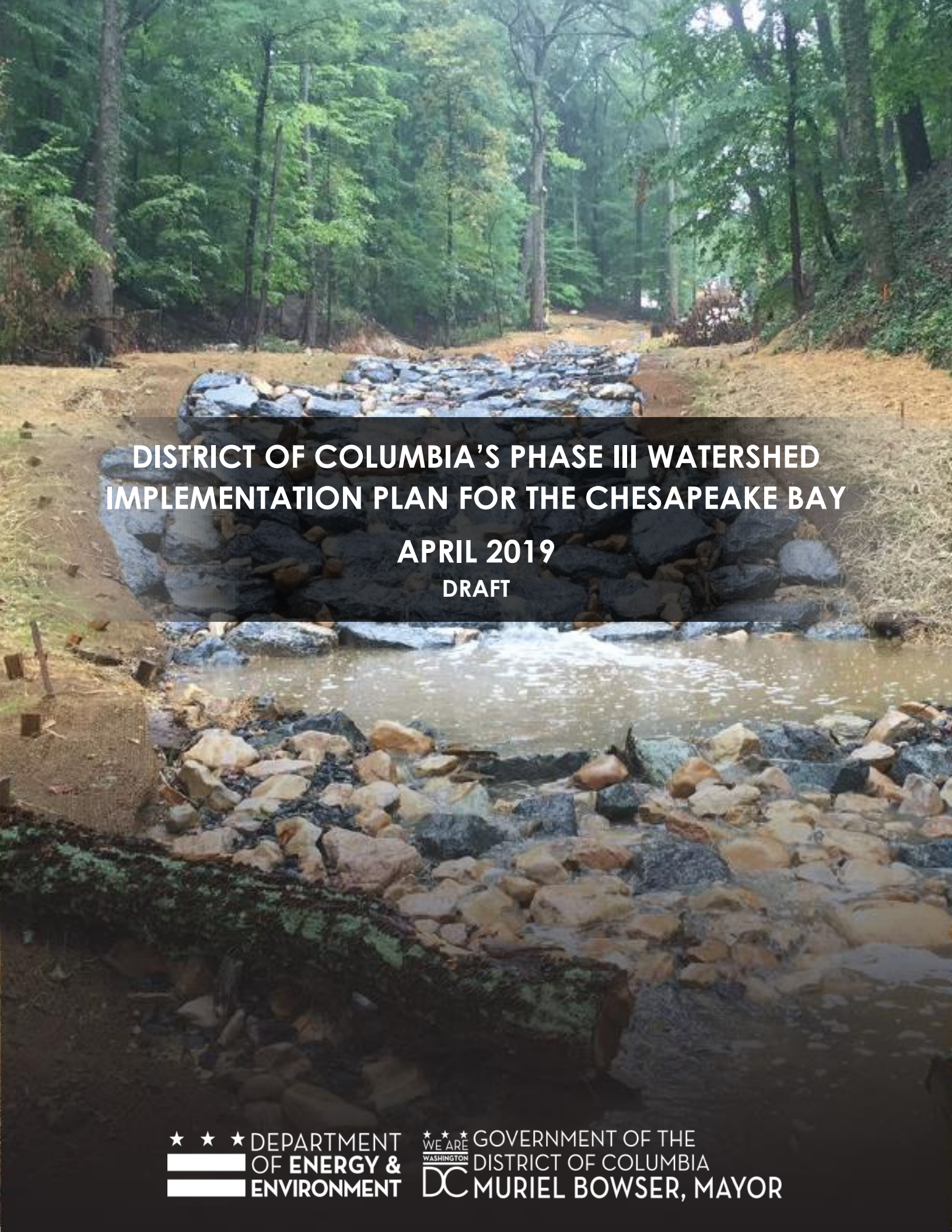

DISTRICT OF COLUMBIA'S PHASE III WATERSHED IMPLEMENTATION PLAN FOR THE CHESAPEAKE BAY

APRIL 2019

DRAFT

DEPARTMENT OF ENERGY & ENVIRONMENT

GOVERNMENT OF THE DISTRICT OF COLUMBIA
MURIEL BOWSER, MAYOR

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EXECUTIVE SUMMARY

The *District of Columbia's Phase III Watershed Implementation Plan for the Chesapeake Bay* (Phase III WIP) describes the actions the District and its partners are taking to reduce nitrogen, phosphorus, and sediment pollution to levels that will meet the water quality goals established in the 2014 Chesapeake Watershed Agreement.

As soon as 2025, climate change will make it harder to achieve clean water in the Chesapeake Bay, due in large part to more frequent and intense storm events that increase the amount of polluted runoff. The District is leading by example and including actions in this WIP to further reduce pollution and address the impacts of climate change on water quality by 2025. The District is on track to meet these goals through the efforts of the District government, DC Water, federal agencies, the private sector, residents, and community-based and environmental organizations.

The District is unique among states within the Chesapeake Bay watershed in that it is ultra-urban; the majority of nitrogen and phosphorus pollution comes from wastewater and urban stormwater runoff. As a result, it is more expensive to reduce a pound of pollution in the District than in other jurisdictions. Additionally, almost 30 percent of the land within its boundaries is owned by federal agencies. These distinct challenges require innovative regulatory, incentive-based and stewardship programs to reduce pollution entering District waterways and the Chesapeake Bay.

Nearly all sources of pollution in the District are regulated under the Clean Water Act. The U.S. Environmental Protection Agency issues permits to DC Water and the District Government to limit wastewater and urban stormwater discharges. Activities required to comply with these permit limits will result in the District meeting water quality goals in the Chesapeake Bay.

A growing population and increase in economic development will lead to more wastewater generation. However, advanced treatment at the Blue Plains Wastewater Treatment Facility and completion of the Clean Rivers Project, which will eliminate 96 percent of combined sewage overflows, will enable the District and DC Water to stay within permit limits, without stalling growth.

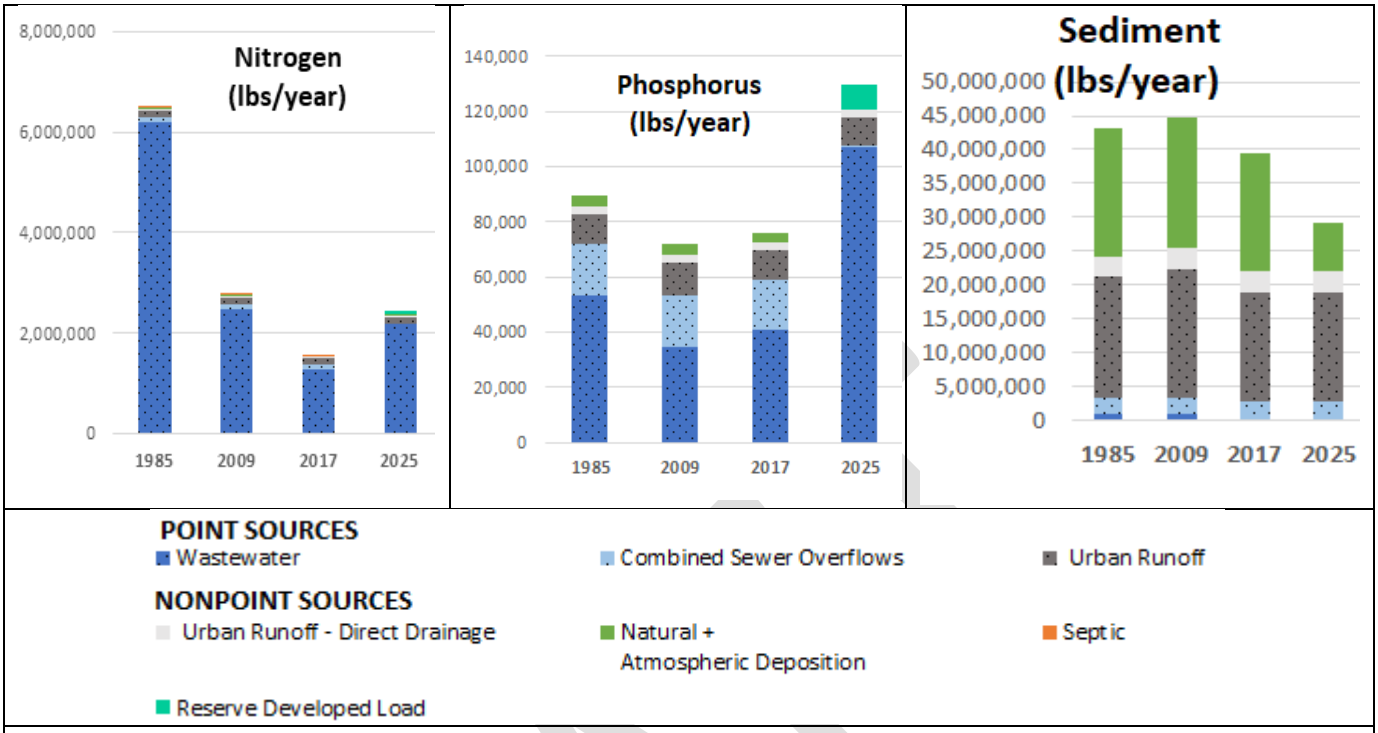


Figure ES-1– District Trends and Planning Goals for Nitrogen, Phosphorus and Sediment Pollution

Further, the District's current rate of implementing stormwater management practices to comply with its municipal separate storm sewer system (MS4) permit reduces enough pollution from developed land to meet water quality goals in the Chesapeake Bay. The WIP prioritizes stormwater management in areas that will yield multiple benefits within the District, including improving the health of local rivers and streams, improving fish and wildlife habitat, and enhancing resilience to impacts of climate change. While implementation of new pollution-reducing practices is on track to meet water quality goals, the inspection and maintenance of these practices present an increasing challenge. The District currently has existing and new programs to prioritize and incentivize inspections and maintenance and is considering additional options to address this need.

The District worked to develop this WIP with DC Water, federal agencies, and government, private, and community partners serving on the Chesapeake Partner Advisory Group. DC Water outlined actions underway to meet and maintain wastewater permit requirements, and each major federal government agency with land in the District developed strategies to meet nitrogen and phosphorus planning goals. The Chesapeake Partner Advisory Group provided recommendations and priorities to reduce urban runoff on nonfederal land. This feedback reinforces efforts underway by the District and informs future priorities, including:

- Enhancing community outreach and engagement;
- Increasing awareness of upcoming funding opportunities;
- Facilitating collaboration among stakeholders, particularly new and non-traditional partnerships;
- Supporting local champions who participate in DOEE programs to improve watershed health;
- More effectively communicating the range of benefits associated with stormwater management practices;
- Enhancing grants management;
- Incentivizing maintenance of stormwater management practices; and
- Exploring opportunities to create green jobs for District residents

Improving water quality is a partnership effort. Implementing strategies within the District's Phase III WIP will meet water quality goals in the Chesapeake Bay and improve watershed health and resilience within the District.

Chapter 1 INTRODUCTION

The *District of Columbia's Phase III Watershed Implementation Plan for the Chesapeake Bay* (Phase III WIP) is the District's strategy for reducing pollution from the District to the Chesapeake Bay while also improving the health of local waterways, restoring fish and wildlife habitats, and increasing resilience to climate change. As a signatory to the Chesapeake Watershed Agreement,[1] the District has developed the Phase III WIP to guide the implementation of the *Chesapeake Bay Total Maximum Daily Load for Nitrogen, Phosphorus and Sediment* (Bay TMDL) established by the U.S. Environmental Protection Agency (EPA) in 2010.[2] The goal of the regional Chesapeake Bay Program partnership, as documented in the Bay TMDL and the 2014 Watershed Agreement, is to have all pollution reduction practices in place by 2025 that are necessary for a clean Bay.

The Chesapeake Bay Program is a unique regional partnership that has led and directed the restoration of the Chesapeake Bay since 1983. The District of Columbia has been a partner since its inception, and other partners include the states of Delaware, Maryland, New York, Pennsylvania, Virginia, and West Virginia; the U.S. Environmental Protection Agency (EPA), representing the federal government; the Chesapeake Bay Commission, a tri-state legislative body; and participating advisory groups. The partners have committed to work together through a series of Chesapeake Agreements. The 2014 Chesapeake Watershed Agreement includes 10 goals to advance a vision of clean water, abundant life, conserved lands, public access to water, a vibrant cultural heritage, and a diversity of engaged citizens and stakeholders.

The District Department of Energy & Environment (DOEE) is the D.C. agency responsible for carrying out program activities related to the Chesapeake Bay. The District does this by focusing primarily on local water bodies including the Anacostia and Potomac Rivers and Rock Creek—all of which drain into the Chesapeake Bay.

This document is divided into the following chapters:

1. **Introduction** – Provides an overview of the District's involvement with regional partnerships, its place within the Chesapeake Bay watershed, its geography and demographics, and the process for developing the Phase III WIP.

[1] Chesapeake Bay Program 2014, Chesapeake Bay Watershed Agreement
[2] EPA 2010, Chesapeake Bay TMDL

2. **Water Quality** – Describes how DOEE assesses water quality and local water quality impairments within the District
3. **Nutrient and Sediment Sources** – Discusses current sources of nitrogen, phosphorus and sediment from the District to the Chesapeake Bay, including wastewater facilities and urban runoff.
4. **District of Columbia's Planning Targets and Planning Goals** – Identifies the planning targets provided by the Chesapeake Bay Program to the District for achieving water quality standards in the Chesapeake Bay and divides these targets into local planning goals and priority subwatersheds for implementation.
5. **Local Engagement Strategy** – Describes the District's multi-pronged strategy for working with key stakeholders to develop and implement the Phase III WIP.
6. **Strategies to Meet and Maintain Planning Targets –** Identifies the programs and resources within the District that will lead to implementation of pollution control practices necessary to meet the District's planning targets and goals.
7. **Crediting, Tracking, Reporting, and Verification –** Describes the District's protocols and tools for crediting, tracking, reporting and verifying pollution control practices.
8. **Climate Change** – Outlines the District's efforts to mitigate and adapt to the impacts of climate change, with a focus on actions affecting water quality.

1.1 PHASE III WIP DEVELOPMENT

The District's Phase III WIP builds on two previous WIPs. The District developed the Phase I WIP in 2010 to inform the pollution limits and reduction strategies that EPA established in the Bay TMDL. The District developed the Phase II WIP in 2012 to further explain to EPA and other interested parties collaborative efforts with key stakeholders, notably federal agencies with land in the District, to meet the Bay TMDL pollution limits. The Phase I and II WIPs focused on actions that would be taken between 2010 and 2017.

The Chesapeake Bay Program partnership completed a midpoint assessment of the Chesapeake Bay TMDL in 2018 to take into account the latest science, data inputs, and lessons learned from Bay TMDL implementation to date. In its 2018 expectations for Phase III WIP development, EPA outlines three elements that it expects to be included.[3] These are:

- **Element 1:** Programmatic and numeric implementation commitments between 2018 and 2025 needed to achieve their Phase III WIP planning targets.

[3] EPA 2018, Phase III WIP Expectations

- **Element 2**: Comprehensive strategies for engagement of the full array of the District's local, regional, and federal partners in WIP development and implementation.
- **Element 3**: Finer scale, local planning goals in the form best suited for directly engaging the District's partners in WIP implementation.

The Bay TMDL is based on meeting water quality standards in each of the 92 Chesapeake Bay "segments" that together comprise the Chesapeake Bay mainstem and its tidal tributaries. EPA therefore expects the Phase III WIPs to include nutrient and sediment loads by segment drainage area. EPA also expects the jurisdictions' WIPs to consider the impact of future growth, both in terms of land use changes and population, on pollution loads and identify actions and controls to maintain planning targets over time.

The District's Phase III WIP takes into account findings from the midpoint assessment; provides more detail on implementation strategies through 2025 to achieve the Bay TMDL; addresses the impacts of growth on water quality; provides pollution loads for the District as a whole and by Bay segment drainage area; and engages a broader range of stakeholders in its development and implementation. These key partners include environmental groups, community-based organizations, and District agencies, among others. The goal of the Phase III WIP is to support priorities within the District for local stream health, water quality, and climate resilience, as well as fulfilling cleanup goals for the Chesapeake Bay.

1.2 THE DISTRICT'S PLACE IN THE CHESAPEAKE WATERSHED

The District of Columbia is located near the geographic center of the Chesapeake Bay watershed, which spans 64,000 square miles across six states and the District (Figure 1-1). The waters of the District of Columbia drain into the Potomac River before reaching the Chesapeake Bay. The District covers 69 square miles, which is less than one half of one percent of the overall Potomac River Basin and approximately one tenth of one percent of the entire Chesapeake Bay watershed.

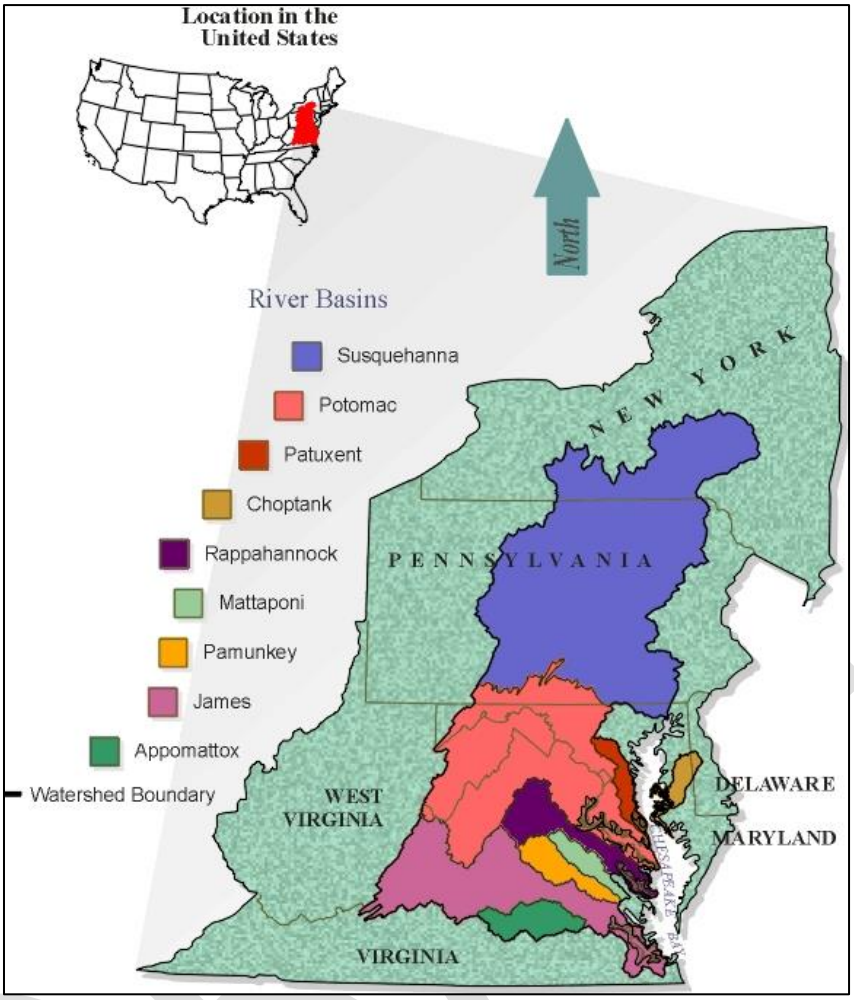


FIGURE 1-1: CHESAPEAKE BAY WATERSHED
SOURCE: UNITED STATES GEOLOGICAL SURVEY

The Chesapeake Bay Program partnership divides the Chesapeake Bay and the tidal portions of its tributaries into 92 segments based on conditions such as salinity and depth. Each segment has designated uses and water quality standards established to protect aquatic life inhabiting it. Each of the 92 segments has its own contributing drainage area, and portions of four drainage areas to four different segments are within the District of Columbia (
Figure 1-2). All of these segments fall within the Potomac River major basin:

- **Upper Potomac River, DC** – This segment is referred to as POTTF_DC and represents the drainage from Rock Creek and a portion of the Potomac River within the District.
- **Upper Potomac River, MD** – This segment is referred to as POTTF_MD and represents the drainage from parts of the District into the Maryland portion of the Potomac River.

