provide site visits at various facilities to provide guidance in SWPPP development, implementation.

5.8 Control of Pollutants from Hazardous Waste Sites

5.8.1 Industrial Facilities Database

The District maintains a database of industrial, commercial, institutional, municipal, and federal facilities within the MS4 area. The database includes NPDES facilities, CERCLA facilities, and large and small quantity generators, including facilities covered by EPA's Multi-Sector General Permit. These facilities provide different services such as automotive repair, car/truck rentals, dry cleaners, building supplies, laboratory and health care, restaurants, gas/oil stations, collection and transfer stations, etc. The database can be searched based on services, possible potential pollutants, outfalls, sub-watersheds, wards, and zip codes. DDOE will continue to update the database and try to capture the industrial "universe" in the District.

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 DDOE conducted Compliance Evaluation Inspections (CEI) of all 11 Individual NPDES permitted facilities within the District. DDOE 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 permits 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.

5.8.2 Monitoring of Pollutants from Hazardous Waste Sites

The Hazardous Waste program regulates commercial businesses as well as federal, District, and local government facilities that generate, transport, treat, store, or dispose of hazardous waste. Each of these entities is regulated to ensure proper management of hazardous waste from the moment it is generated until its ultimate disposal or destruction. DDOE has developed the Environmental Certification Handbook. The handbook contained information related to pollution prevention to avoid discharges into the MS4. For more information on monitoring, refer to the Illicit Discharges and Improper Disposal section of this plan.

5.9 Management Plan for Pesticide and Herbicide Application

The application of pesticides and herbicides in the District is regulated by the DCMR Title 20 Chapter 22. The District plans to reduce the amount of pesticides and herbicide application through implementation of public education activities and the pesticide certification/licensing program. The outfall monitoring program described in Section 4 will offer insight into the success of these programs by providing pollutant concentrations of pesticides and fertilizers entering surface waters in the District.

5.9.1 Pesticides and Fertilizer Education Program

DDOE has an Integrated Pest Management (IPM) strategy to better inform the public about the proper use and disposal of pesticides, and safer alternatives to pesticides. These programs encourage IPM at all project sites. The program provides citizen education and outreach to help residents adopt environmentally sound practices for pesticides use in yards and gardens, including the use of "good" garden pests.

The strategy educates District residents as to the proper application of pesticides and provides guidance on how to choose an appropriate pesticide, how to choose a pest control company, and what regulatory requirements exist regarding commercial application of pesticides.

The Pesticide Program within DDOE regulates the use, sale and distribution of pesticides in the District, as outlined in the DCMR Title 20 Chapters 22-25. A proposed rulemaking to implement the provisions of the Pesticide Education and Control Amendment Act of 2012 and amends and reorganizes the District's existing pesticide regulations was published in the D.C. Register on May 30, 2014. Comments were received and the proposed rulemaking is being revised. As of January 2015 the rulemaking has not been finalized.

The regulatory functions of the Pesticide Program are accomplished through pesticide registration, certification and testing to assure the competency of commercial and public pesticide applicators, and compliance monitoring, inspections and investigations of pesticide misuse. DDOE's promulgated list of reduced-risk pesticides or classes of pesticides is intended as a living list.

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

5.9.2 Source Characterization Screening

DDOE performs outfall monitoring as part of its overall monitoring program. Samples collected are analyzed for suspended pollutants, including pesticides. If pesticides are found in monitoring samples, the Illicit Discharge Detection and Elimination (IDDE) Program is notified and an inspection is conducted. Details of sample set activities are included in Section 4 of the SWMP.

5.10 Management Plan for Illicit Discharges and Improper Disposal

The stormwater pollution control management plan for the Illicit Discharge Detection and Elimination Program (IDDE) entails a mixture of program activities that include the following:

- Meet the IDDE requirements of the NPDES Permit No. DC0000221, including quick and effective responses to illicit discharges to the District's MS4;
- Promote proper and consistent illicit discharge detection and elimination methodologies;
- Facilitate the proper management and disposal of floatables, household toxics, pet waste, and leaf litter;
- Educate residents, businesses, employees, and property owners on the importance of preventing, detecting, and eliminating illicit discharges through adherence to the District's IDDE Program;
- Reduce or eliminate careless or illegal discharges to the MS4 system that can result in pollutants reaching local water bodies or areas of natural importance via stormwater; and
- Reduce or eliminate pollutant discharges that can affect safety and health, water quality, wildlife, and eventually damage the quality of life in the District.