- **Anacostia River, DC** – This segment is referred to as ANATF_DC and represents the drainage from the Anacostia River within the District.
- **Anacostia River, MD** – This segment is referred to as ANATF_MD and represents the drainage from parts of the District into the Maryland portion of the Anacostia River subwatershed.

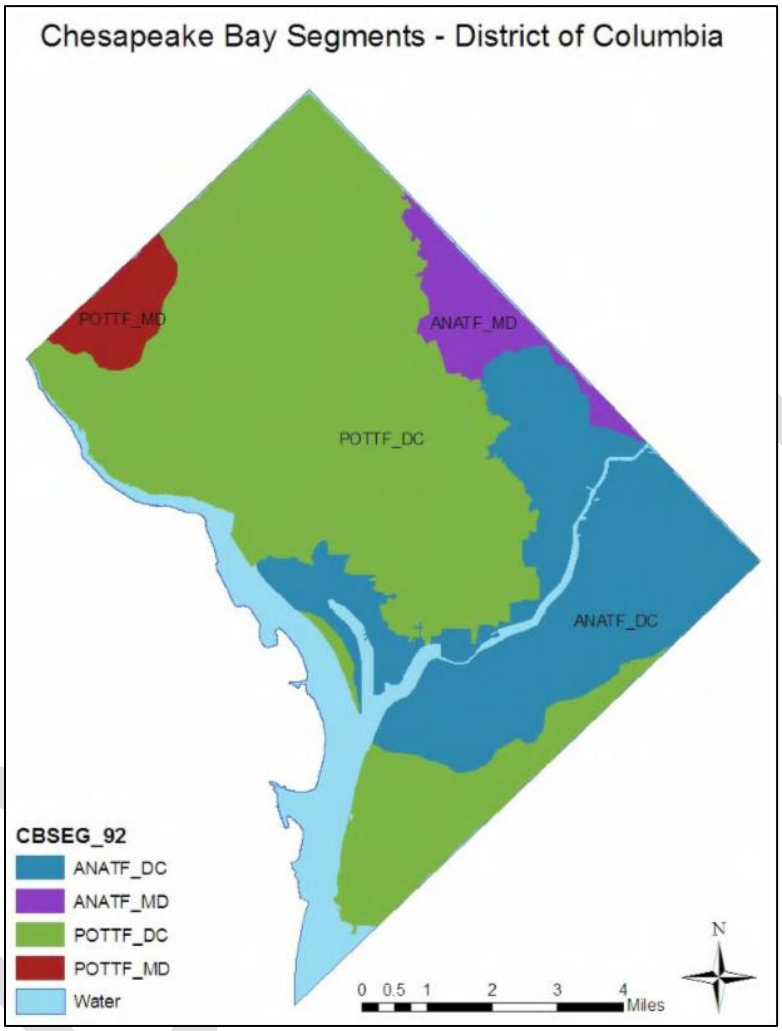


FIGURE 1-2: DRAINAGE AREAS TO CHESAPEAKE BAY SEGMENTS WITHIN THE DISTRICT OF COLUMBIA SOURCE: DOEE

1.3 DISTRICT LAND USE AND DEMOGRAPHICS

The District is a highly urbanized and built out area, and as a result wastewater and urban runoff from developed lands covered with buildings and impervious surfaces

are by far the largest contributors of nitrogen, phosphorus and sediment loads to the Chesapeake Bay from the District. As further described in Chapters 3 and 6, wastewater loads will continue to grow with population and economic development. However, the wastewater planning goals in the WIP, the Blue Plains permits, and the Bay TMDL allocations are all based on the design capacity of the Blue Plain Wastewater Treatment Facility and will accommodate additional growth in this sector. Further, new development and redevelopment in the District actually improve water quality because the District is already built out. The District's stormwater management regulations require land-disturbing activities to install pollution reduction practices, leading to a net decrease in polluted urban runoff from developed lands.

When considering how the District can achieve its water quality goals, the impacts of growth, and how stormwater management efforts can benefit residents and natural areas within the District, it is important to recognize the significant variation in demographics across the District. The city has a higher level of income inequality than any state in the country, with households in the top 20 percent having 29 times more income than the bottom 20 percent (DC Fiscal Policy Institute, 2017). The District also has one of the highest poverty rates in the country, with nearly one in five District residents living in poverty. There is a correlation between race and income, which can be seen geographically as minority demographics vary significantly by neighborhood (Figure 1-3). Home ownership rates and types of housing also vary substantially across the District.

As can be seen in the following charts, these indicators demonstrate the need for a variety of tools to reduce pollution across diverse demographic areas. Chapter 6 further describes the range of programs available in the District to support watershed health as well as strategies to engage and support stakeholders throughout all eight wards.

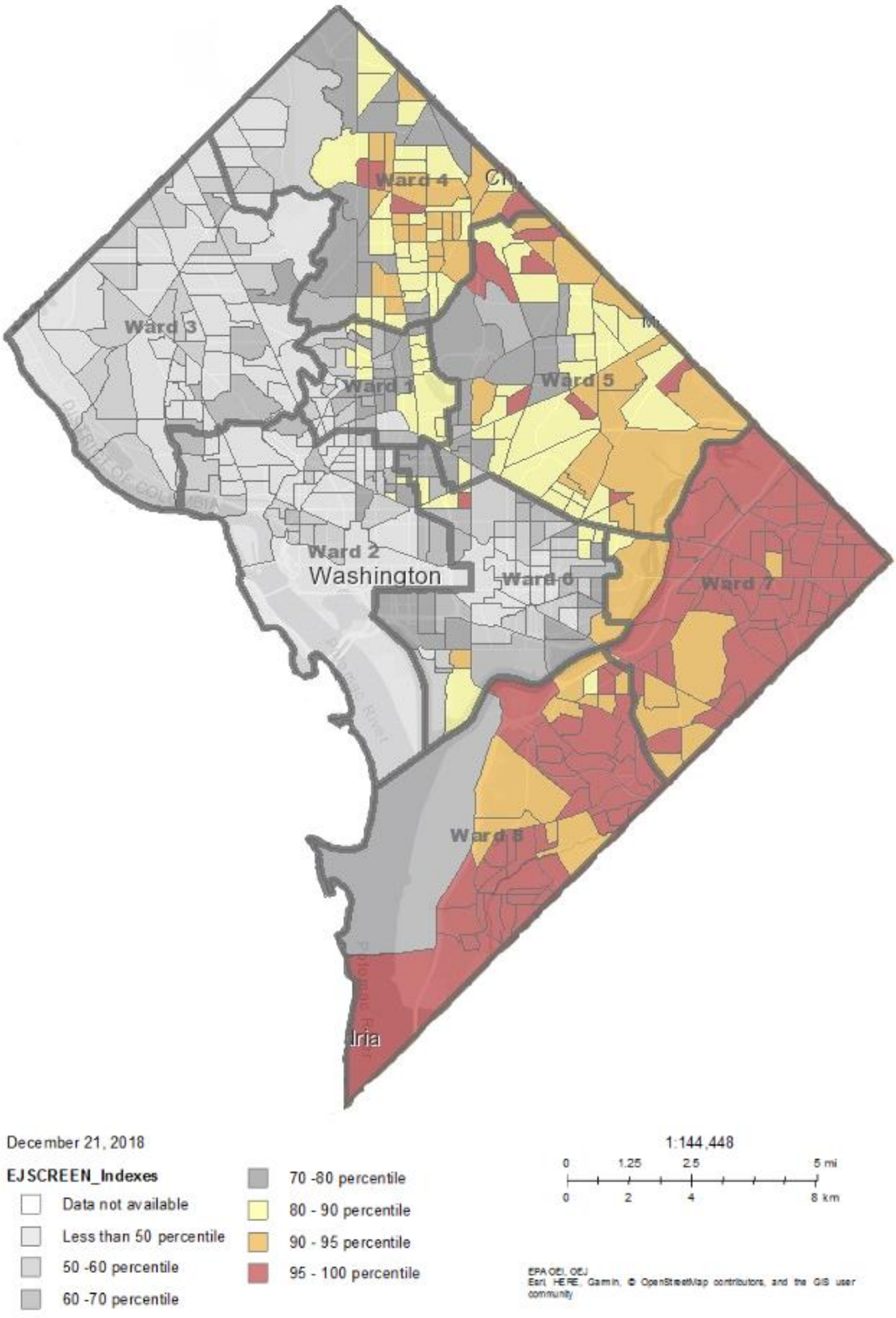


FIGURE 1-3: PERCENT MINORITY POPULATION
SOURCE: EPA, EJSCREEN

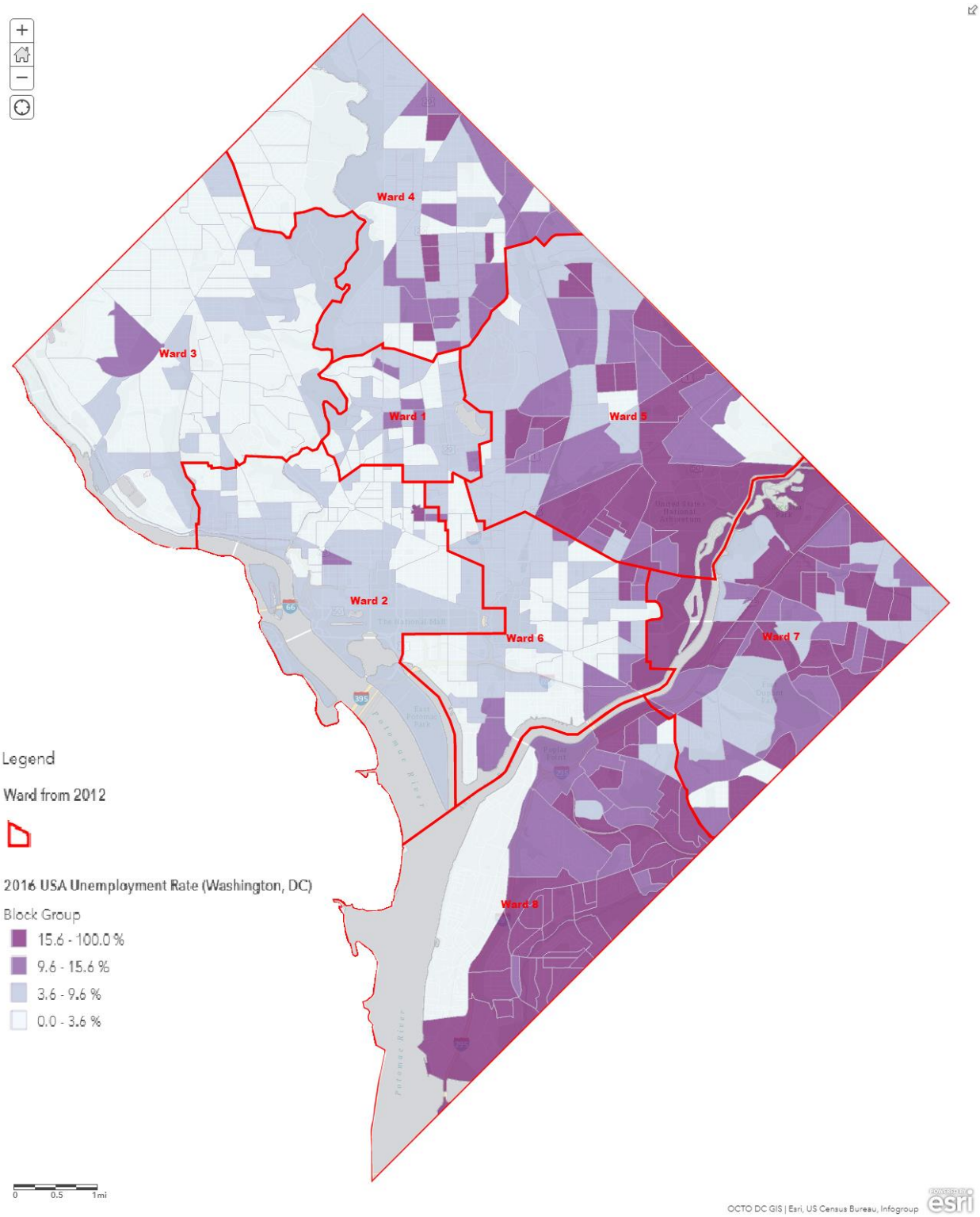


FIGURE 1-4: UNEMPLOYMENT RATES ACROSS THE DISTRICT
SOURCE: DC GIS

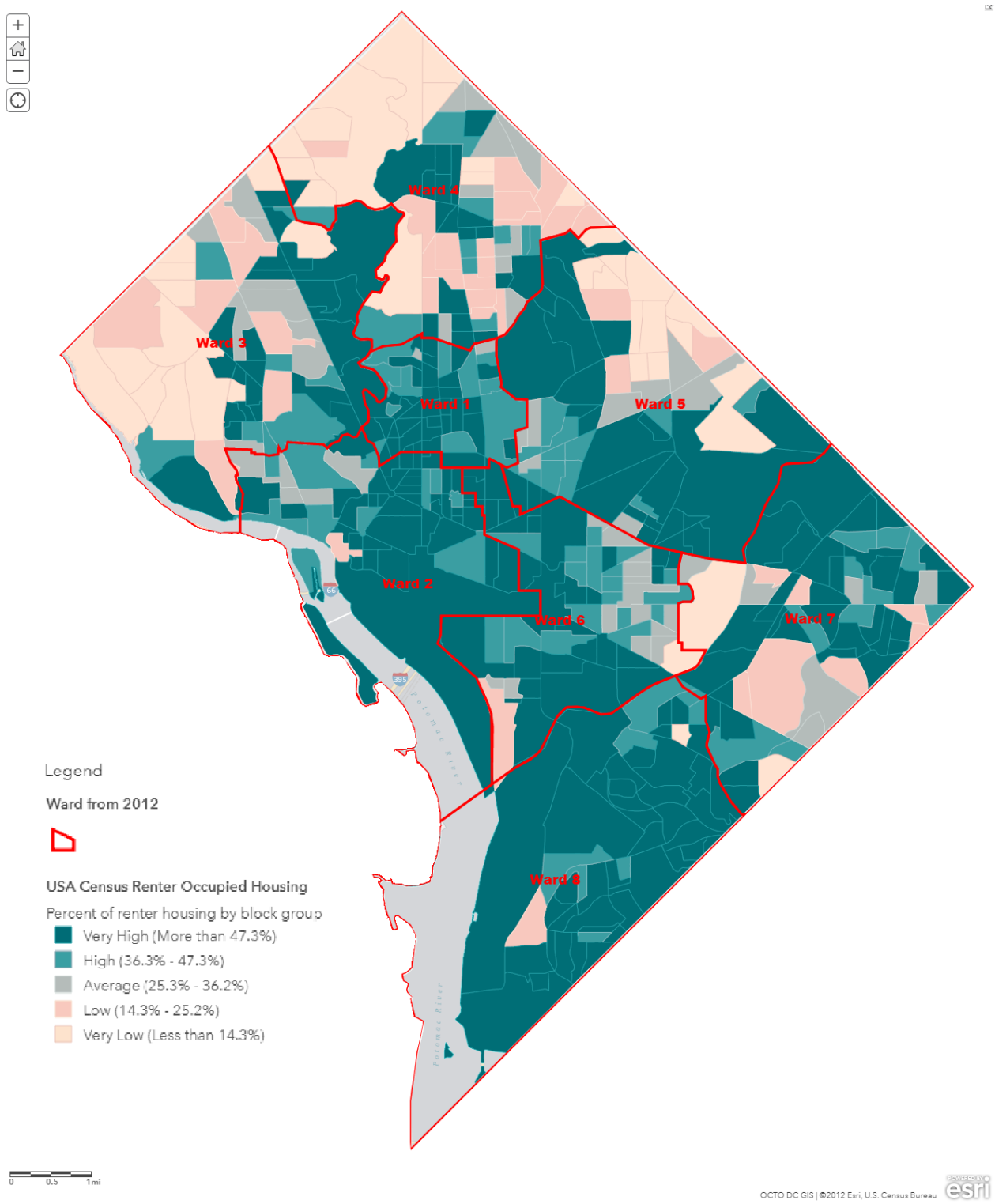


FIGURE 1-5: RENTER-OCCUPIED HOUSING RATES ACROSS THE DISTRICT
SOURCE: DC GIS

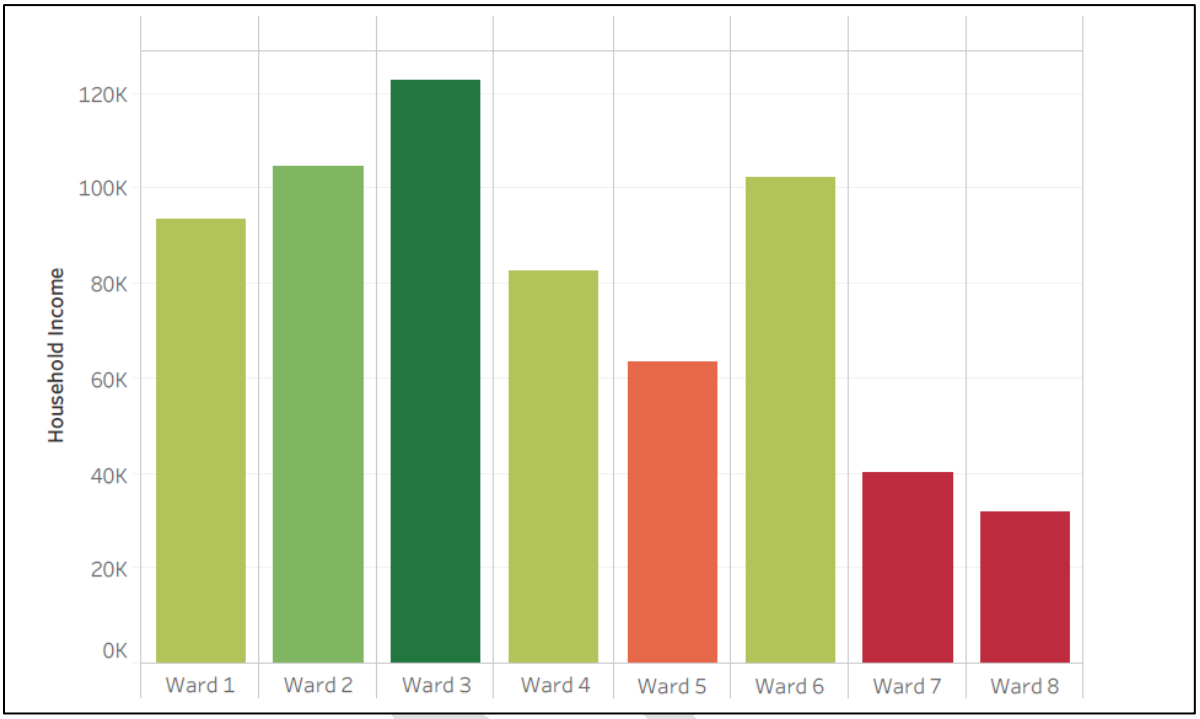


FIGURE 1-6: MEDIAN HOUSEHOLD INCOME BY WARD
SOURCE: DC ECONOMIC STRATEGY. DATA FROM 2013-2017 U.S. CENSUS BUREAU 5-YEAR ESTIMATES.

Chapter 2 WATER QUALITY IN THE DISTRICT

2.1 WATER QUALITY STANDARDS

One of the District's priorities for the Phase III WIP is to advance strategies that will help to improve water quality within the District. DOEE's Water Quality Division, Standards and TMDL Branch regulates several aspects of the federal Clean Water Act. The Branch revises DOEE's Water Quality Standards (WQS) as required by 40 CFR Section 131 at least every three years to reflect EPA's latest recommendations to protect surface water bodies. Revisions to the WQS are submitted to EPA for review, revision, and approval. The Branch also certifies National Pollutant Discharge Elimination System (NPDES) permits, as required under 40 CFR Section 401. The District currently has 11 NPDES permits, the three largest of which are the DC Water (Blue Plains) permit, the municipal separate storm sewer system (MS4) permit, and the Washington Aqueduct permit.

The District's WQS are described in the District of Columbia Municipal Regulations Title 21, Chapter 11, Section 1104. The WQS include designated uses, water quality criteria, and anti-degradation and other policies. There are five designated uses of water within the District (see Table 2-1). The District uses both numeric and narrative water quality criteria. Examples of numeric criteria include E.coli, pH, and turbidity levels for Class A waters. In addition, there are numeric criteria for dissolved oxygen, secchi depth, and chlorophyll-a for Class C waters. There are no numeric criteria for nitrogen, phosphorus and sediment, but there are narrative criteria that require surface waters to be free from substances that impair the naturally occurring biological community.

TABLE 2-1: DESIGNATED USES FOR SURFACE WATERS IN THE DISTRICT OF COLUMBIA

CLASS OF WATER	DESCRIPTION
A	Primary contact recreation
B	Secondary contact recreation and aesthetic enjoyment
C	Protection and propagation of fish, shellfish and wildlife
D	Protection of human health related to consumption of fish and shellfish
E	Navigation

2.2 LOCAL TMDLS

Many local TMDLs exist in the District of Columbia.

Table 2-3 lists local TMDLs that include both nutrients and total suspended solids (TSS).

TABLE 2-2: LIST OF LOCAL TMDLS THAT INCLUDE BOTH NUTRIENTS AND TSS

YEAR	TITLE
2002	TSS in the Upper and Lower Anacostia River
2003	TSS, oil and grease, and biochemical oxygen demand (BOD) in Kingman Lake
2003	TSS in Watts Branch
2007	Sediment/TSS for the Anacostia River Basin, Montgomery County, Prince George County, MD, and the District of Columbia.
2008	Nutrients/BOD for the Anacostia River Basin, Montgomery County, Prince George County, MD, and the District of Columbia.

Table 2-3 provides a list of other local TMDLs within the District. As further discussed in section 4.3, practices that will help reduce nutrients and sediment will also help to achieve some of these other local TMDLs.

TABLE 2-3: OTHER LOCAL TMDLS FOR DISTRICT WATERWAYS

YEAR	TITLE
1998	Oil and grease, PCB, and chlordane in Hickey Run
2003	Organics and metals in the Anacostia River and tributaries
2003	Organics and metals in Kingman Lake
2003	BOD in Fort Davis
2003	Oil and grease in the Anacostia River
2004	pH in the Washington Ship Channel
2007	PCBs for Tidal Portions of the Potomac and Anacostia Rivers
2010	Trash for the Anacostia River Watershed
2014	Bacteria (E. coli) for the Anacostia River and Tributaries
2014	Bacteria (E. coli) for Kingman Lake
2014	Bacteria (E. coli) for Potomac River and Tributaries
2014	Bacteria (E. coli) for Tidal Basin and Washington Ship Channel
2014	Bacteria (E. coli) for C & O Canal
2014	Organics, Metals, and Bacteria TMDLs for Oxon Run
2014	Bacteria (E. coli) for Rock Creek
2016	Organochlorine Pesticides and PCBs in Broad Branch, Dalecarlia Tributary, Dumbarton Oaks, Fenwick Branch, Klingle Valley Creek, Luzon Branch, Melvin Hazen Valley Branch, Normanstone Creek, Oxon Run, Piney Branch, Pinehurst Branch, Portal Branch, and Soapstone Creek in the District of Columbia
2016	Metals in Rock Creek

The District's 2011 MS4 NPDES permit required the development of a Consolidated TMDL Implementation Plan for all waste load allocations assigned to discharges from the District's MS4. The plan was required to include a schedule to attain waste load

allocations. A draft plan was completed and published for public comment in 2015. DOEE revised the plan to address comments from stakeholders and EPA in 2016. The revised plan contains numeric and programmatic milestones that have subsequently been incorporated into the District's 2018 MS4 permit.

Chapter 3 NUTRIENT AND SEDIMENT SOURCES

The sectors in the District contributing nitrogen, phosphorus and sediment pollution to the Chesapeake Bay differ from the watershed as a whole. One-third of the District is served by a combined sewer system which collects wastewater and urban runoff. During storm events, the system is overwhelmed and combined sewer overflows deliver untreated wastewater and stormwater into District waterways. The number of people living or working in the District and the fact that one third of the city is served by a combined sewer system means that wastewater is overwhelmingly the largest contributor to the nutrient and sediment loads, followed by urban runoff from developed lands and "natural areas." While "natural" is a term the Chesapeake Bay Program models use to refer to land covered by trees, shrubs and scrub grass as well as wetlands, rivers and streams, the density of development in the District particularly upland of these areas means they generate higher levels of pollution due to human activity. There is no agricultural land in the District, although upstream agricultural runoff affects downstream District water quality.

Also unique among Chesapeake Bay states, the vast majority of pollutant load originating from the District is point source regulated under the federal Clean Water Act through National Pollutant Discharge Elimination System (NPDES) permits for wastewater, stormwater and construction as further described in section 3.1. The only nonpoint source load in the District is runoff that flows directly into District waterways without passing through the MS4 system, loads originating from stream beds and banks, atmospheric nitrogen deposition to waterways, and a small number of septic systems.

Figure 3-1 shows the portions of the District draining to the combined sewer system (CSS), which is covered by the NPDES permit to the Blue Plains Advanced Wastewater Treatment Facility; the municipal separate storm sewer system (MS4), which is covered by the District's MS4 permit; and direct drainage. Urban runoff from the direct drainage areas is not covered by a NPDES permit and is therefore a nonpoint source.

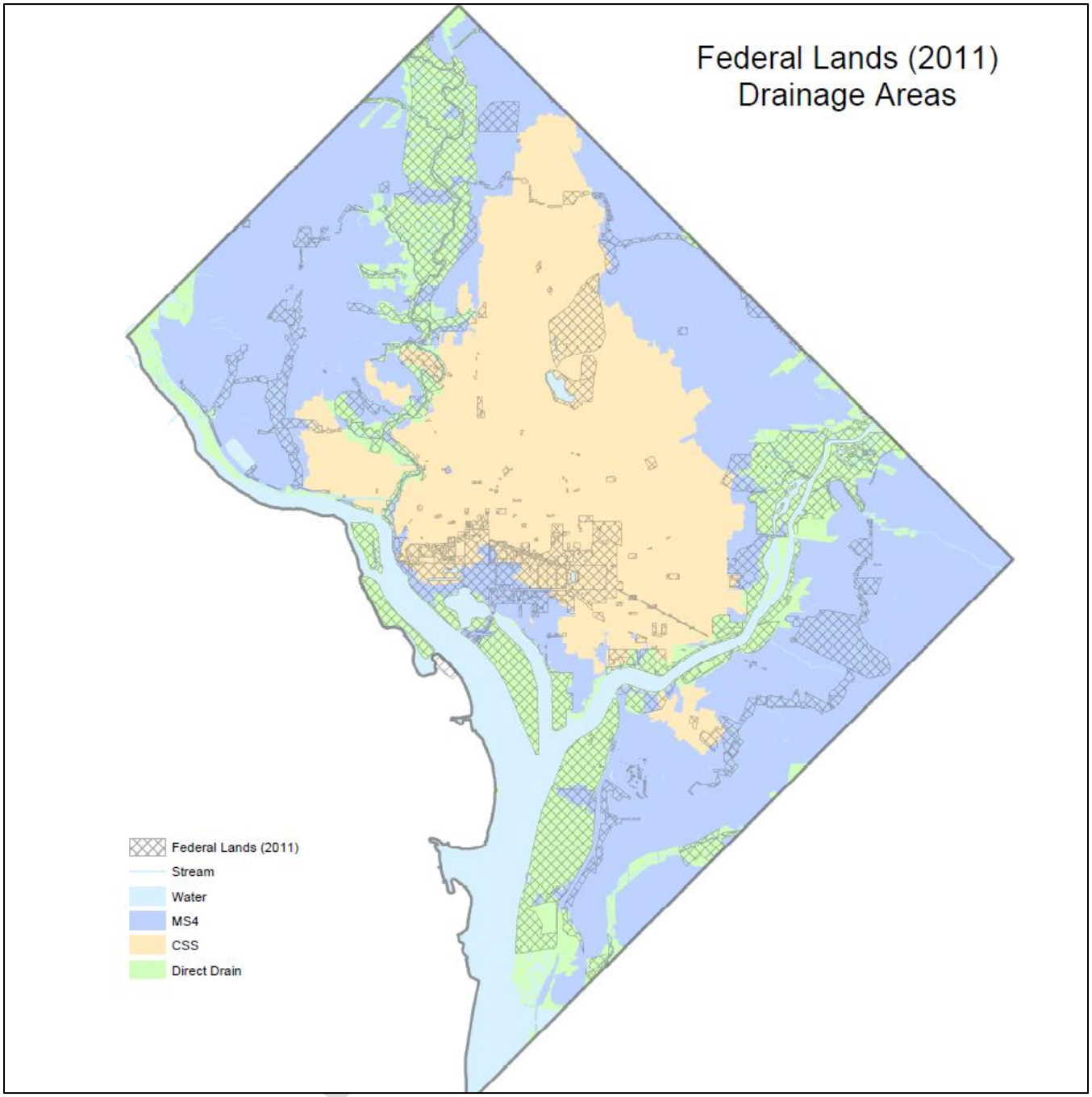


FIGURE 3-1: DRAINAGE AREAS WITHIN THE DISTRICT
SOURCE: DOEE

Most of the total nitrogen load (88 percent) originating within the District and reaching the Bay is from wastewater and combined sewer overflows (
Figure 3-2). About 11 percent of the remaining total nitrogen load is from urban runoff, of which 9 percent is a point source covered by the District's MS4 permit and the remaining 2 percent is nonpoint source runoff that flows directly to District waterways.

The remaining one percent of nitrogen loads is from runoff from nonpoint source "natural" areas and atmospheric nitrogen deposition to nontidal waters.

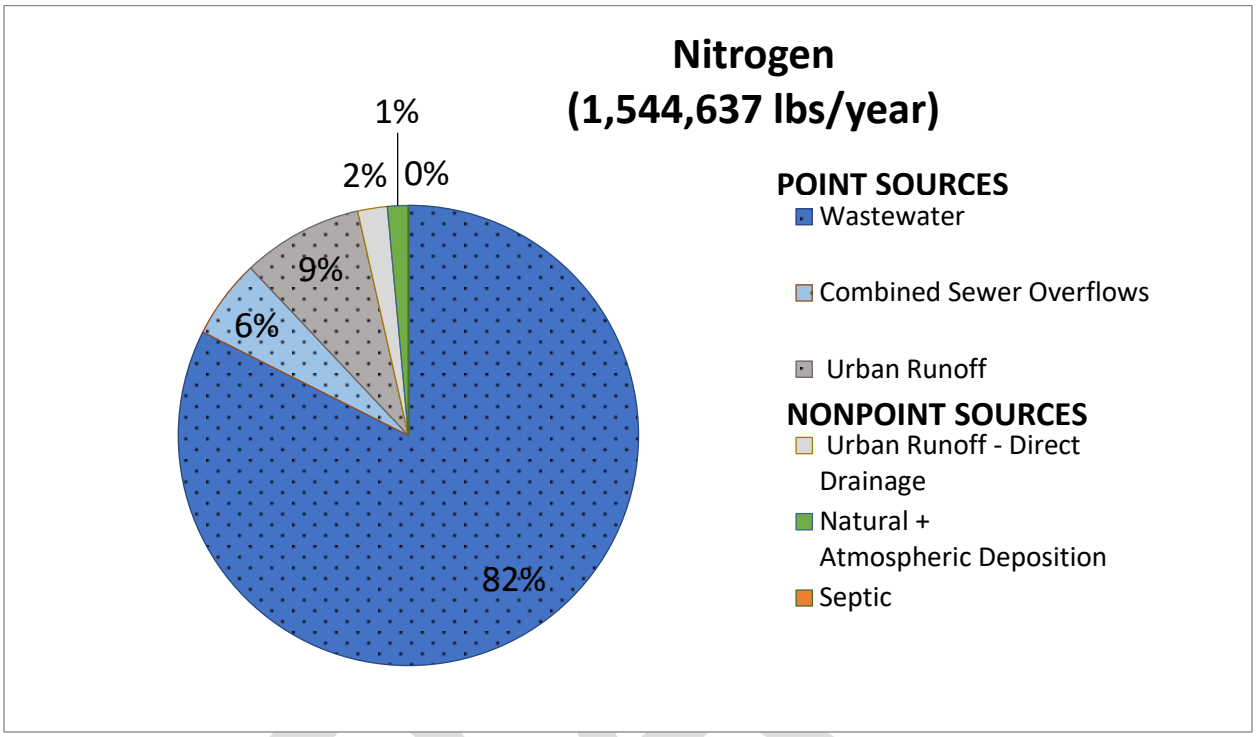


FIGURE 3-2: SOURCE SECTOR CONTRIBUTIONS OF NITROGEN FROM THE DISTRICT TO THE CHESAPEAKE BAY SOURCE: CHESAPEAKE BAY PROGRAM WATERSHED MODEL PHASE 6. CAST REPORT—2017 PROGRESS

For total phosphorus loads from the District to the Bay, wastewater and combined sewer overflows contributes the greatest amount (78 percent), followed by urban runoff (17 percent), of which 14 percent is point source and three percent is nonpoint source. Nonpoint source runoff from "natural" areas accounts for five percent of phosphorus pollution from the District to the Chesapeake Bay (Figure 3-3).

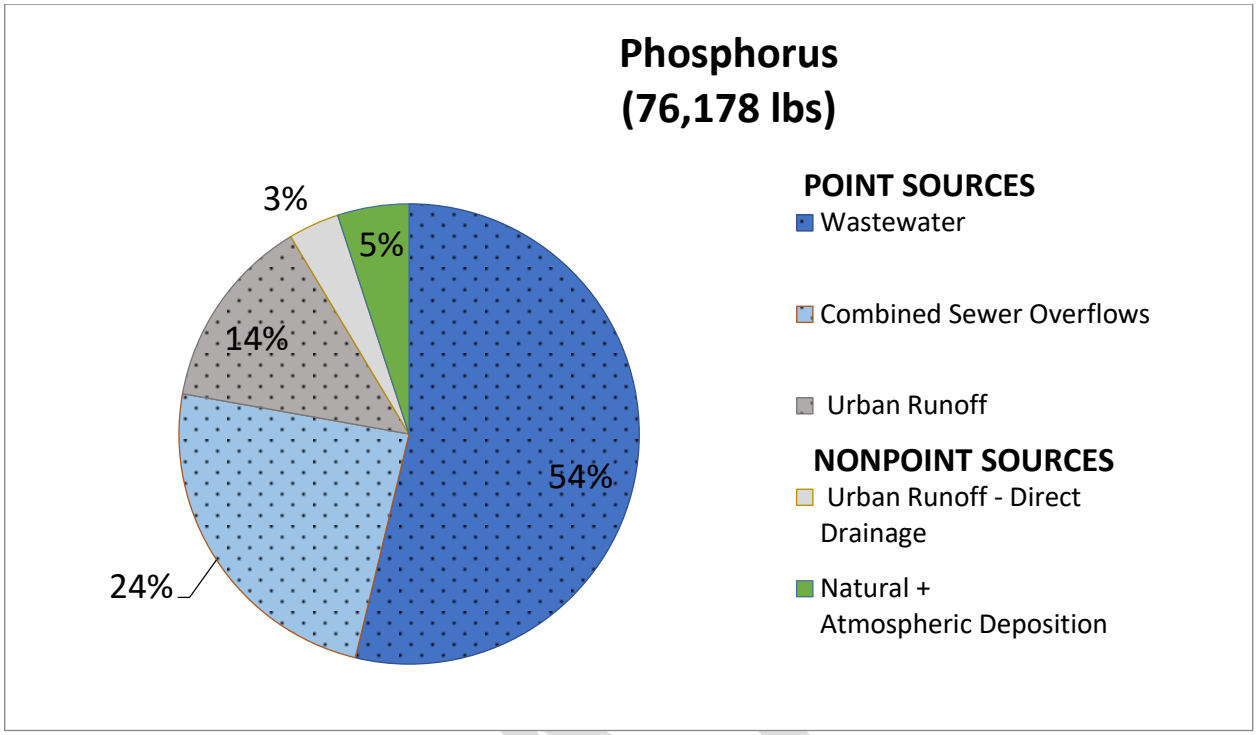


FIGURE 3-3. SOURCE SECTOR CONTRIBUTIONS OF PHOSPHORUS FROM THE DISTRICT TO THE CHESAPEAKE BAY SOURCE: CHESAPEAKE BAY PROGRAM WATERSHED MODEL PHASE 6. CAST REPORT—2017 PROGRESS

The contribution of sediment from sectors in the District is much different compared to the sources of nutrient loads. Wastewater and combined sewer overflow (CSO) loads only account for seven percent of the load, while nonpoint source runoff from "natural" areas account for 45 percent, point source urban runoff accounts for 41 percent, and nonpoint source urban runoff accounts for seven percent of sediment loads.

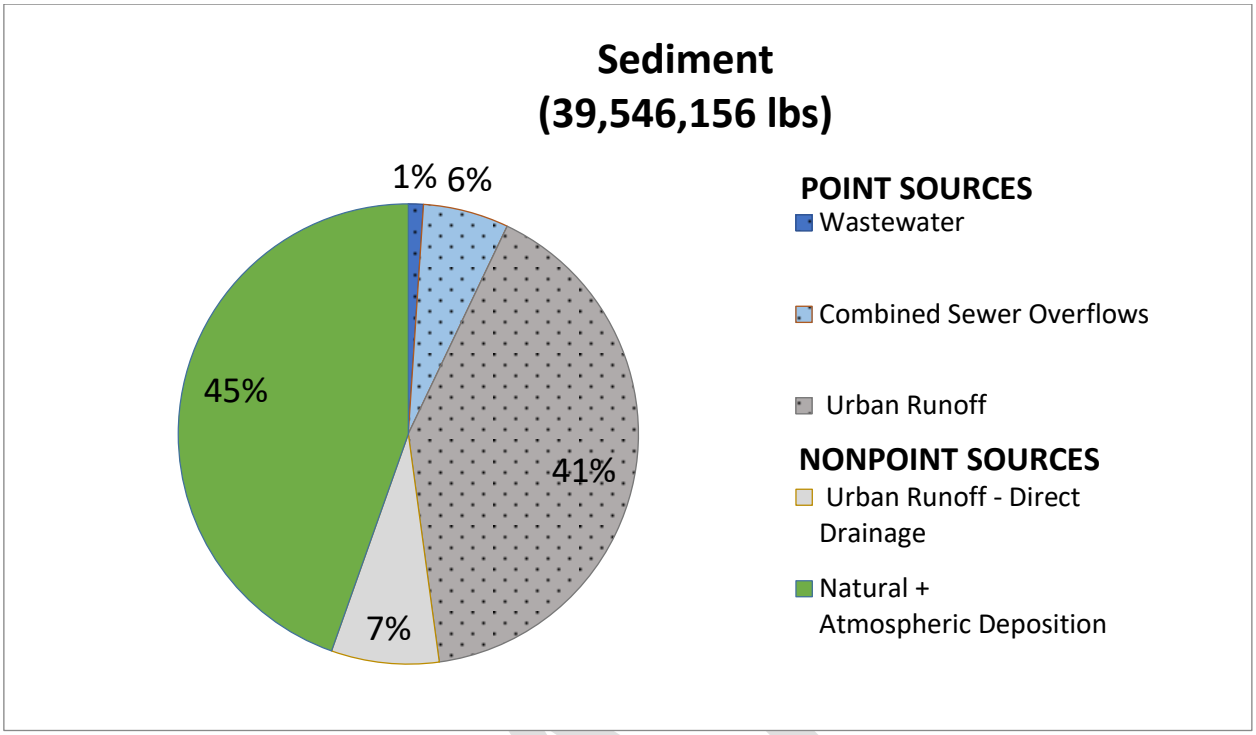


FIGURE 3-4: SOURCE SECTOR CONTRIBUTIONS OF SEDIMENT FROM THE DISTRICT TO THE CHESAPEAKE BAY SOURCE: CHESAPEAKE BAY PROGRAM WATERSHED MODEL PHASE 6. CAST REPORT—2017 PROGRESS

To fully appreciate the current nutrient and sediment loads - and the progress in water quality that they reflect – it is important to consider them in the context of historical trends. As can be seen in Figure 3-5, point sources of nitrogen, phosphorus and sediment from the District to the Chesapeake Bay have changed over time and generally reflect progress in managing these loads. Nutrient and sediment wastewater loads decreased from 1985 to 2009 due to upgrades at the Blue Plains Advanced Wastewater Treatment Plant. Phosphorus and sediment loads have increased slightly since 2009 - likely due to increased flow being treated by the plant. Nitrogen decreased from 2009 to 2017 due to the completion of enhanced nutrient removal upgrades. Loads from urban runoff have decreased slightly over time even in the face of increasing population and economic development due to the implementation of stormwater management practices.