5.10.1 Illicit Discharge Detection and Elimination

The District maintains an IDDE program designed to detect and eliminate illicit discharges within the District. DDOE, 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 DDOE for assistance. Those incidents referred to WQD through DDOE Emergency Operations are considered "emergency responses" and are designated and recorded as such.

5.10.2 Inspection Plan

The District continues to maintain an inspection program for illicit discharges. The Permit states that the Permittee will use a mix of strategies for the detection and elimination of illicit discharges. 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.

5.10.3 Enforcement Plan

The District continued the enforcement plan program to prohibit the discharge or disposal of motor vehicle fluids, household hazardous wastes, coal tar, grass clippings, leaf litter, and animal waste into separate storm sewers.

DDOE's enforcement procedures are addressed in *The Environmental Enforcement Guidelines*, see Attachment 2. This document details how enforcement actions, such as notices of violation, notices of infraction, and stop work orders are issued and adjudicated. These guidelines detail the written enforcement strategy outlining how enforcement actions, such as violation notices, notices of infractions, and stop work orders, are issued and adjudicated.

The District has enacted legislation that prohibits the discharge or disposal of used motor vehicle fluids, household hazardous wastes, grass clippings, leaf litter, and animal waste into separate storm sewers. The Water Pollution Control Act of 1984 (D.C. Official Code 8-103.07 (e)) provides that no person shall discharge a pollutant to the waters of the District. The Water Pollution Control Act defines "pollutant" as any substance which may alter or interfere with the restoration or maintenance of the chemical, physical, radiological, and biological integrity of the waters of the District; or any dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemicals, chemical wastes, hazardous wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, oil, gasoline and related petroleum products, and industrial, municipal, and agricultural wastes. Implementing regulations at 21 DCMR § 529 control stormwater runoff for oil, grease, organic animal wastes and other discharges that violate the water quality standards of receiving waters in the District.

5.10.4 Limit Infiltration of Seepage from Sanitary Sewers to the MS4

DC Water has taken the following steps to limit infiltration of sanitary waste into storm sewers:

- Sewer lining contracts have been awarded to target defective sewers throughout the District.
- Inspection/repair of sewers that cross streams.
- Sewer relocation and upgrade at Watts Branch
- Reduce CSO's that discharge into the Anacostia and Potomac Rivers and into Rock Creek via sewer separation to eliminate several CSO outfalls and use the outfalls for storm water only.

5.10.5 Spill Response Program

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.

5.10.6 Program to Promote, Publicize and Facilitate Public Reporting of the Presence of Illicit Discharges or Water Quality Impacts Associated With Discharges from the MS4

The District has a no tolerance position toward illegal dumping. In addition to education and enforcement programs, the District urges residents to report illegal dumping and illicit discharges.

Solid waste education and enforcement program (SWEEP) inspectors patrol assigned areas daily on the lookout for sanitation violations, such as illegal dumping. Residents who spot trash or piles of debris that are not in proper containers or set out in an unsanitary manner, are not at a proper point of collection, or are on a vacant lot or public property, are urged to call the Mayor's Citywide Call Center at 311 and provide information on the location of the dumping, the persons and/or vehicles that engaged in dumping, and the time and date when the dumping occurred and, if possible, what materials were dumped. A SWEEP inspector investigates all reports of dumping and arranges for clean-up.

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Additionally, the District has created a 311 tip line application for smart phones. This app allows citizens to report illegal dumping and litter, as well as infractions of the Bag Law (which requires retailers to charge a 5-cent fee for plastic and paper bags); the Anti-Idling Law (commercial vehicles may not idle for more than three minutes); and soil erosion and drainage offenses at construction sites. Photos and comments can be shared and a tracking number will be provided to follow up on each reported incident. The app, DC 311, is available at the Android and iTunes app stores.