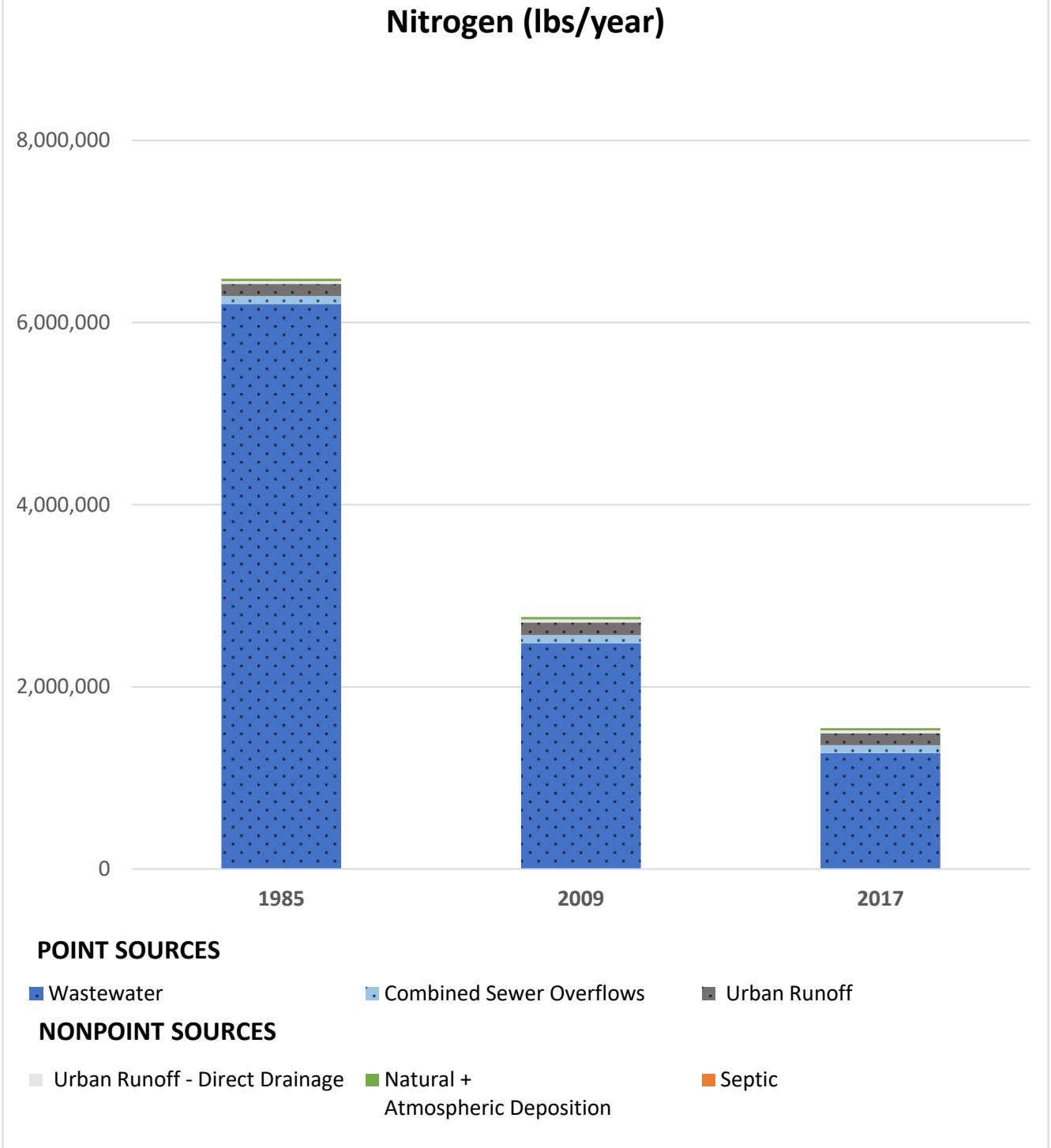


FIGURE 3-5: NITROGEN LOADS FROM THE DISTRICT TO THE BAY OVER TIME

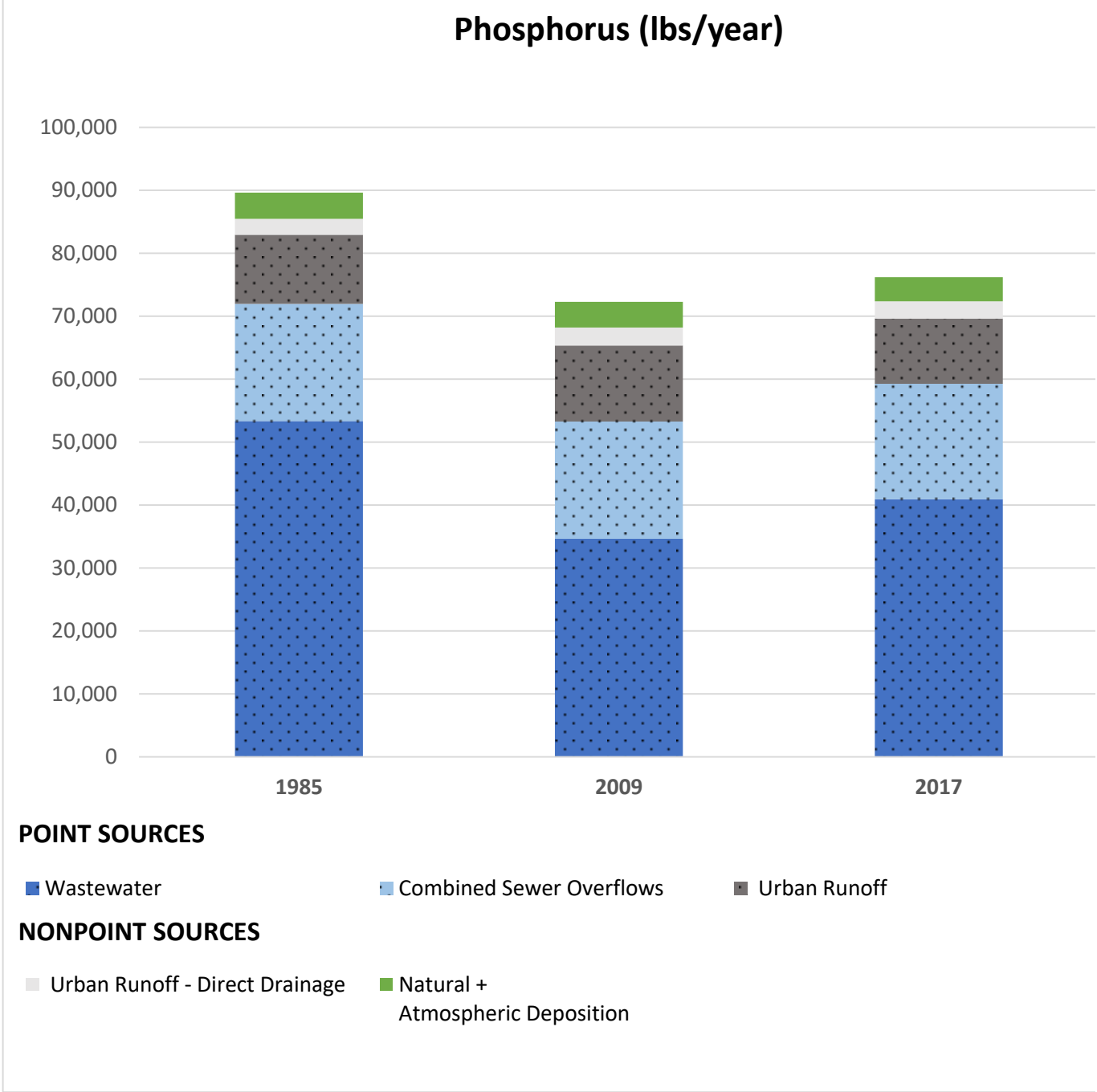


FIGURE 3-6: PHOSPHORUS LOADS FROM THE DISTRICT TO THE BAY OVER TIME

FIGURE 3-7: SEDIMENT LOADS FROM THE DISTRICT TO THE BAY OVER TIME

3.1 POINT SOURCES

The District is not a delegated authority under EPA's NPDES program, so EPA issues permits to point sources of pollution in the District. Specifically, EPA issues individual NPDES permits for wastewater dischargers in the District; a municipal separate storm

sewer system (MS4) permit for urban runoff that flows through the District's MS4 infrastructure; a multi-sector general permit for industrial activities; and a construction general permit for land-disturbing activities. The District does certify NPDES permits in accordance with Section 401 of the federal Clean Water Act. Currently, there are 10 facilities and one MS4 that have individual NPDES permits issued by EPA for wastewater and stormwater discharges in the District (Table 3-1). EPA has administratively extended the expired permits so that their limits are still in effect until a new permit is issued. In addition, there are several industrial facilities and construction sites that have been permitted under the Multi-Sector General Permit (MSGP) or the Construction General Permit (CGP).

TABLE 3-1: INDIVIDUAL SIGNIFICANT AND NONSIGNIFICANT FACILITIES THAT HAVE INDIVIDUAL EPA NPDES PERMITS IN THE DISTRICT OF COLUMBIA.

Location	Facility or Permit Name	Permit Number	Permit Type	Permit Status	Issuance Date	Effective Date	Expiration Date
DC	D.C. Municipal Separate Storm Sewer System (MS4)	DC0000221	Stormwater	Final	5/23/2018	6/22/2018	6/21/2023
DC	D.C. Water and Sewer Authority Wastewater Treatment Plant at Blue Plains	DC0021199	Individual	Final	7/26/2018	8/26/2018	8/25/2023
DC	Potomac Electric Power Company (PEPCO) Benning Generating Station	DC0000094	Individual	Final	6/19/2009*	07/19/2009	6/18/2014*
DC	Washington Aqueduct Water Treatment Plant	DC0000019	Individual	Final	11/20/2009	11/20/2008	11/19/2013*
DC	JFK Center for the Performing Arts	DC0000248	Individual	Final	6/6/2013	6/6/2013	6/5/2018*
DC	National World War II Memorial	DC0000345	Individual	Final	7/3/2018	7/3/2018	7/2/2023
DC	Lincoln Memorial Reflecting Pool	DC0000370	Individual	Final	7/3/2018	7/3/2018	7/2/2023
DC	Washington Navy Yard	DC0000141	Individual	Final	12/23/2009	01/22/2010	1/22/2015*
DC	Super Concrete Ready-Mix Corp. (Aggregate Industries)	DC0000175	Individual	Final	1/6/2014	1/6/2014	1/5/2019
DC	Washington Metropolitan Area Transit Authority (WMATA) Mississippi Avenue Pumping Station	DC0000337	Individual	Final	4/20/2012	04/20/2012	4/20/2017*
DC	General Services Administration (GSA) West Heating Plant	DC0000035	Individual	Final	9/11/2018	9/11/2018	9/10/2023

SOURCE: EPA

The following section describes the individual permits that only have nutrient and sediment permit limits or monitoring requirements that pertain to the Chesapeake Bay TMDL. Therefore, not all permits are described.

3.1.1 Wastewater

3.1.1.1 SIGNIFICANT

Blue Plains Wastewater Treatment Plant and Combined Sewer System (CSS)

DC Water operates the Blue Plains Advanced Wastewater Treatment Plant (Blue Plains), which provides treatment to combined sewer and sanitary flows from the District of Columbia and sanitary flows from Fairfax County and Loudoun County in Northern Virginia, and Montgomery County and Prince Georges County in Maryland. The Blue Plains service area covers more than 725 square miles and is shown in Figure 3-8. The total population served by Blue Plains exceeds two million.

The jurisdictions outside the District of Columbia have sanitary sewers that discharge flow into DC Water's wastewater interceptor system through which the flows are conveyed to Blue Plains. The District of Columbia has both separate sanitary and combined sewers.

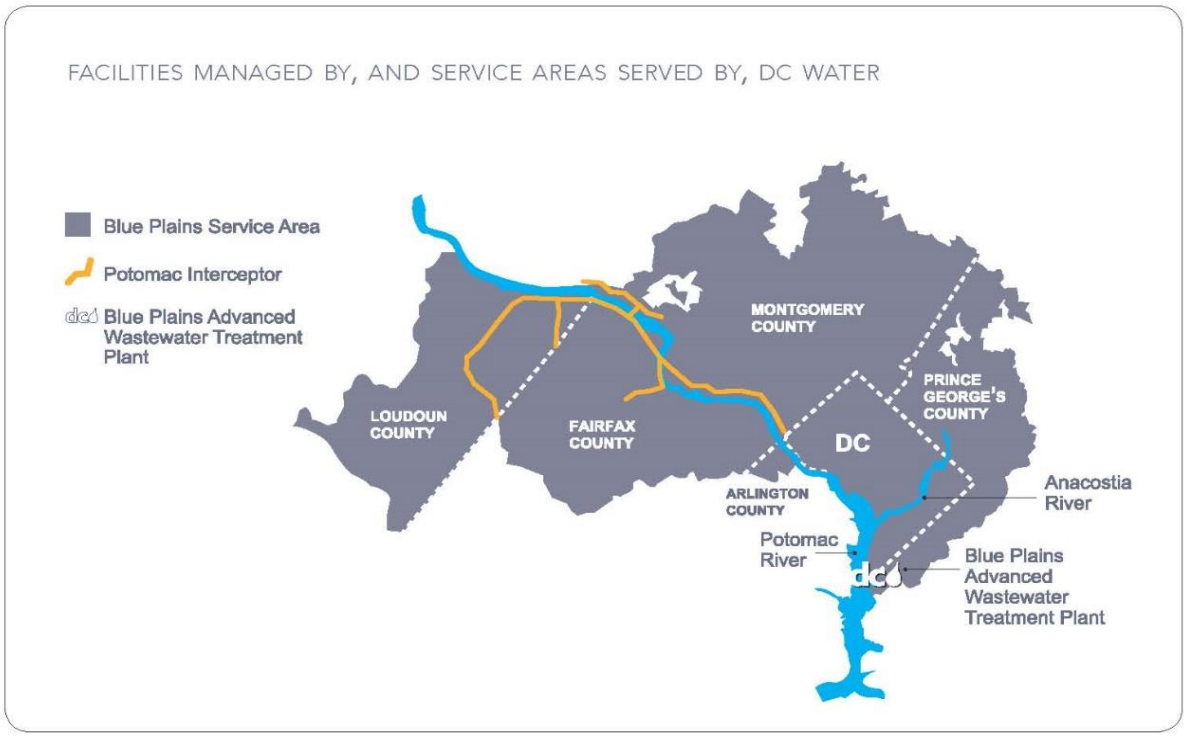


FIGURE 3-8: BLUE PLAINS SERVICE AREA

SOURCE: DC WATER

There are two outfalls at Blue Plains. Outfall 002 is the discharge from the complete treatment process at the plant including primary, secondary and tertiary treatment. Outfall 001 is the discharge from the Wet Weather Treatment Facility (WWTF). The Clean Rivers tunnel system, which is designed to control combined sewer overflows in the District, terminates at the Tunnel dewatering pumping station at the WWTF. There, the contents of the tunnel are disinfected and dechlorinated. If there is remaining capacity at the plant, flow from the WWTF is routed to the west portion of the plant for complete treatment. Any flow beyond the capacity of complete treatment is discharged from Outfall 001. Figure 3-9 shows a schematic of the treatment system at Blue Plains and

Table 3-2 shows the peak treatment rates for each outfall.

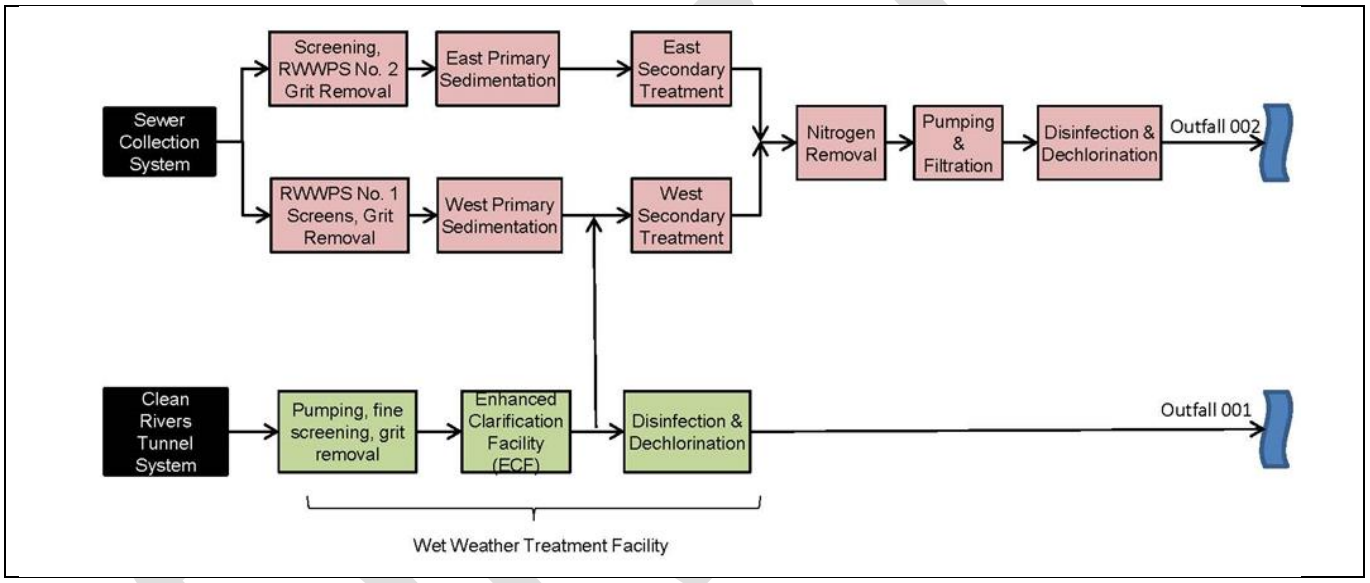


FIGURE 3-9: TREATMENT SYSTEM AT BLUE PLAINS
SOURCE: DC WATER

TABLE 3-2: PEAK TREATMENT RATES AT BLUE PLAINS

TIME PERIOD	PEAK TREATMENT RATE (MGD)	
	OUTFALL 002 COMPLETE TREATMENT	OUTFALL 001 WET WEATHER TREATMENT FACILITY
First 4 hours after start of combined sewer system flow conditions	555	225
After 4 hours	511	225

The *Blue Plains Intermunicipal Agreement of 2012* (2012 IMA) is a contract signed by the District of Columbia; DC Water; Fairfax County, Virginia; Montgomery County,

Maryland; Prince George's County, Maryland and the Washington Suburban Sanitary Commission. The IMA allocates capacity in Blue Plains, provides procedures for management of flows, and is the basis for allocating capital, operating and maintenance costs. The annual average flow allocations in the 2012 IMA are summarized in Table 3-3.

TABLE 3-3: BLUE PLAINS ALLOCATED CAPACITY IN 2012 IMA

ENTITIES	ALLOCATIONS (MGD)[1]
District of Columbia	152.50
Non-Party Users	
Loudoun County Sanitation Authority, Virginia	13.80
Dulles Airport, Virginia	1.50
Town of Vienna, Virginia	1.50
Naval Ship Research & Development Center, Maryland	0.07
National Park Service, Maryland	0.03
Sub-total	16.90
District of Columbia - Total	169.40
WSSC[2] (for Prince George's County & Montgomery County), **Maryland - Total**	169.60
Fairfax County, Virginia[3] **- Total**	31.00
Grand Total - Blue Plains Design Flow Capacity	370.00

Notes:

1. **Flows represent Annual Average Hydrologic Conditions.**
2. **The Allocated Flow Capacity for WSSC is on behalf of Prince George's and Montgomery, with any sub-allocations determined by separate agreements between those entities. The WSSC allocation also includes wastewater from other political jurisdictions with which WSSC has separate agreements.**
3. **The Allocated Flow Capacity for Fairfax also includes wastewater from other political jurisdictions with which Fairfax has separate agreements.**

EPA issued DC Water Permit No. DC0021199 for discharge from Blue Plains and the combined sewer system. The permit in effect at the time the 2012 IMA was executed identified the design capacity of the complete treatment at Blue Plains and discharge through Outfall 002 as 370 million gallons per day. On August 26, 2018, EPA reissued NPDES Permit No. DC0021199 to DC Water and identified the design capacity of the complete treatment and discharge through Outfall 002 at Blue Plains as 384 million gallons per day. The 14 million gallons per day increase was due to capture and treatment of stormwater from the combined sewer system. However, due to higher treatment levels at the plant, the discharge limits from Blue Plains remain equal to the Bay TMDL wasteload allocations of 4,689,000 pounds per year nitrogen, 203,855 pounds per year phosphorus and 8,198,332 pounds per year total suspended solids.

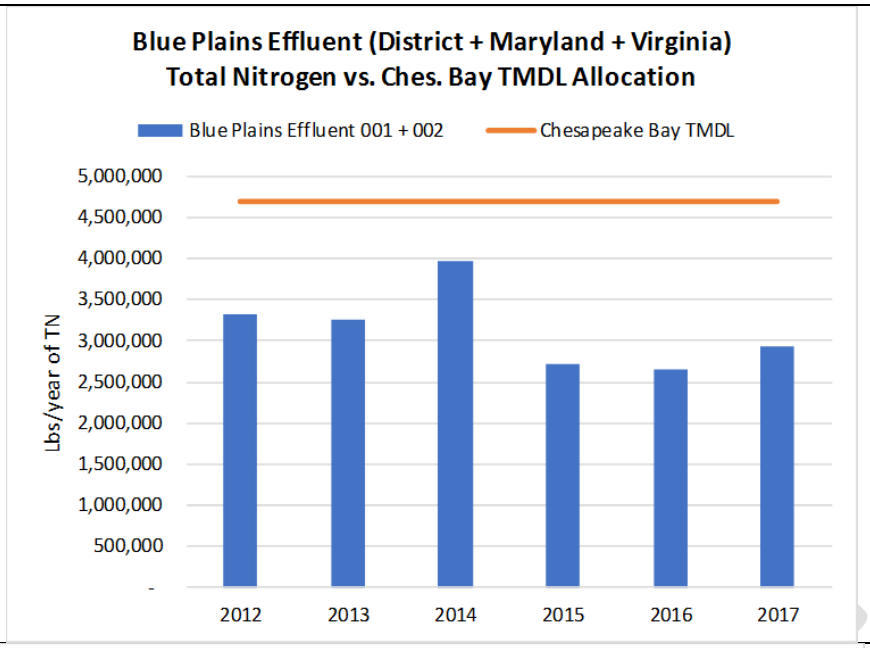
Table 3-4 shows the District's wasteload allocation for Blue Plains from the Bay TMDL, which is consistent with the 2018 Blue Plains permit.

TABLE 3-4: BLUE PLAINS WASTELOAD ALLOCATIONS AND PERMIT LIMITS (POUNDS/YEAR)

WASTEWATER	TOTAL NITROGEN	TOTAL PHOSPHORUS	TOTAL SEDIMENT
DC	2,114,542	87,994	3,693,000
Maryland	1,993,000	89,694	3,487,775
Virginia	581,458	26,166	1,017,557
Total	4,689,000	203,854	8,198,332
CSOs (District Only)	3,496	743	80,530

SOURCE: EPA CHESAPEAKE BAY TMDL

Figure 3-10, Figure 3-11, and Figure 3-12 show Blue Plains effluent discharges for calendar years 2012 through 2017 for total nitrogen, phosphorus and suspended solids (TSS). The Figures show total effluent as well as the District's portion of Blue Plains' effluent based upon the Blue Plains Service Area Flow reports produced by DC Water.



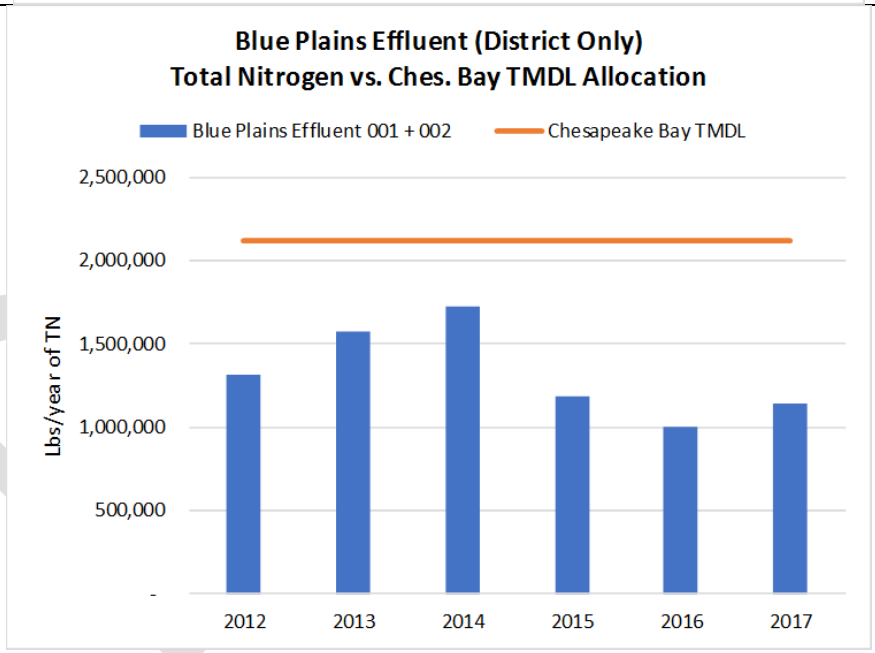
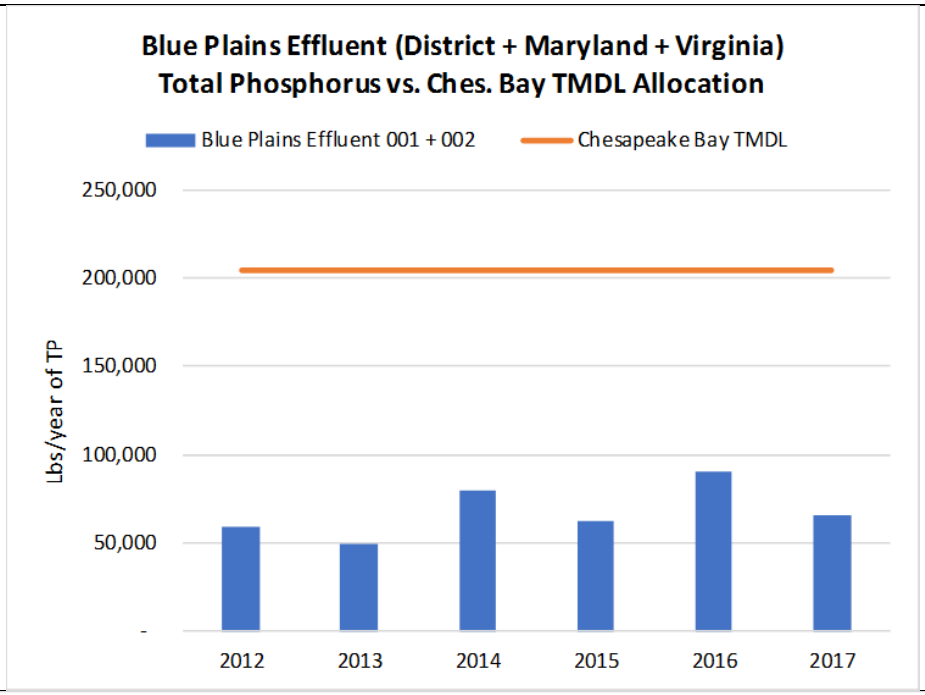


FIGURE 3-10: BLUE PLAINS TOTAL NITROGEN EFFLUENT



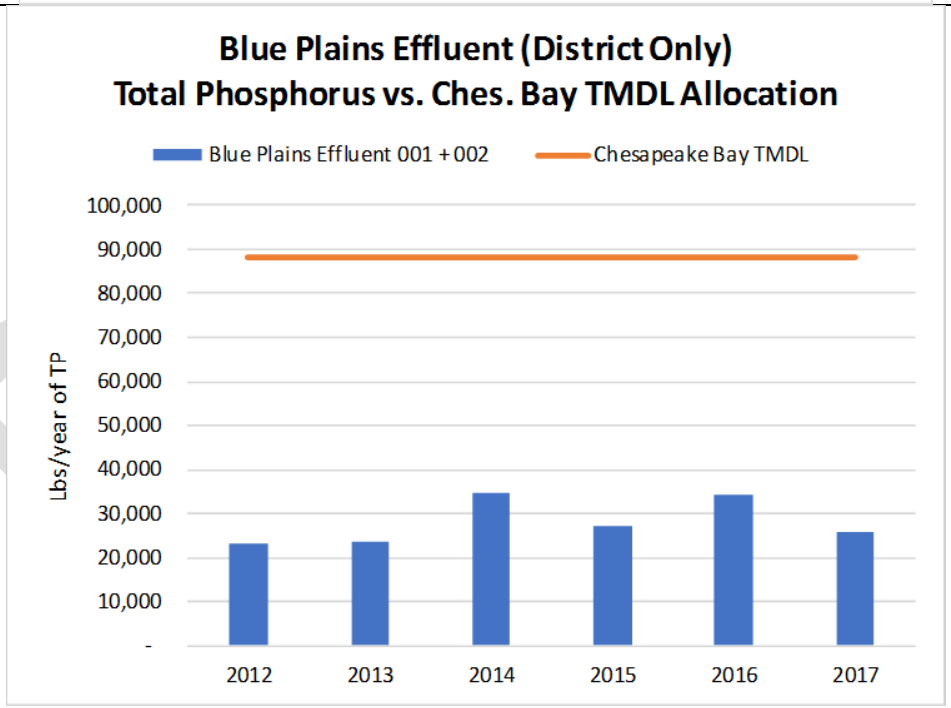


FIGURE 3-11: BLUE PLAINS TOTAL PHOSPHORUS EFFLUENT

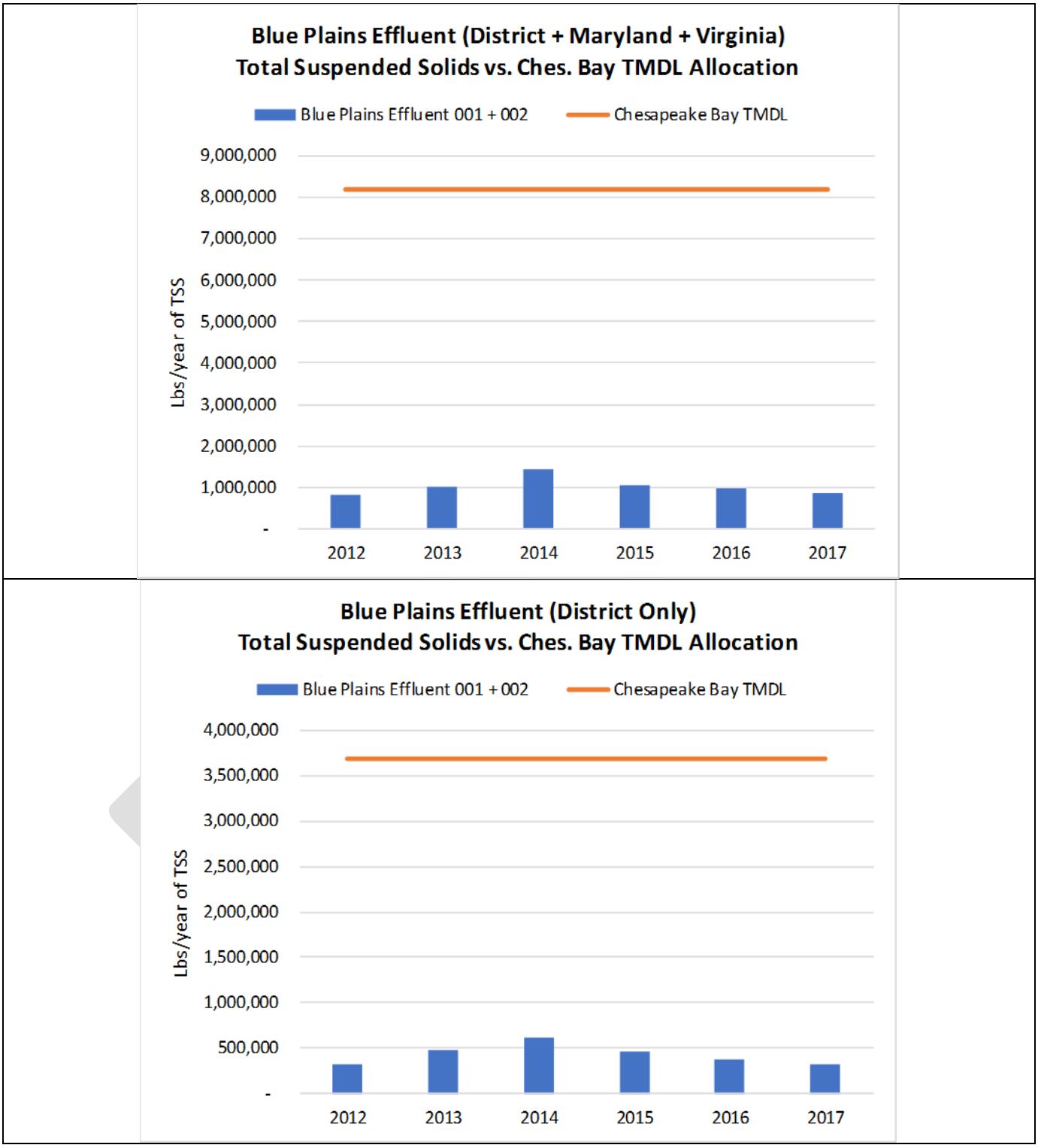


FIGURE 3-12: BLUE PLAINS TOTAL SUSPENDED SOLIDS EFFLUENT (POUNDS/YEAR)

Figure 3-10, Figure 3-11, and Figure 3-12 show that effluent discharges from Blue Plains are currently well below the Bay TMDL allocations for the facility. Nutrient upgrades at

Blue Plains primarily to enhance nitrogen treatment were completed in 2015 per NPDES permit requirements to comply with the Chesapeake Bay TMDL wasteload allocations assigned to the District. While discharges in recent years have been below the Bay TMDL allocations, it is important for Blue Plains to maintain the full load associated with the facility's capacity and allocations in order to continue to meet the allocations and permit limits under future conditions. Specifically, the pollutant removal performance of Blue Plains, particularly for nitrogen, is affected by a variety of factors, including variations in the wastewater flow, incoming loads and temperature. Blue Plains is a combined sewer plant subject to large variations in flows and loads based on rainfall conditions. In addition, DC Water just placed in operation the first phase of the Clean Rivers Project, which will substantially change the amount and character of wet weather flows. Additional amounts of wet weather influent will occur as subsequent phases of the CSO controls are placed in operation between 2018 and 2030. Variations in effluent performance will occur and effluent performance substantially below allocations in any year do not mean there is excess capacity in the plant. Instead, that capacity is intended to address cold temperatures, variations in influent loading, and wet weather flows and loads that a plant serving a combined sewer system must expect to occur and may be further exacerbated by the future impacts of climate change.

The facility capacity also takes into account projected changes in flow resulting from changes in households and economic activity. The Blue Plains Service Area makes regular projections for wastewater flows to Blue Plains via the Metropolitan Washington Council of Government (MWCOG) Regional Wastewater Flow Forecast Model. The model starts with existing flows to Blue Plains and makes projections for changes based on demographic and economic data provided by the jurisdictions. The most recent projections were Round 9.0 (Draft January 2017). These projections show the District and the Service Area reaching capacity between 2030 and 2040. Changes in water use due to the use of low flow fixtures and rehabilitation of sewer systems to reduce extraneous flows can significantly reduce flows based on growth in population, but they will also concentrate influent. DC Water regularly monitors actual flows versus projections and will initiate planning studies to identify improvements to treatment facilities as needed.

In summary, the Bay TMDL allocations and permit limits for the Blue Plains Wastewater Treatment Facility are based on the facility's design capacity and account for expected growth through at least 2030. DC Water and MWCOG perform ongoing studies and analyses to assess the facility's capacity to address load further into the future in the face of economic development, population growth, and changing conditions within the Blue Plains Service Area.

CSOs

In the District, the sewer system is comprised of both combined sewers and separate sanitary sewers. A combined sewer (CSS) carries both sewage and runoff from storms. Modern practice is to build separate sewers for sewage and storm water, and no new combined sewers have been built in the District since the early 1900's. Approximately one-third of the District (12,478 acres) is served by combined sewers. The majority of the area served by combined sewers is in the older developed sections of the District.

In the CSS, sewage from homes and businesses during dry weather conditions is conveyed to Blue Plains for treatment to remove pollutants before being discharged to the Potomac River. When the capacity of a combined sewer is exceeded during storms, the excess flow, which is a mixture of sewage and storm water runoff, is discharged to the Anacostia and Potomac Rivers, Rock Creek and tributary waters. The excess flow is called a combined sewer overflow (CSO). There are a total of 47 potentially active CSO outfalls in the combined sewer system listed in DC Water's NPDES Permit.

In accordance with the 1994 CSO Policy, DC Water submitted a Final Long Term Control Plan (LTCP) to EPA in 2002. The District Department of Energy and Environment (DOEE) and EPA approved the Final LTCP and determined that CSOs remaining after implementation of the plan "…will not preclude the attainment of water quality standards or the receiving waters' designated uses or contribute to their impairment", subject to post-construction monitoring. DC Water is currently implementing the LTCP in accordance with a Consent Decree entered by the United States District Court for the District of Columbia on March 23, 2005. In January 2016, the Consent Decree was modified to include green infrastructure to capture and treat urban runoff from portions of the area within the combined sewer system draining to Rock Creek and the Potomac River and to change the implementation schedule from 20 years to 25 years. The cost of the Clean Rivers Project is $2.7 billion. From FY2003 to FY2018, federal funding sources provided $252.8 million. Ratepayers have provided the remaining funds.

The CSO projects in the consent decree designed to control the CSOs discharging to the Anacostia River and their implementation status are in Table 3-5 and shown on Figure 3-13.