5.10.7 Public Education for Proper Disposal of Used Oil and Other Toxic Material

5.10.7.1 Hazardous and Electronic Waste (e-waste) Collection

Through the District's website and periodic mailings, District residents are made aware of the negative environmental consequences of throwing household hazardous waste (HHW) into the trash, pouring it down the drain, or disposing of it in other improper ways. DPW classifies HHW as any leftover household product that can burn or cause a fire; eat away materials; destroy living tissue on contact; cause an explosion or release poisonous fumes when exposed to air, water or other chemicals; or damage or destroy cells and chromosomal material. DPW also promotes proper e-cycling of unwanted computers, televisions, VCRs, stereos, copiers and fax machines to prevent the release of dangerous substances, such as lead and mercury into the environment.

In April 2014, DPW expanded the opportunity for residents to dispose properly of HHW by increasing the frequency of its collection events from monthly to weekly. DPW continues to provide e-cycling and personal document shredding on the first Saturday of the month. All HHW, e-cycling, and shredding activity takes place at the Fort Totten Transfer Station (4900 Bates Road, NE). By providing these services, DPW increases the awareness of the importance of proper disposal of HHW and promotes control of the disposal of toxic substances.

All HHW is taken to a US EPA-approved facility for processing, recycling or disposal. E-waste is broken down into its component parts; precious/toxic metals are extracted, and then the various materials are recycled or disposed of safely.

DPW accepts the following hazardous waste and e-cycling items:

- Aerosols
- Antifreeze
- Asbestos tile (non-friable)
- Batteries
- Brake fluid
- CDs and DVDs
- Cell phones
- Compressed Fluorescent Lamps
- Cleansers
- Computers and components
- Drain openers
- Fluorescent light bulbs
- Gasoline in small amounts
- Mercury Thermometers
- Moth balls
- Motor and boat oil (used)
- Paint (oil-based)
- Pesticides
- Petroleum products
- Polishers
- Propane tanks
- Solvents
- Thinners
- Videotapes
- Wood preservatives

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DPW has distributed a multilingual (English, Spanish, Vietnamese, Chinese, Korean and Amharic) Reference Guide that includes the information detailed above about the importance of hazardous waste and e-cycling, acceptable waste and what citizens can do to help.

5.10.7.2 Storm Drain Marking Program

DDOE implements a storm drain stenciling program during the summer and spring months. Storm drain stencils are placed on storm drains to educate people that whatever is put down the drains would end up in the District rivers. DDOE has committed to installing 400 storm drain markers every two (2) years.

5.10.7.3 Pet Waste

DDOE has developed an educational and outreach program entitled "Scoop Your Pet's Poop" 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. The District has created 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. The District has installed metal "Scoop Your Pet's Poop" street signs throughout the District, targeted in areas where residents have requested pet waste signs.

5.10.7.4 Ban on Coal Tar Pavement Products

Effective July 1, 2009, it is illegal to sell, use, or permit the use of coal tar pavement products in the District. Coal tar pavement products contain high concentrations of polycyclic aromatic hydrocarbons (PAHs), suspected carcinogens and highly toxic chemicals with known harmful impacts on humans and animals. Coal tar is usually found in sealants applied to parking lots and driveways. Asphalt-based sealants, an alternative to coal tar-based sealants, are readily available for comparable prices and contain significantly lower concentrations of PAHs. Once sealant has been applied to a paved surface, PAHs enter the environment through volatilization into the air, leaching into stormwater, and the erosion of dust that is carried by air and water.