TABLE 3-5: IMPLEMENTATION STATUS OF CSO PROJECTS IN LONG TERM CONTROL PLAN AS OF DECEMBER 2018

FACILITY	STATUS
System-Wide	
Low Impact Development at DC Water facilities	Placed in operation in 2014
Anacostia River	
Rehabilitation of Main, O Street and Eastside Pumping Stations	Placed in operation in 2008
Separation of CSO 006	Placed in operation in 2010
New Poplar Point Pumping station	Placed in operation March 20, 2018
Tunnel from Blue Plains Advanced Wastewater Treatment Plant to CSO 019 comprising more than 100 million gallons of storage	
225 million gallons per day Tunnel Dewatering Pumping Station and Wet Weather Treatment Facility at Blue Plains	
Northeast Boundary Tunnel	Under construction, scheduled to be placed in operation in 2023
Potomac River	
Rehabilitate Potomac Pumping Station	Placed in operation in 2013
Potomac Tunnel	Facility planning and environmental assessment underway. Scheduled to be placed in operation in 2030.
Separation of CSO 025 and 026	Scheduled to be placed in operation in 2023
Potomac Green Infrastructure Project #1	Scheduled to be placed in operation in 2019
Potomac Green Infrastructure Project #2[1]	Scheduled to be placed in operation in 2024
Potomac Green Infrastructure Project #3[1]	Scheduled to be placed in operation in 2027
Rock Creek	
Separation of CSO 031, 037, 053, 058	Completed in 2011
Separation of CSO 057	Completed in 2013
Rock Creek Green Infrastructure Project #1	Scheduled to be placed in operation in 2019
Rock Creek Green Infrastructure Project #2[1]	Scheduled to be placed in operation in 2024
Rock Creek Green Infrastructure Project #3[1]	Scheduled to be placed in operation in 2027
Rock Creek Green Infrastructure Project #4[1]	Scheduled to be placed in operation in 2029
Rock Creek Green Infrastructure Project #5[1]	Scheduled to be placed in operation in 2030

Notes:

1. **The Consent Decree provides for DC Water to implement the first Green Infrastructure (GI) project in the Potomac River and Rock Creek drainage areas, perform post-construction monitoring and prepare a practicability assessment. If GI is determined to be practicable, then DC Water continues to implement the remainder of the GI projects. If GI is determined to be impracticable, then the Decree requires DC Water to construct a 9.5 million gallon storage facility on Rock Creek and to extend the Potomac Tunnel to capture CSO 027, 028 and 029 and increase the Potomac Tunnel storage volume from a minimum of 30 million gallons to 40 million gallons. Separate determinations regarding practicability can be made for the Potomac River and Rock Creek drainage areas.**

The tunnel system that was placed in operation on March 20, 2018 was designed to control 81% of the CSOs on the Anacostia River, with approximately 100 million gallons of storage and 225 million gallon per day wet weather treatment facility at Blue Plains. To date, the tunnels have exceeded expectations; 2018 was the wettest year in the District on record since 1871, and the tunnels prevented 89 percent of combined sewer overflows from reaching the Anacostia River. The Northeast Boundary tunnel, which is scheduled to be placed in operation in 2023, will add approximately 90 million gallons of storage, and is designed to control 98% of the CSOs on the Anacostia River.

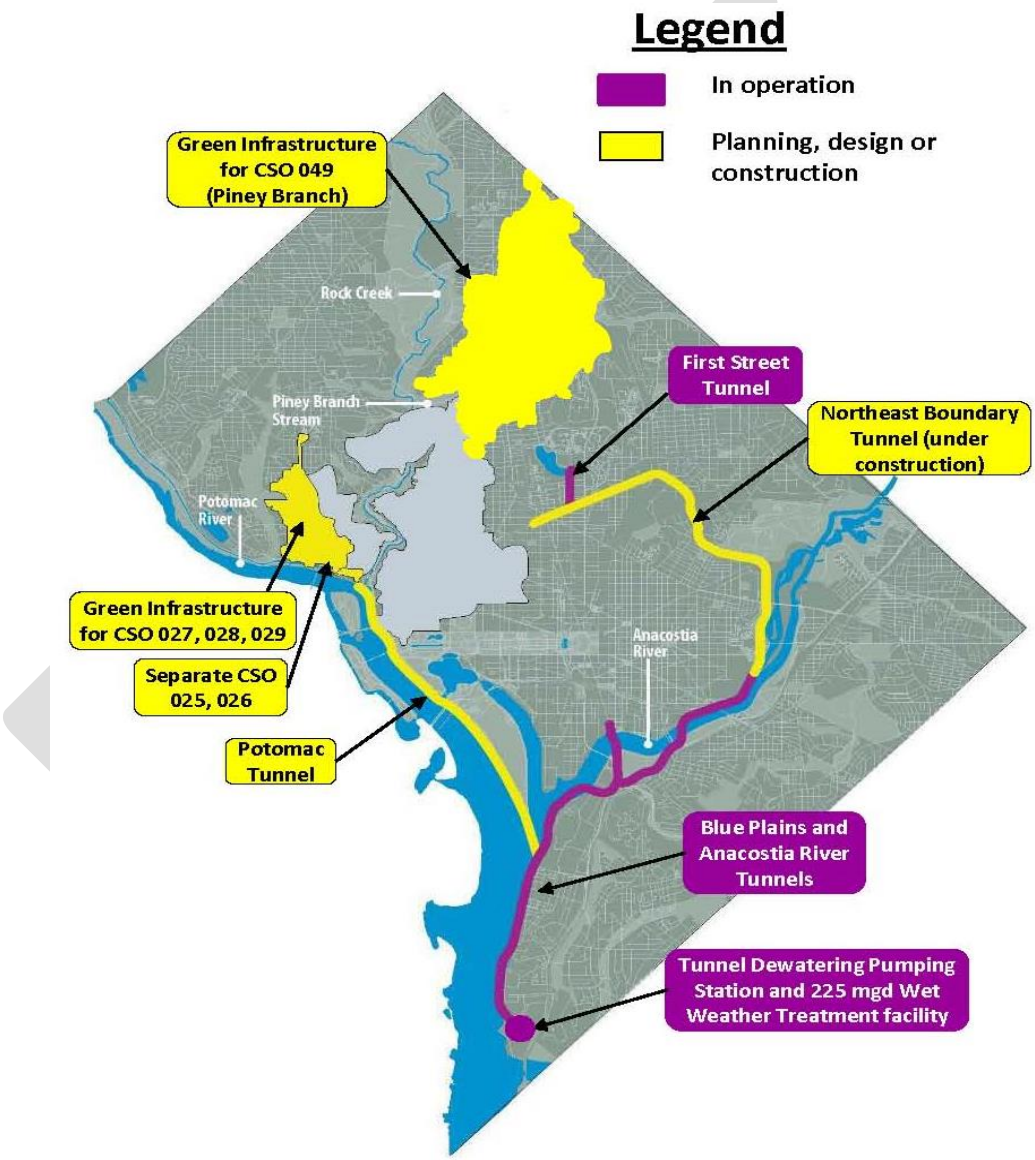


FIGURE 3-13: STATUS OF IMPLEMENTATION OF CLEAN RIVERS PROJECT
SOURCE: DC WATER

Table 3-6 summarizes the annual estimated nitrogen, phosphorus and sediment loads discharged by CSOs.

TABLE 3-6: LOAD ESTIMATES FOR CSOS (AVERAGE RAINFALL YEAR[1])

CONDITION	TOTAL NITROGEN (LB/AVG YEAR)	TOTAL PHOSPHORUS (LB/AVG YEAR)	TOTAL SUSPENDED SOLIDS (LB/AVG YEAR)
Before Long Term Control Plan	82,443	17,531	1,898,871
Status as of Dec. 2018	27,283	5,802	628,483
After Long Term Control Plan is complete	3,496	743	80,530
Wasteload Allocation in 2010 Chesapeake Bay TMDL for CSOs	3,496	743	80,530

Notes:

1. **The average rainfall year is defined in the Long Term Control Plan as the average of the climate in the years 1988 (31.74" rain), 1989 (50.32" rain) and 1990 (40.84" rain). Rainfall amounts are as measured at Ronald Reagan National Airport.**

Given that the combined sewer service area is already built out, nutrient and sediment loads are not expected to substantially change with population growth and economic development. In contrast, stormwater retention practices that are required under the District's stormwater regulations and further described in Chapter 6 will lead to a net decrease in runoff as new development and redevelopment occur within the combined sewer system drainage area. Full implementation of the Clean Rivers Project will result in meeting the Blue Plains' permit limits and Bay TMDL allocations.

3.1.1.2 INDIVIDUALLY PERMITTED NONSIGNIFICANT FACILITIES

There are seven nonsignificant point source facilities with individual NPDES permits in the District that discharge to surface waters and, eventually, the Chesapeake Bay. The Bay TMDL defines nonsignificant facilities in the District as any facility discharging less than 27,000 pounds per year of total nitrogen (TN) or 3,800 pounds per year of total phosphorus (TP).[4] For the TMDL, nonsignificant facilities were included in the aggregate wasteload allocations by Chesapeake Bay segment watershed.

The below sections briefly describe the seven facilities that have individual NPDES permits issued by EPA for point source discharges to surface waters. The point source

[4]EPA 2010, Section 4 of Bay TMDL, p 4-7

discharges may have permit limits and/or monitoring requirements for TN, TP, and/or total suspended sediment (TSS).

Georgetown 29K Acquisition LLC

The former General Services Administration (GSA) West Heating Plant at 1051 29th Street, NW, is located on approximately 2 acres and has not operated since 1997.[5] The current permit coverage is for discharges of uncontaminated groundwater and surface water infiltration and stormwater runoff from roof drains that discharge to Rock Creek via Outfall 002. The reported flow for the discharge is approximately 75 gallons per day. There are no effluent limits for nitrogen, phosphorus or TSS. Total nitrogen and phosphorus are not being currently monitored. There is, however, a monitoring requirement for TSS. In previous permits, there was a technology-based sediment effluent limit. The Bay TMDL regards this facility as a nonsignificant industrial discharge and includes the discharge loads in the aggregate wasteload allocations for nitrogen, phosphorus or TSS.

Washington Aqueduct

The US Army Corps of Engineers owns and operates two water treatment plants—the Dalecarlia and McMillan Water Treatment Plants—which supply potable water to about one million residents in Washington DC, Virginia, and Maryland. The intake water for the two plants is the Potomac River in Maryland. The Department of the Army, Baltimore District, Corps of Engineers is authorized to discharge water from 5900 MacArthur Boulevard, NW, to the Potomac River, Rock Creek, Mill Creek, and Little Falls Branch through eight outfalls, seven of which are intermittent. The permit limits for discharge include a 30 milligrams per liter TSS monthly average concentration and a 60 milligrams per liter daily maximum concentration. There are no nitrogen or phosphorus limits or monitoring requirements.

Pepco

Pepco, a public energy utility owned by Exelon Corporation, is authorized to discharge from the Benning Road Generation Station to the Anacostia River. There are numerous effluent limits and monitoring requirements on outfalls that include discharge from multiple sources (e.g., cooling tower basin wash water, cooling tower blow-down water, and groundwater infiltration). Many outfalls have effluent limits for TSS. Average monthly TSS limits are 30 milligrams per liter and daily maximum TSS limits are typically 100 milligrams per liter. There are no nitrogen or phosphorus effluent limits on facility

[5]EPA, Region III. 2018. Factsheet NPDES Permit No. DC 0000035, Former GSA West Heating Plant

outfalls; however, there are nitrogen and phosphorus monitoring requirements of four sampling events per year for outfalls 001, 005, 006, 011-016, and 401.

Super Concrete Corporation

This permit authorizes the discharge from 5001 Fort Totten Drive NE via outfall number 004 to a tributary to the Northwest Branch of the Anacostia River. The discharge is a combination of both process water and stormwater. There are discharge effluent limits for only TSS. The limits are expressed in pounds per day and milligrams per liter. The average monthly limits are 33 pounds per day and 23.4 milligrams per liter. There are no limits or monitoring requirements for nitrogen or phosphorus.

Washington Navy Yard

The Washington Navy Yard is authorized to discharge stormwater from 12 different locations that include eight outfalls to the Lower Anacostia River, three combined sewer overflows, and an authorized discharge to the District's MS4. Within three years from the effective date (January 2010) of the permit, there were effluent limits for nitrogen, phosphorus and TSS. The final nitrogen and TSS effluent limits for the EPA issued NPDES permit to the Navy Yard is 695 pounds/yr and 6420 pounds/yr. These limits apply to all discharge locations. The final phosphorus limit applies to two combined sewer overflows and the stormwater discharge to the MS4. The nutrient and TSS limits are based on the wasteload allocations established in the Anacostia River Basin TMDLs for nutrients and sediments.

Washington Metropolitan Area Transit Authority

Washington Metropolitan Area Transit Authority (WMATA) is authorized to discharge water from its facility at 1400 Mississippi Avenue Pumping Station to Oxon Run, a tributary to the Potomac River. The permittee is authorized to discharge groundwater collected from track drainage areas through Outfall 001A. There are permit limits for TSS. The monthly average discharge limit is 30 milligrams per liter and the daily maximum is 60 milligrams per liter. The sampling frequency is two samples per month. There are no nitrogen or phosphorus discharge limits; however, there are annual reporting requirements for nitrogen and phosphorus discharge concentrations.

National World War II Memorial

The National World War II Memorial at 17th Street and Independence Avenue SW covers about eight acres in the National Mall. The current permit coverage is for stormwater, groundwater, and pool flushings from the Memorial. The water is then

conveyed to a well and discharges via Outfall 001 to the Tidal Basin. The Tidal Basin drains to the Washington Ship Channel, which drains to the Potomac River[6]. The Bay TMDL regards this facility as a nonsignificant industrial discharger and includes the loads in the aggregate wasteload allocations for nitrogen, phosphorus and TSS. To verify that existing loads are consistent with the aggregate WLAs, both nitrogen and phosphorus are monitored four times a year. There is a technology-based monthly average effluent limit for TSS of 30 milligrams per liter. This is required to meet the aggregate wasteload allocation.

Lincoln Memorial Reflecting Pool

The Lincoln Memorial Reflecting Pool (LMRP) is a national landmark that is located close to the center of Washington, D.C. The facility consists of the Lincoln Memorial Reflecting Pool itself ("Pool"), a water treatment facility, and walkways. Currently, the Pool holds approximately 4.5 million gallons of water and is filled with potable water from the District of Columbia's potable water supply. The intended source of water to fill the Pool is the Tidal Basin (Basin), which is treated at filling. Use of water from the Basin depends on the conditions of the Basin, however. Since the Pool has only been filled with potable water since 2012, the permittee is required to submit an effluent characterization report before discharging to the Tidal Basin if the Pool has been filled with water from the Basin. EPA believes this facility is not expected to be significant source of nitrogen and phosphorus since the Pool water is either potable water or treated water from the Tidal Basin. Monitoring for nitrogen and phosphorus is included in the permit to verify this discharge does not contribute to any exceedances to the aggregate Bay TMDL wasteload allocations. The Phase III WIP includes an estimated load for this facility based on average discharges from other nonsignificant plants. There is a discharge effluent limit for TSS levels in the Pool which should not exceed 25 mg/L.[7]

Nonsignificant Facilities Point Source Loads of Nutrients and Sediment

Nutrient and sediment loads were calculated on nonsignificant facilities for the 2018 progress reporting period (July 2017 through June 2018). For a description of the methodology to calculate these loads, see Chapter 7. For seven nonsignificant

[6]EPA, Region III. 2018. Factsheet NPDES Permit No. DC 0000345. National World War II Memorial

[7] EPA, Region III. 2018. Factsheet NPDES Permit No. DC 0000370. Lincoln Memorial Reflecting Pool

facilities together, the nitrogen load for the reporting period was 149 pounds, the phosphorus load was 9 pounds, and the TSS load was 1,060 pounds. Relative to the overall District nutrient and sediment progress loads for 2018 (already shown in Chapter 3), the loads from the nonsignificant facilities represent 0.01 percent (one hundredth of one percent) of the District's nitrogen load, 0.011 percent of the District's phosphorus load, and 0.003 (three thousandths of one percent) percent of the District's TSS load.

Progress reporting data for nonsignificant facilities was submitted by DOEE to the Chesapeake Bay Program on December 3, 2018. Progress data for the reporting period is reported monthly for each facility and outfall. Both flow and concentration data are included.

To summarize the 2018 progress reporting, data was annualized. The total flow for all nonsignificant facilities together was estimated at about 2.1 million gallons per day (Table 3-7). The average nitrogen concentration across facilities was 1.2 milligrams per liter, the average phosphorus concentration across facilities was 0.15 milligrams per liter, and the average TSS concentration across facilities was 16 milligrams per liter. Annual nutrient and total suspended sediment loads were also calculated. For all the nonsignificant facilities together, the nitrogen load for the reporting period was 149 pounds, the phosphorus load was 9 pounds, and the TSS load was 1,060 pounds. Relative to the overall District nutrient and sediment progress loads for 2018, the loads from the nonsignificant facilities represent 0.01 percent of the nitrogen load, 0.011 percent of the phosphorus load, and 0.003 (three thousandths of one percent) percent of the TSS load.

TABLE 3-7: ANNUALIZED FACILITY FLOW AND AVERAGE ANNUAL NUTRIENT AND SEDIMENT CONCENTRATIONS BY FACILITY OUTFALL REPORTING PERIOD JULY 2017 THROUGH JUNE 2018.

NPDES ID	FACILITY NAME	FLOW (MGD)	TOTAL NITROGEN (lbs)	TOTAL PHOSPHORUS (lbs)	TOTAL SUSPENDED SOLIDS (lbs)
DC0000019	WASHINGTON AQUEDUCT	0.05	33.77	7.24	589.03
DC0000035	GEORGETOWN 29K ACQUISITION	0.11	1,509.75	44.40	2,269.10
DC0000094	PEPCO - BENNING RD	0.001*	7.03	.21	216.26
DC0000141	WASHINGTON NAVY YARD	0.06	1,877.67	331.49	25,147.88
DC0000175	SUPER CONCRETE CORP.	0.61	2,842.66	83.61	5,392.43
DC0000337	WMATA-MISSISSIPPI AVE DPS	0.01	33.40	0.20	105.03
DC0000345	NATIONAL WORLD WAR II MEMORIAL	0.04	379.05	11.15	1,048.04
DC0000370	LINCOLN MEMORIAL REFLECTING POOL**	-	-	-	-

***Note: Value are rounded to the nearest hundredth unless otherwise noted**

**** Note: The Lincoln Memorials Reflecting Pool NPDES permit was established in July of 2018. No flow or loads are available for the reporting period.**

3.1.2 MS4

Approximately two-thirds of the District is served by a municipal separate storm sewer system (MS4). Stormwater runoff generated from impervious surfaces is conveyed by the MS4 and discharged from 555 outfalls to Rock Creek, the Potomac River, the Anacostia River, and their tributaries. These stormwater discharges carry nutrient and sediment loads as runoff encounters land-based pollutants as it flows into the MS4. Stormwater pollution comes from widely-distributed sources and behaves as a nonpoint source, but is actually regulated as a point source via a NPDES permit.

Nutrient and sediment loads from stormwater discharges in the District have decreased slightly since 1985 despite development that occurred before the adoption of aggressive stormwater regulations. The District's 2017 progress scenario shows an approximate 5 percent decrease in nitrogen loads from stormwater sources, and approximate 10 percent decreases in phosphorus and sediment loads over the same timeframe. The 2018 progress reporting is expected to show less progress due to new BMP verification requirements, but the District anticipates restoring credit for its full complement of stormwater BMPs as data and reporting challenges are overcome,

BMP inspections and maintenance continue and the District explores opportunities to prioritize and enhance inspections and maintenance.

The District is effectively "built-out" with respect to impervious surface, so "new" development in the District overwhelmingly involves the redevelopment of previously developed sites. Many of these existing sites were developed before the District had enacted strong stormwater management regulations. As further described in Chapter 6, new and redevelopment that disturbs more than 5,000 square feet triggers stormwater retention requirements as of 2013. Therefore redevelopment projects occurring since then and into the future actually represent an opportunity to better manage stormwater and lead to a net decrease in urban runoff. Nutrient and sediment loadings should continue to decrease as more of the District is redeveloped in accordance with current stormwater management regulations. As a result, growth in loadings from the MS4 is not expected and should not be a concern.

3.2 NONPOINT SOURCES

The District has over 38 miles of stream and rivers with the vast majority being within the MS4 areas of the District. In the combined sewer area, most streams have been buried and piped. There are a few areas of direct drainage of overland runoff in areas where streams run through parks such as Rock Creek and Anacostia Park. Runoff from these areas with direct drainage to a stream or river without first going through the MS4 represent nonpoint source pollution because it is not covered permitted under the Clean Water Act. The vast majority of spaces contributing nonpoint source pollution are owned by the federal government as shown in Figure 4-1.

Because much of this land is parkland owned by the federal government, there should be little development on these parcels in the coming years. The past uses of some federal parcels, such as the former landfill at Kenilworth Park, present environmental challenges and may continue to have adverse impacts on District waterways. The District continues to work with federal partners to ensure these sites are managed properly and that remediation, when warranted, is undertaken in the most environmentally responsible and beneficial manner.