DDOE's oversees the inspection and enforcement of the coal tar pavement product ban. Inspectors conduct regular inspections of sealed parking lots and driveways throughout the District to determine whether or not the sites' sealant contains coal tar. Inspectors also prioritize inspections based on tips received from an online public tip line. Once a site has been identified as sealed, inspectors collect a small sample of the sealant for a solvent screening test, which provides an initial indication of whether or not the sealant contains coal tar. If the solvent screening test indicates that the sealant contains coal tar, the inspector will request documents related to the most recent sealant application from the site's property owner. The inspector will also arrange a time with the property owner to return to the site to collect a larger sample for laboratory analysis to measure the total concentration of PAHs. This laboratory analysis is a reliable indicator of whether or not the site was sealed with a coal tar-based sealant product. If the laboratory analysis indicates that the sample contains coal tar, DDOE will issue an enforcement action and require that the site be remediated.

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In 2013, the District began utilizing advanced GIS and remote sensing analysis to remotely identify sealed parking lots for inspection. Using high-resolution aerial imagery and computer algorithms, the District is able to analyze all paved surfaces in the District and identify likely-sealed lots to prioritize for inspection. This remote detection increases the efficiency and effectiveness of the District's coal tar inspection efforts. As of June 2014, one enforcement action has been issued for a site remotely identified using aerial imagery.

In the summer of 2013, DDOE began a study to evaluate the prevalence of coal tar-based sealant in the District. By inspecting a randomly-selected statistically-significant sample of paved surfaces in the District (not including public roads and alleys), the District hopes to estimate the number of sites in the District that were sealed with either asphalt or coal tar-based pavement sealants both before and after the ban. Since sealant typically lasts between three to five years, DDOE hopes to gather baseline data on the prevalence of coal tar sealant that will enable the agency to estimate the impact of the coal tar ban on PAHs released into the environment.

When the District determines that a coal tar pavement product has been used on a site, the District issues a Notice of Violation (NOV) to all the parties involved in applying the sealant. This often includes property owners, contractors, subcontractors, and property managers. The NOV stipulates that, in order to avoid the full civil penalties of the law, those parties must remediate the site via shot blasting or encapsulation. Shot blasting removes the sealant by projecting small balls of abrasive metal at the surface. After passing over a given surface, the metal balls are collected with a magnet and the sealant residue is captured by a vacuum outfitted with a HEPA filter. All collected debris must be disposed of at a Subtitle D landfill facility. Encapsulation applies two additional layers of asphalt-based sealant on top of the existing layer of coal tar-based sealant. This ensures that the coal tar-based sealant does not continue to erode or otherwise export PAHs into the environment. The first encapsulation layer must be brightly-colored to indicate when the second additional layer has worn away. Respondents that opt to encapsulate must enter into a binding mitigation plan in which they agree to monitor the encapsulated sealant and reseal any areas in which the indicator layer is visible. The property owner is also responsible for recording the mitigation plan with the District of Columbia Recorder of Deeds as a covenant on the property's deed.

If any respondent fails to meet the terms of the NOV, the District seeks civil penalties by issuing a Notice of Infraction (NOI). Pursuant to the relevant statute, respondents found in violation of the ban on coal tar pavement products are liable for civil penalties up to $2,500 for each day of the violation. Notices of Infraction are enforceable in the District's Office of Administrative Hearings, an administrative court.

Since 2010, the District has issued 12 NOVs and one NOI for violations of the ban on coal tar pavement products, Table 13. The District has also entered into one settle agreement with a property owner in lieu of issuing an NOV or NOI. Remediated through shot blasting took place at 10 sites. In one case, a site was remediated through an alternate remediation method proposed by the property owner. One case for which an NOV has been issued is still pending. The aforementioned settlement agreement also resulted in the site being remediated through shot blasting.

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Table 13 Coal Tar Enforcement Statistics

FY2011	Inspections	36
	NOVs	7
	NOIs	0
FY2012	Inspections	79
	NOVs	1
	NOIs	1
FY2013	Inspections	162
	NOVs	2
	NOIs	0
FY2014 to date	Inspections	104
	NOVs	2
	NOIs	0
	Settlement Agreements	1

In 2009 and 2010, DDOE conducted extensive outreach on the coal tar pavement product ban in the DC Metro region. Outreach included notification to landholding or managing sister agencies, pavement product distributors, home improvement and hardware stores, contractors (approximately 1,600 in the region), property owners with driveways and parking lots (approximately 31,000), trade associations, and utility companies (PEPCO and Washington Gas). Outreach materials included letters, postcards, and brochures.