3.3 FEDERAL SOURCES

Each relevant Federal Agency with land in the District has provided information regarding their facilities and their nutrient and sediment sources. This information is included in Appendix F.

Chapter 4 District of Columbia's Planning Targets and Planning Goals

Chapter 4 identifies the planning targets provided by the Chesapeake Bay Program to the District for achieving water quality standards in the Chesapeake Bay and divides these targets into local planning goals and priority subwatersheds for implementation.

4.1 DISTRICT-WIDE PLANNING TARGETS FOR NITROGEN AND PHOSPHORUS

The Chesapeake Bay Program Principals Staff Committee (PSC), comprised of secretaries and directors of environmental and natural resource agencies in the six watershed states and the District and the Regional Administrator of the U.S. Environmental Protection Agency (EPA) Region III, set nitrogen and phosphorus planning targets for each of the jurisdictions in the watershed (see Table 4-1).

TABLE 4-1: PHASE III WIP PLANNING TARGETS

	PLANNING TARGET (MILLIONS OF POUNDS PER YEAR)	
Jurisdiction	Nitrogen	Phosphorus
District of Columbia	2.42	0.130
Delaware	4.55	0.108
Maryland	45.78	3.680
New York	11.53	0.587
Pennsylvania	73.18	3.044
Virginia	55.73	6.192
West Virginia	8.22	0.432

SOURCE: CHESAPEAKE BAY PROGRAM 2018

The PSC used the following guiding principles to establish these targets:

1. Achieve water quality standards in the Chesapeake Bay and its tidal tributaries.
2. Major river basins that contribute the most to water quality in the Bay must do the more to reduce pollution to the Bay.
3. All tracked and reported reductions in loads are credited toward achieving planning targets.[8]

The PSC also agreed to base the targets on sources of pollution in 2010, the year U.S. EPA established the Bay TMDL.

[8] Shenk, Gary 2017, Phase III WIP Planning Targets Methodology.

4.2 INCORPORATING CLIMATE CHANGE INTO NUTRIENT PLANNING TARGETS

The Chesapeake Bay Program also quantified the impact of climate on achieving water quality standards in the Chesapeake Bay. Due largely to increasing volume and intensity of rainfall events as well as warmer waters associated with the impacts of climate change by 2025, further reductions of 9.09 million pounds nitrogen and 0.485 million pounds phosphorus reaching the Chesapeake Bay would be needed in order for the Bay to still achieve water quality standards in 2025. Additional nutrient reductions would be necessary post-2025 as the impacts of climate change intensify.

The Chesapeake Bay Program calculated the additional pollutant load necessary to address the impacts of climate change among the six states and the District using the guiding principles for establishing planning targets and based on each jurisdiction's share of nitrogen and phosphorus pollution from sources other than wastewater. The PSC gave jurisdictions the choice to further reduce their planning targets by these amounts to address the impacts of climate change by 2025 or to wait until 2022 to begin addressing these impacts through the two-year milestones process.

Recognizing the impacts of climate change will only intensify over time, the District was the first jurisdiction to commit to take these additional reductions into account in its Phase III WIP. In doing so, the District will further reduce its load by 6,000 pounds of nitrogen and 1,028 pounds of phosphorus (Table 4-2).

TABLE 4-2: DISTRICT'S PHASE III WIP PLANNING TARGETS TO ADDRESS CLIMATE CHANGE

	DISTRICT PLANNING TARGET (POUNDS PER YEAR)	
	Nitrogen	**Phosphorus**
Planning Target	2,424,737	130,065
Additional Reductions to Address Climate	6,000	1,028
Updated Planning Target	2,418,738	129,037

4.3 DISTRICT-WIDE PLANNING TARGETS FOR SEDIMENT

The Bay TMDL sets pollutant limits on nitrogen, phosphorus and sediment. However, the Chesapeake Bay Program set Phase III WIP planning targets only for nitrogen and phosphorus because nutrients have the greatest impact on the water quality standards that are the most difficult to achieve under the Bay TMDL: dissolved oxygen levels supportive of aquatic life in the Bay. Practices to control nitrogen and phosphorus also reduce sediment loads to waterways. The Chesapeake Bay Program therefore agreed to base sediment targets on sediment loads reaching the tidal waters of the Chesapeake Bay after implementing pollution reduction controls necessary to meet nitrogen and phosphorus planning targets.

4.4 DEVELOPING LOCAL PLANNING GOALS

The District divided its nitrogen and phosphorus planning targets into local planning goals based on sources of pollution, entities responsible for implementation, data availability, and scale of the Chesapeake Bay Program Watershed Model. The major sources of pollution in the District are wastewater and runoff from impervious and pervious urban surfaces, tree canopy, vegetated areas and stream bed and banks. Given that all of these sources exist in an ultra-urban environment affected by human activity, the District collectively refers to these sources of runoff as "developed load." The District then set local planning goals based on wastewater and major stakeholders responsible for developed load.

4.5 WASTEWATER

The District based local planning goals for wastewater on permit discharge limits for wastewater treatment plants, combined sewer overflows, and other facilities with individual National Pollution Discharge Elimination System (NPDES) permits as simulated by the Phase 6 Chesapeake Assessment Scenario Tool (CAST). The sum of these permitted loads is 2,186,000 pounds of nitrogen and 108,000 pounds of phosphorus.

4.6 DEVELOPED LOAD LOCAL PLANNING GOALS

Nearly 30 percent of the land area in the District is owned or operated by the federal government; this land is the source for much of the nitrogen and phosphorus pollutant load generated outside the combined sewer service area. Much of this land is held by five major agencies:

- National Park Service
- General Services Administration
- Department of Defense
- Smithsonian Institution
- Department of Agriculture

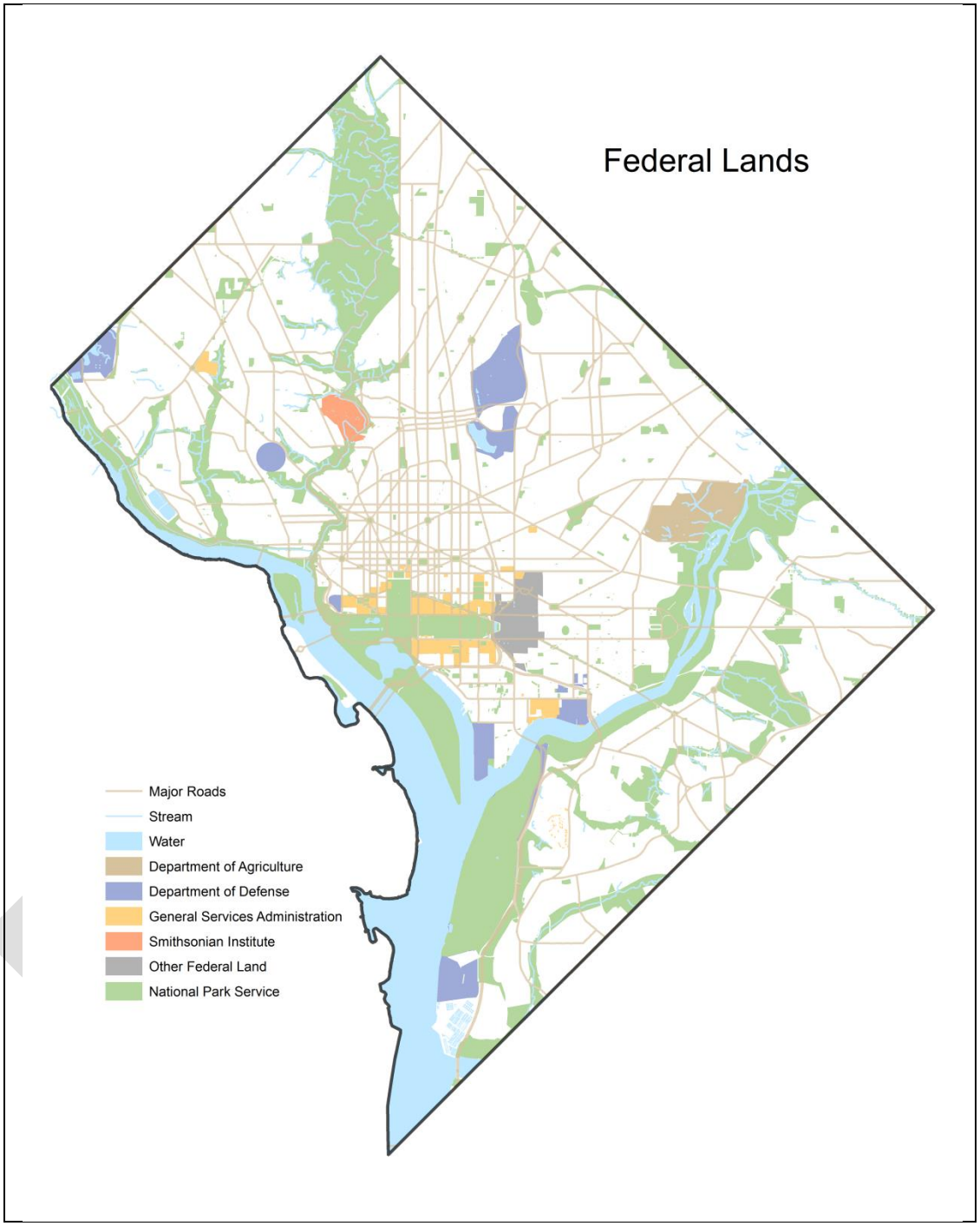


FIGURE 4-1: FEDERAL LANDS IN THE DISTRICT
SOURCE: FEDERAL LAND OWNERSHIP DATA USED IN THE PHASE 6 CHESAPEAKE BAY PROGRAM WATERSHED MODEL

Figure 4-1 shows the federal agency ownership used by the Chesapeake Bay Program (CBP) in the Phase 6 Watershed Model. DOEE and the federal agencies have notified CBP that there are errors in these data. For instance, a large swathe of land along the Potomac River in southwestern quadrant of the District is owned by the Department of

Defense, not the National Park Service. Further, portions of National Park Service land along Watts Branch, Pope Branch and Oxon Run have since transferred to the District. DOEE and federal agencies will work with CBP to correct these data in the next model update and revise the federal planning goals discussed below accordingly.

Phase 6 of the Chesapeake Bay Program Watershed Model and CAST represents the first time the Chesapeake models have the capacity to track land use acres, pollutant loads, and pollution control practices by major federal agency. Further, EPA's August 2018 *Expectations for Federal Lands and Facilities in Supporting the Chesapeake Bay Watershed Jurisdictions' Phase III Watershed Implementation Plans* states that EPA expects federal agencies to "work with the Bay watershed jurisdictions to ensure that they have the information necessary to prepare Phase III WIPs" including meeting federal facility targets.[9] EPA also expects federal agencies to annually report progress toward implementing pollutant reduction practices, and EPA commits to track federal progress. Finally, EPA states, "EPA will not hold jurisdictions accountable for the pounds of nitrogen, phosphorus and sediment reductions that are the responsibility of federal agencies."[10]

The District established local planning goals for developed load from major federal agencies, other federal agencies, and nonfederal sources because federal lands represent a major source of pollution, the modeling capacity exists to track loads and controls by agency, and EPA's expectations for federal lands. The District's method for dividing its planning target into local planning goals for developed load was based on the same principles that the Chesapeake Bay Program used to establish planning targets for the seven Bay Watershed states.

First, the District subtracted the load it expected to assign to wastewater based on permitted discharge limits. To divide the remaining load, the District used the Chesapeake Bay Program's concept of controllable load, defined as the difference between "2010 No Action" representing watershed conditions in 2010 with minimal to no pollution controls, and "2010 E3," or "Everyone doing Everything Everywhere," representing watershed conditions with maximum pollution controls regardless of cost. Level of effort can then be defined as "% E3," where: 0 percent E3 is the same as No Action, and represents no or minimal pollutant controls and no reductions in controllable load; 50 percent E3 reduces half of the controllable load; and 100 percent E3 is the same as the E3 scenario and reduces all controllable load.

[9]EPA, August 16, 2018, Expectations for Federal Lands p. 2
[10] EPA, August 16, 2018 Expectation for Federal Lands, p.3

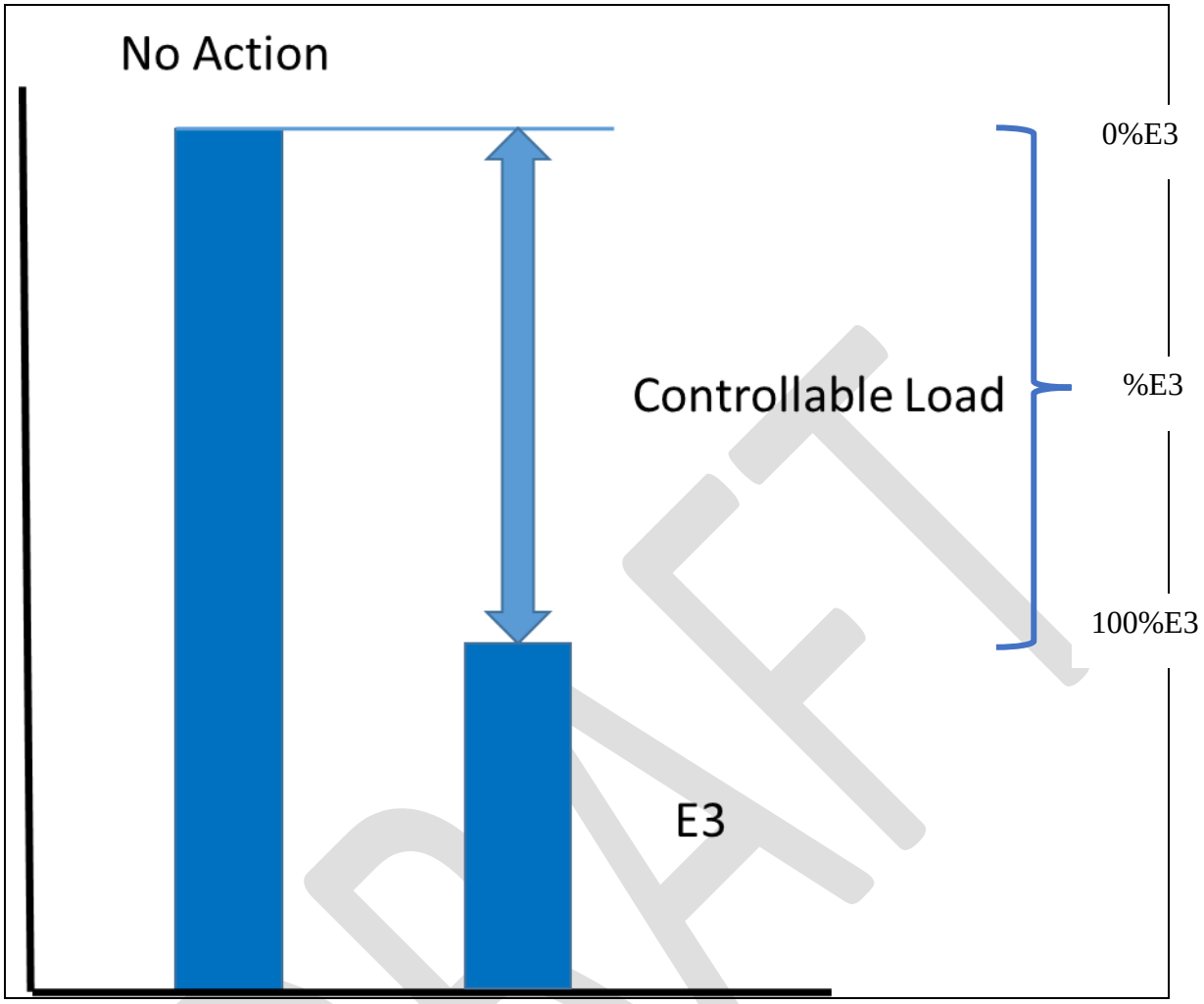


FIGURE 4-2: CONTROLLABLE LOAD
SOURCE: CHESAPEAKE BAY PROGRAM

Given that smaller federal agencies lack the capacity to track land uses, pollutant loads, or controls by agency, the District held these other agencies to "2010 No Action," or 0 percent E3. The District expects these smaller federal agencies to offset any changes in watershed conditions that have led to increased loads since 2010, but otherwise no pollutant controls are necessary. For the major federal agencies and nonfederal sources, the District divided the remaining load so that watersheds with greater impact on water quality in the Bay, such as areas located below the fall line and draining to tidal portions of the Anacostia and Potomac rivers, would have to do more, as measured by "% E3." The District's small geographic area means that there is little difference among segmentsheds in relative effectiveness compared to larger geographic areas and, therefore, little difference in level of effort required among major federal agencies and nonfederal sources.

Finally, the District subtracted from its target the additional 6,000 pounds of nitrogen and 1,028 pounds of phosphorus associated with addressing the impacts of climate change by 2025 from the nonfederal local planning goal. The District made this commitment to further reduce pollution and will achieve these reductions among the nonfederal developed load that it controls. The District's commitment to address climate change does not affect local planning goals for wastewater or federal agencies. Applying these additional reductions to nonfederal developed load resulted in a higher level of effort for nonfederal sources, as reflected by % E3.

TABLE 4-3: NITROGEN LOCAL PLANNING GOALS

AGENCY	2010 NO ACTION	2017 PROGRESS*	PLANNING GOAL (POUNDS/YEAR)	2010 E3	PLANNING GOAL AS % E3
Department of Agriculture	1,272	1,328	1,212	775	12%
Department of Defense	12,224	12,388	11,538	6,517	12%
General Services Administration	2,095	2,118	1,965	1,038	12%
National Park Service	37,060	35,287	35,178	22,266	13%
Smithsonian Institution	439	691	430	362	12%
Other Federal Land	130	152	130	80	0%
Nonfederal	146,924	133,830	132,298	71,992	20%
Total	**200,143**	**185,795**	**182,750**	**103,030**	

TABLE 4-4: PHOSPHORUS LOCAL PLANNING GOALS

AGENCY	2010 NO ACTION	2017 PROGRESS	PLANNING GOAL (POUNDS/YEAR)	2010 E3	PLANNING GOAL AS % E3
Department of Agriculture	104	106	83	46	35%
Department of Defense	1,145	1,141	941	588	37%
General Services Administration	141	141	109	57	38%
National Park Service	13,197	4,553	9,128	2,826	39%
Smithsonian Institution	103	112	82	47	37%
Other Federal Land	9	11	9	5	0%
Nonfederal	15,344	10,844	10,701	3,041	38%
Total	**30,042**	**16,908**	**21,053**	**6,610**	

The term, "2017 progress loads," represents nitrogen and phosphorus loads reaching the Bay from different agencies and nonfederal lands based on sources of pollution that existed in 2017, such as acres of impervious surface, and pollution controls implemented as of 2017. DOEE, federal agencies, and the Chesapeake Bay Program recognize the model-estimated 2017 progress loads have increased compared to the 2010 No Action scenario. Partners agree this is the result of data input errors and not conditions on the ground. Specifically, the 2017 progress run did not credit any BMPs implemented by federal agencies. DOEE is working with federal agencies to improve how federal agency implementation data is reported to the District's Stormwater Database and the Chesapeake Bay Program so that federal practices are credited. DOEE also determined the Chesapeake Bay Program models are assuming a false increase in acres of land draining to the MS4 system as opposed to the CSS, leading to an artificial increase in developed load from some federal agencies. DOEE is working with the Chesapeake Bay Program to correct these issues. These changes will not change the local planning goals, but they will demonstrate greater progress toward the goals.

Should the sum of local planning goals be less than the District's nitrogen or phosphorus planning targets, the District will add any remaining load to the developed load goals.

4.7 TARGETED SUBWATERSHEDS TO INCREASE CO-BENEFITS

The District has identified subwatersheds in which additional nitrogen and phosphorus controls will also support local priorities. These targeted subwatersheds represent a finer scale than the Chesapeake Bay Program Watershed Model and CAST can simulate, so these priorities are not quantified as separate local planning goals. However, strategies to meet the nonfederal planning goals for developed load discuss opportunities to increase implementation in these areas.