In May 2013, DDOE sent 13,885 postcards to property owners with paved surfaces larger than one parking space.

Measurable Outputs:

- Draft regulations for the ban on coal tar pavement products.
- Conduct outreach to more targeted constituencies
- Conduct targeted inspections

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- Continue to work with members of the Metropolitan Police Department to enhance illegal dumping enforcement.

5.11 Management Plan for Industrial Facilities

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. The District's Industrial Facilities Inspection and Enforcement Program involve the following:

- Maintains an up-to-date database of facilities identified as critical sources of stormwater pollution;
- Inspects facilities within the District's MS4 area designated as critical sources of stormwater pollution a minimum of twice within the term of the MS4 permit;
- Assures compliance from all facilities within the District's MS4 area designated as a critical source of stormwater pollution, via follow-up inspections, site directives, Notices of Violation, or Notices of Infraction;
- Documents and tracks all inspections, follow-up inspections, and all other compliance or enforcement actions; and,
- Conducts educational activities and outreach for businesses, industries, property owners, and employees of facilities within the MS4 area where critical sources of stormwater pollution have been identified.

5.11.1 Industrial Facilities Database

The District maintains a list of all industrial, commercial, institutional, municipal, and federal facilities within the MS4 area that were identified as critical sources of stormwater pollution. More information on the critical sources database can be found in Section 5.8.1. The District will continue to include any new data on industrial facilities suspected of contributing pollutants to rivers of the District, to update the database to include new facilities and remove facilities that have closed and been released from Federal or District regulation.

5.11.2 Monitoring and Inspections

DDOE's inspection program covers industrial, commercial, institutional, municipal, and federal facilities within the MS4 area that are identified as critical sources of stormwater pollution in the MS4 Facility List. DDOE inspects each of these facilities a minimum of twice each Permit term and tracks these inspections via the MS4 Tracking Database. 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.

Inspection requirements for stormwater management are included in the DCMR, Chapter 5: Water Quality and Pollution. The regulations require that facilities receiving storm water runoff install a BMP to control the discharge of oil and grease concentrations exceeding 10 mg/l. Facilities with storage for animals must prevent the waste runoff from reaching the waters of the

District. Measures to control storm water runoff include infiltration of runoff, attenuation by open vegetated swales and natural depressions, retention structures, and detention structures.

5.11.3 Wet Weather Screening Program

The Wet Weather Screening Program is being implemented as part of the Wet Weather Outfall Monitoring Program, and in conjunction with the illicit discharge detection program.

5.11.4 Industrial Facility Outreach Program

The District provides industrial facilities with educational materials, seminars and conferences regarding the proper handling and storage of chemicals. The District will continue the industrial facility outreach program including the distribution of pamphlets on preventing discharges and on site assistance to facility staff. DDOE personnel used inspections to promote awareness of the proper methods of chemical storage. Based on what they observe on-site, inspectors can make facility-specific recommendations to improve their compliance with stormwater regulations.

Measurable Outputs:

- Continue inspecting industrial facilities.
- Continue on-site assistance and outreach focused on Permit compliance**.**
- Maintain a database to track industrial, commercial, institutional, municipal, and federal facilities within the MS4 area that were identified as critical sources of stormwater pollution.

5.12 Management Plan for Construction Sites

All development in the district must meet the requirements of the 2013 Stormwater Rule. As stated in Section 5.1.1.1, major land-disturbing activity must retain the first 1.2" of rainfall on-site or through a combination of on-site and off-site retention.[10] Major substantial improvement activity must retain the first 0.8" of rainfall on-site or through a combination of on-site and off-site retention.[11] Retention is achieved with Best Management Practices (BMPs) that infiltrate, evapo-transpire, and/or harvest stormwater runoff for non-potable use. The 2013 SWMG provides technical guidance on complying with the 2013 Stormwater Rule. The District reviews all stormwater management plans for regulated development projects. The District also requires developers to provide an erosion and sediment control plan for development that will cause 50 square feet of land disturbance. Erosion and sediment control plans must include stabilization and structural controls. Additionally, the District will continue to review all stormwater management and erosion and sediment control plans for federal projects.

10 A major land-disturbing activity is any activity that disturbs over 5,000 square feet or greater of land area.
11 A major substantial improvement activity is a substantial improvement activity and associated land-disturbing activity, including such activities that are part of a common plan of development, for which the combined footprint of improved building and land-disturbing activity is five thousand square feet (5,000 ft2) or greater and for which the project cost exceeds 50% of the pre-project value of the structure.

5.12.1 Review and Approval Process

The District reviews and approves construction plans through its "One-Stop Permitting Center." Plan review and site inspections are coordinated with DDOE enforcement staff and DCRA to ensure that deficiencies in the permitting process are corrected when they are encountered. DDOE's Technical Services Branch has engineers stationed at the "One-Stop Permit Center" at DCRA to provide assistance to customers and to ensure that permit applications, construction plans, and environmental forms and documents meet regulatory requirements. Projects seeking LEED certification are eligible for the Green Building Expedited Construction Documents Review Program. Once a developer submits all documents required for the permit application, DCRA will process the application within 30 business days after all other agencies have reviewed and approved the plans. DDOE continues to train our engineers to improve efficiency and effectiveness in plan review.

5.12.2 Inspection and Enforcement Procedures

DDOE's Inspection and Enforcement Division's mission is to ensure compliance with the District's erosion and sediment control and stormwater management regulations, and to investigate citizens' complaints related to soil erosion and drainage problems.

The District's policies and procedures for erosion and sediment control inspections have been updated (see Attachment 8), and all Inspection and Enforcement Branch 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. Inspectors are authorized to conduct periodic inspections of all land disturbing activity at construction sites to ensure compliance with approved plans and to determine if the measures in the approved plans are providing effective erosion and sediment control. Inspectors also conduct final inspections within four weeks after receiving notice of project completion to ensure compliance with final stabilization as specified in the approved plan. Inspectors then conduct inspections for maintenance of the stormwater management facilities. The owner or operator of the stormwater management facility is required to maintain the facility in good condition.

There are several administrative enforcement remedies may be used to respond to any violations of the stormwater management and erosion and sediment control regulations. DDOE enforcement procedures are addressed in *The Environmental Enforcement Guidelines*, see Attachment 2. 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.

In addition, the new BMP tracking database that is under development will address the recordkeeping, paperwork, and data management issues highlighted in this observation. 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.

5.12.3 Educational and Training Measures for Construction Site Operators

The District continues to provide educational training and materials for construction site operators and District soil and erosion inspectors. The objective of the education efforts is to decrease sources of storm water pollutants and improve storm water quality.

Current training is conducted during the site inspection process and includes distribution of the District's Storm Water Management Guidebook and addresses particular needs and questions of the operators.

District inspectors continue to receive training on the updated SOPs, 2013 Stormwater Rule and 2013 SWMG, GAR, and professional certifications.

Measurable Output:

- DDOE will continue to review and approve projects throughout the life of the MS4 Permit.
  - The District will continue implementing inspection and enforcement procedures as currently managed.
- The District will continue to use standardized reports as part of the inspection process to provide accurate record keeping of inspections of construction sites.

5.13 Education and Outreach

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. Information about several education and outreach programs can be found at http://green.dc.gov/education and http://dpw.dc.gov/service/solid-waste-education-and-enforcement-sweep.

5.14 Mapping and Computer Modeling of Stormwater Impacts

5.14.1 Mapping of the MS4 Infrastructure

Several GIS layers have been developed to support the inspection, management and planning efforts for the District's MS4 infrastructure. A geodatabase containing outfalls, gravity lines, junctions, catch basins and other components of the conveyance system was initially developed by DC Water. DDOE continues to update and refine the geodatabase based on field verification and QA/QC procedures, and has used the information to develop a layer outlining the catchment area for each MS4 outfall. All MS4 outfalls and their corresponding catchments have been associated with the TMDL waterbodies in which they occur.

A detailed review and spatial analysis of the District's MS4 infrastructure was conducted as part of the development of the District's Consolidated TMDL Implementation Plan, and is documented in Appendix B (Sewershed and Watershed Delineations) of the Comprehensive Baseline Analysis Report (available with all other project documentation at www.dcstormwaterplan.org). This technical memorandum was prepared as an integral part of the TMDL IP.

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5.14.2 Modeling of Stormwater Impacts

The District's MS4 permit includes provisions to identify and apply a model to support pollutant load estimation and pollutant reduction, and to track progress in achieving WLAs. In particular, the main requirements for developing a modeling tool specify that the model will:

- Estimate baseline and current pollutant loads;
- Tabulate loads on an annual basis;
- Estimate pollutant load reductions achievable via various BMP implementation scenarios; and
- Represent the daily expression of the TMDL.

A separate technical memorandum (Comprehensive Baseline Analysis, Appendix A: Model Selection and Justification) documents the selection, justification, and description of the modeling tool that is being used to inform the Consolidated TMDL Implementation Plan (available with all other project documentation at www.dcstormwaterplan.org). It documents the details of the Implementation Plan Modeling Tool (IPMT), including:

- Review of previous modeling studies of the MS4 Area;
- Review of publically available modeling tools and calculators;
- Model needs;
- Model selection and justification;
- Model description and requirements;
- Model comparisons; and
- Model limitations.

5.15 Signatory and Certification requirements

In accordance with Part VII.F of the current MS4 Permit, the Mayor delegated signatory authority for any documents required to be submitted to EPA to the Director of DDOE or his designee. A copy of the letter sent by the District's City Administrator to the EPA regarding the delegation of authority was included in the 2009 SWMP.

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6 ASSESSMENT OF CONTROLS

This section provides a strategy to assess the effectiveness of the District's SWMP. As discussed in Section 1.1, the District is developing a Consolidated TMDL Implementation Plan. This IP will set a schedule for attainment of MS4 WLAs, and will also include a framework for tracking progress and adaptive management. The assessment will use pollutant load reductions achieved by BMP implementation, as estimated by the Consolidated TMLD Implementation Plan Modeling Tool. Demonstration of progress (as specified in Parts IV and VIII of the MS4 Permit) will be accomplished by comparing the area managed by BMPs and associated load reductions with the interim milestones and numeric benchmarks specified in the Consolidated TMDL IP.

6.1 Assessment of the Stormwater Management Program

The District's SWMP will be evaluated through direct and indirect measurements, in accordance with the guidance in EPA's "Guidance, Manual for the Preparation for Part 2 of the NPDES Permit Applications from Municipal Separate Storm Sewer Systems." As indicated in the EPA manual, direct measurement "includes the number of BMPs installed, removal efficiencies, stormwater volume reduction, event mean concentration reduction, and pollutant loading reduction." For some of the components of the District's SWMP, such as implementation of structural controls (*e.g.*, bioretention cells, sand filters), the effect on pollution from stormwater runoff is observable and pollutant removal efficiencies can be modeled and estimated directly.

For other components, such as outreach programs for industrial facilities, new regulatory initiatives and the installation of storm drain stencils, pollutant reductions are hard to quantify and incorporate into benchmarks. For these harder to quantify activities, EPA encourages applicants to identify some indirect measurement that can be used to evaluate their success. As stated in EPA's manual, indirect measurement "includes but is not limited to, the amount of household hazardous waste collected, number of public hearings and attendance at these hearings, number of spill cleanups, number of sewer inlet stencils, number of educational brochures distributed, and number of erosion and sediment control permits issued."

6.1.1 Direct Measurement of Program Effectiveness

The District will submit estimates of expected pollutant load reductions from the Consolidated TMDL IP Modeling Tool. This modeling tool incorporates modules focused on calculating stormwater runoff (based on the Simple Method), calculating pollutant loads (based on EMCs derived from the District's wet weather monitoring program or from the original TMDL studies), and for calculating pollutant load reductions (based on implementation of BMPs and removal efficiencies for BMPs from EPA's Chesapeake Bay Program and other reputable sources) Indirect Measurement of Program Effectiveness

Progress of stormwater management activities under the District's SWMP can also be assessed indirectly using statistics on stormwater management activities implemented and reported by District agencies. While these measures are qualitative and not quantitative, the level of effort, equipment and personnel dedicated to each stormwater management activity help assess pollution reduction resulting from improvements to the SWMP. It is important to note that the unit of measurement (tons, units, pounds, etc.) for each indirectly measured activity may vary each year, as certain activities are subject to development trends, weather, increased education

and changes in consumer habits. For example, the number of annual plan reviews conducted per year is subject to economic development trends in the District, and the amount of hazardous waste collected may decrease as citizens learn to reduce the production of household hazardous waste by switching their purchasing habits to less toxics products. Therefore, these indirect measurements must be assessed in the context of the District's overall stormwater management program. Indirect measurement statistics may include, but are not limited to the following:

- Number of catch basins cleaned;
- Number of miles swept;
- The number of storm drain markers installed per year;
- Tons of leaves collected each year;
- The number of construction plans reviewed;
- Number of outfall inspections performed per year;
- Tons of household hazardous waste collected;
- Number of educational brochures distributed;
- Number of public hearings on stormwater and attendance at these hearings;
- The number of education materials distributed.

6.1.2 Impacts of Stormwater Controls on Groundwater

The promotion and implementation of green infrastructure includes the promotion and implementation of infiltration BMPs, such as infiltration trenches and basins. However, infiltration BMPs have the potential to contaminate groundwater if they are constructed on previously contaminated land or on land that has the potential to receive pollutants from proposed development. To address the potential of groundwater contamination via seepage, the revised stormwater management and erosion and sediment control regulations prohibit the use of any infiltration practice on previously contaminated land and on land that will be developed for an industry or business that has the potential to pollute stormwater runoff.

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7 ANNUAL REPORTS ON THE EFFECTIVENESS OF THE STORM WATER MANAGEMENT PROGRAM

The District will submit an Annual Report to EPA throughout the Permit term. The Annual Report will consolidate the Annual Report, Implementation Plan, and Discharge Monitoring Report into one MS4 Program Annual Report. The Annual Report will include, among other things:

1. The status of implementing the components of the SWMP;
2. Proposed changes or revisions to the SWMP;
3. Projected annual expenditures and budget for the year following each annual report;
4. Summary of stormwater management activities;
5. TMDL WLAs and TMDL implementation activities;
6. Summary of water quality monitoring data;
7. Results of water quality modeling;
8. Event Mean Concentration and annual pollutant loadings for wet and dry weather events for pollutants of concern.

The Annual Report data will be evaluated in preparing SWMPs for any future permits. Annual Reports will also be used in identifying any required modifications of the current MS4 Permit for the remainder of its term.

7.1 Notifications to National Marine Fisheries Service

The current MS4 Permit indicates that the Hay's Spring Amphipod and the Bald Eagle are federally listed endangered species. However, as of 2007, the U.S. Fish and Wildlife Service determined that the Bald Eagle is no longer a federally-listed endangered or threatened species. At the present time, there is no evidence that stormwater discharges covered under the MS4 Permit are adversely affecting the Hay's Spring Amphipod. To allow further evaluation of the potential effects of stormwater discharges on the Hay's Spring Amphipod, the District will continue to submit to National Marine Fisheries Service (NOAA Fisheries) a copy of the Annual Report.

7.2 Notifications to Historic Preservation

The current MS4 Permit requires any project that includes ground disturbance, new construction or demolition to notify the District's Office of Planning and Historic Preservation Office. Notification to the Historic Preservation Office is conducted during the initial phase of a proposed development. Any individual applying for a District building permit affecting a historic property is required to have the Historic Preservation Review Board approve the appropriateness of changes to historic landmarks and properties located in historic districts.

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