The District considered the following factors when developing targeted subwatersheds:

- **Local water quality**: Identified subwatersheds with TMDLs for pollutants that would also be reduced by nitrogen and phosphorus controls, including BOD, nitrogen, phosphorus, sediment, and polyaromatic hydrocarbons (PAHs). PAHs are addressed in the TMDLs for organics.

- **Habitat and stream health:** Identified subwatersheds with completed or planned stream restoration projects. Practices upland of these restoration sites will reduce erosion and pollution to these sites, protecting the District's investment in habitat and stream health. District also considered areas that drain to tributaries of the Anacostia or Potomac rivers so they would protect local streams in addition to mainstem rivers.

- **Climate resilience:** Areas identified by the District's *Climate Ready DC* climate adaption plan as having residents and community assets vulnerable to flooding and extreme heat events associated with climate change.[11]

The District included areas that met more than one of these criteria as targeted subwatersheds (see Figure 4-3).

[11] District of Columbia, November 2016, Climate Ready DC

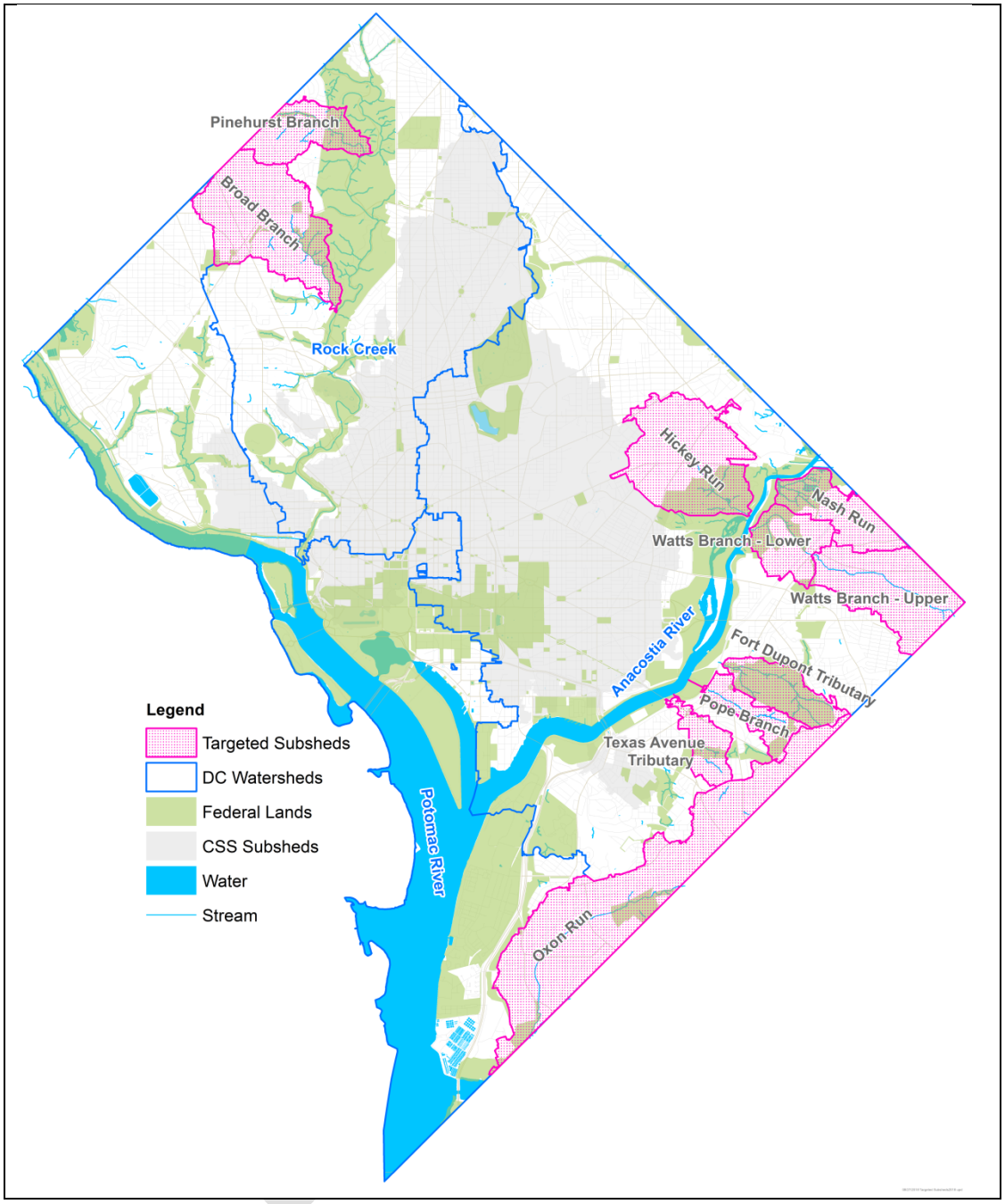


FIGURE 4-3: TARGETED SUBWATERSHEDS
SOURCE: DOEE

Chapter 5 Local Engagement Strategy

The District developed a multi-pronged local engagement strategy to collaborate with the key stakeholders involved in meeting the District's local planning goals:

1. DC Water, the water utility operating the Blue Plains Wastewater Treatment Plant and the District's combined sewer system (CSS).
2. Major federal land-holding agencies in the District.
3. Chesapeake Partner Advisory Group comprised of stakeholders who work with DOEE to reduce urban runoff on nonfederal lands.
4. Stakeholders engaged as part of market research and marketing strategy development for DOEE programs.
5. Other stakeholders.

5.1 DC WATER

Wastewater represents almost 90 percent of the nutrient pollutant load from the District to the Chesapeake Bay, and the vast majority of this load is treated by DC Water. DC Water has been involved in the Chesapeake Bay Program since before the Bay TMDL was established as a member of the Water Quality Goal Implementation Team and Wastewater Treatment Workgroup. Starting in fall 2017, DOEE worked with DC Water to review preliminary planning targets from the Chesapeake Bay Program for the District and ensure wastewater treatment and combined sewer overflow data inputs to the Chesapeake Bay Program models were accurate. DOEE has also worked with DC Water to evaluate wastewater data reporting to the Chesapeake Bay Program for WIP development and progress reporting, and worked with EPA to streamline the process through use of the new Point Source App. DOEE and DC Water met multiple times throughout 2018 to discuss WIP development, understand forecasted loads from the wastewater sector, and determine how to incorporate this information into the District's Phase III WIP. DOEE worked with DC Water, EPA and the Chesapeake Bay Program to develop wastewater input decks for the Phase III WIP, and DC Water wrote the Phase III WIP sections related to Blue Plains and combined sewer overflows.

5.2 FEDERAL FACILITIES

Federal agencies that own property or operate facilities in the District are critical partners in implementing practices to reduce nutrient loads to local waterways and the Chesapeake Bay. DOEE has actively engaged the five major landholding agencies for which pollutant loads and control practices can be simulated and tracked by agency:

- National Park Service
- Department of Defense
- Department of Agriculture
- General Services Administration
- Smithsonian Institution

DOEE has been participating with these and other federal agencies on the Chesapeake Bay Program's Federal Facility Working Group since its inception. DOEE began to actively engage these federal agencies specifically on the development of the Phase III WIP in May 2018, and has a number of events for federal agencies in collaboration with the Chesapeake Bay Program.

TABLE 5-1: SUMMARY OF EVENTS TO ENGAGE FEDERAL FACILITIES

EVENT	DATE	DESCRIPTION
Webinar	May 24, 2018	Overview of Chesapeake Bay Program, Phase III WIP, CAST and District Stormwater Database
Onsite Training	May 31, 2018	Train federal agencies on preliminary local planning goals, CAST, and District Stormwater Database
Onsite Training	October 19, 2018	Train federal agencies on draft local planning goals, CAST, and WIP development strategies
Onsite Training	February 13, 2019	Train federal agencies on local planning goals, CAST, and WIP development strategies
Additional events could be scheduled upon the request of a federal agency		

In addition to these webinars and training sessions, DOEE staff have coordinated with federal agencies one-on-one on specific issues and ensured that Chesapeake Bay Program personnel and contractors are available to assist. DOEE has also offered to convene meetings with federal agencies and other stakeholders on programs that could help them to meet their local planning goals, such as utilizing the District's Stormwater Retention Credit (SRC) program as a pollution reduction strategy.

In spring 2018, in collaboration with the Chesapeake Bay Program, DOEE began developing local planning goals for federal agencies. DOEE shared preliminary planning goals at the May 2018 webinar and training and distributed draft planning goals on September 14, 2018 for a one month review by federal agencies, with the understanding that no comment represented an acceptance of the planning goals. DOEE then worked with federal agencies to answer questions and resolve issues around the draft goals through December 2018. DOEE considers the local planning goals in this document to be final and accepted by the major land-holding federal agencies in the District.

DOEE also developed a methodology for crediting pollution reduction projects in the District based on funding, project coordination, and location of the pollution reduction or restoration efforts. DOEE shared this draft methodology on September 14, 2018 for a one-month review and further refined it in November and December 2018 based on federal agency feedback. It is further described in Chapter 7.

Finally, DOEE set iterative deadlines for federal agencies to develop Phase III WIP pollution reduction scenarios in CAST that meet the planning goals and to draft sections of the Phase III WIP document that explain how they will meet and maintain these goals.

A recording of the webinar, materials from the trainings, planning goals, and crediting protocols are available at **https://doee.dc.gov/service/watershed-implementation-plans-chesapeake-bay**.

5.3 CHESAPEAKE PARTNER ADVISORY GROUP

The third, fourth and fifth elements of DOEE's engagement strategy involve working with stakeholders who have a role in reducing urban runoff on nonfederal land. For the third element, DOEE convened the Chesapeake Partner Advisory Group (C-PAG) to gather feedback on DOEE programs and share proposals for the Preliminary, Draft, and Final Phase III WIP. DOEE anticipates that C-PAG members will also be partners in WIP implementation. The C-PAG is comprised of 24 organizations who have been involved in delivering DOEE programs through frequently receiving DOEE grants, administering DOEE's rebate and stewardship programs, participating in the Stormwater Retention Credit (SRC) Program, or implementing stormwater management on District property.

Table 5-2 lists these stakeholders.

TABLE 5-2: NONPROFITS, PRIVATE, AND SISTER AGENCIES THAT ARE PART OF THE C-PAG

NON-PROFITS	PRIVATE	SISTER AGENCIES
Alice Ferguson Foundation	Design Green	Department of General Services
Alliance for the Chesapeake Bay	Nspire Green	Department of Parks and Recreation
Anacostia Coordinating Council	RainCredits	Department of Transportation
Anacostia Riverkeeper	Solvitect, LLC	University of the District of Columbia
Anacostia Watershed Society		
Center for Watershed Protection		
Earth Conservation Corps		
Latin American Youth Conservation Corps		
Living Classrooms		
Rock Creek Conservancy		

The Nature Conservancy		
Washington Parks and People		

*** Other organizations were invited but opted not to attend or provide feedback through follow up surveys and are not included here.**

DOEE hosted four C-PAG roundtable conversations between October 2018 and May 2019. The first roundtable, held on October 22nd, 2018, provided background on the Chesapeake Bay restoration effort and an overview of the District's Phase III WIP development process. The meeting featured interactive breakout sessions to gather feedback on existing DOEE programs. C-PAG members were asked to identify top barriers to implementing DOEE programs and make recommendations to inform strategies for the Phase III WIP. DOEE created an online survey for C-PAG members who either were unable to attend the first roundtable or had additional feedback to add after the meeting.

DOEE summarized the responses from the breakout sessions and follow-up survey into the following nine issues:

1. **Identifying Partnership Opportunities:** It is difficult to identify, develop, and support non-traditional and new partnerships to strengthen project ideas and increase community input.
2. **Identifying Funding Opportunities and Preparing Applications:** It is difficult to learn about DOEE funding opportunities and there is limited time to put together a strong application that is reflective of DOEE priorities and includes all necessary documents and letters of support.
3. **Supporting Local Champions:** It is difficult to engage partners in DOEE programs throughout all 8 Wards. In some areas in particular, potential partners are more receptive to hearing from neighbors or peers than District government.
4. **Community Outreach and Engagement Support:** There is limited time to conduct meaningful outreach and engagement within the scope of the grant without going over budget. The time and resources necessary for meaningful engagement is often underestimated.
5. **Communicating Benefits and Co-Benefits:** There are not enough resources and it is difficult to communicate the benefits and co-benefits of DOEE programs.
6. **Regulated Properties' Knowledge of Stormwater Retention Credit (SRC) Program:** Regulated properties may make decisions about how they meet the District's stormwater management requirements before they are aware of offsite compliance options.
7. **Resources for SRC Generators:** SRC generators do not have consistent access to or knowledge of the necessary resources to effectively plan and design projects and recruit interested property owners.

8. **Grants Management:** It is difficult to understand grant manager and grantee roles and responsibilities. Clarification is needed to improve communication and avoid highly problematic gaps in grant awards.
9. **BMP Maintenance (Issue raised by DOEE):** Unmaintained best management practices (BMPs) lose their pollution reduction effectiveness.

DOEE was aware of many of these issues already, but feedback from the C-PAG reinforced and provided additional insight regarding these barriers and the degree to which they were an issue.

DOEE then developed 21 proposals based on C-PAG feedback and DOEE internal discussions that could potentially address the challenges identified by C-PAG. The proposals did not represent a commitment from DOEE for implementation, and some proposals were actions that DOEE was already taking. Again, feedback from the C-PAG provided additional information on how to address these challenges. The document was provided to C-PAG members for review prior to the second roundtable. A full list of the proposals is available in Appendix A.

DOEE hosted the second roundtable on December 4th, 2018. During this meeting, DOEE presented a summary of the issues and proposals. DOEE also shared information on its marketing and design contract to enhance outreach materials for the purpose of increasing participation in DOEE programs. This effort is further described in section 5.4. In addition, Nspiregreen, a consulting firm based in the District, presented its findings from focus groups with past and potential participants in DOEE's RiverSmart Homes program to green residential properties (See Chapter 6 for further information on RiverSmart Homes). A significant portion of the meeting was then allocated for C-PAG members to ask questions about the proposals, provide additional feedback, and vote on the top issues and proposals. Each C-PAG member was allowed to vote a total of ten times and could vote for a proposal more than once to show it was a higher priority for action. The votes reflected the top priorities of C-PAG members and were used to inform DOEE's next steps to address barriers to implementation. Members who were not able to make the meeting were provided a separate survey to submit comments and votes.

Figure 5-1 summarizes the 215 votes cast by C-PAG members. BMP maintenance was the issue receiving the most votes, followed by supporting local champions and increasing awareness of the SRC program.

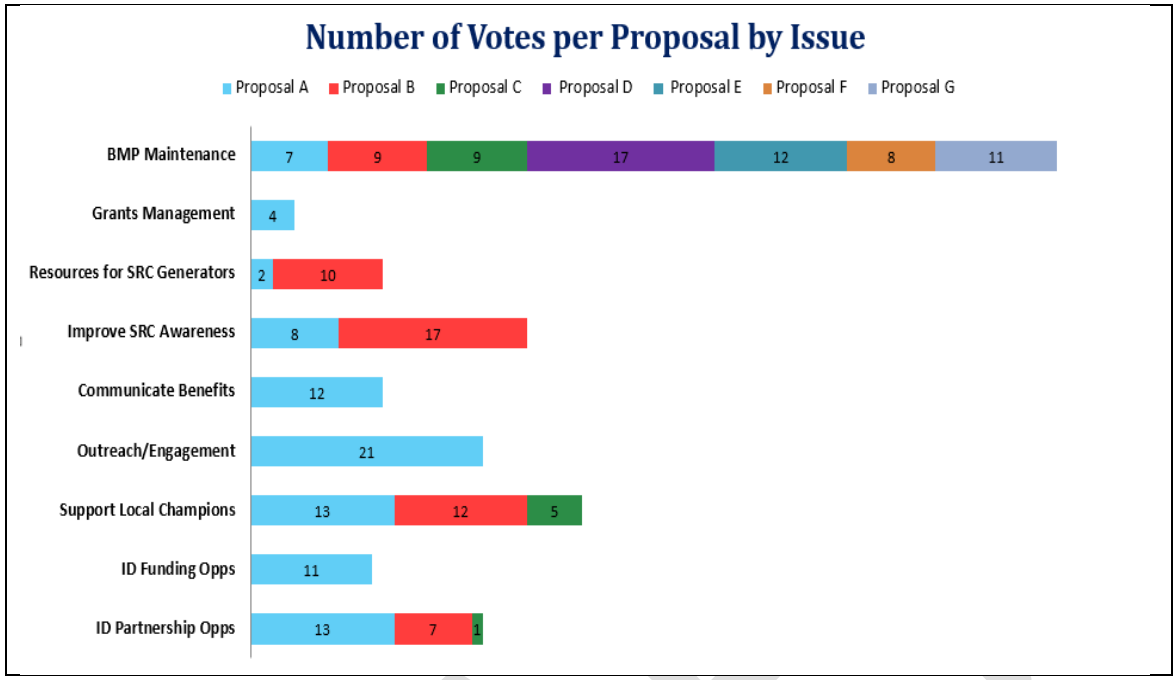


FIGURE 5-1: SUMMARY OF VOTES CAST BY C-PAG MEMBERS

Table 5-3 summarizes the proposals that received the most votes. Appendix A includes the full voting results. Actions that DOEE is taking that address C-PAG feedback and priorities can be found in Chapter 6.

TABLE 5-3: CHESAPEAKE PARTNER ADVISORY GROUP'S TOP 3 PROPOSALS

TOPIC	ISSUE	PROPOSAL	VOTES
1. **Community Outreach and Engagement Support**	Limited time to conduct meaningful outreach and engagement within the scope of the grant without going over budget. Time and resources necessary for meaningful engagement is often underestimated.	A. When applicable, clearly specify community outreach and engagement needs and outputs in RFA so grantee can budget accordingly.	21
9. **BMP Maintenance**	Unmaintained best management practices (BMPs) lose their pollution reduction effectiveness.	D. Explore opportunities to link workforce development and green jobs to BMP maintenance.	17
2. **Regulated Properties' Knowledge of SRC Program**	Regulated properties may make decisions about how they meet the District's stormwater management requirements before they are aware of offsite compliance options.	B. Continue to actively encourage regulated entities to buy stormwater credits to promote a vibrant market, which the SRC program depends on.	17

C-PAG members received a preliminary draft of the Phase III WIP in the end of January 2019 for a two-week review. During this review period, DOEE hosted the third C-PAG roundtable on February 7, 2019 to present the key findings of the WIP and gather comments on the preliminary draft. To encourage feedback and participation, DOEE facilitated four breakout sessions where members could provide input and ask questions about various aspects of the WIP including DOEE's responses to C-PAG recommendations across programs, BMP maintenance, stormwater regulations and the SRC program, and general questions about the WIP process. DOEE incorporated this feedback as applicable into this Draft Phase III WIP.

The final C-PAG roundtable will occur in May and provide C-PAG members with the opportunity to provide additional input that could be incorporated into the final Phase III WIP, due August 9, 2019.

5.4 ENGAGEMENT FOR MARKET RESEARCH AND MARKETING STRATEGY DEVELOPMENT

The fourth element of DOEE's local engagement strategy involves leveraging efforts underway to engage stakeholders for feedback on how DOEE promotes its programs. DOEE contracted with a marketing and design firm to conduct comprehensive market research and develop a marketing strategy with creative messaging and a mixed-media inventory tool to drive engagement and increase participation in programs within DOEE's Natural Resources Administration (NRA) across diverse audiences within all eight wards. The contract contains four defined deliverables: Marketing and Engagement Research and Analysis, Creative Messaging Development, Mixed-Media Inventory Tool and Non-Traditional Advertising Approaches, and Prototype Development. This contract provides an opportunity to reach non-traditional stakeholders, gather more information on how to do effective outreach to encourage participation in DOEE programs, and further address some of the issues raised by the C-PAG, such as providing partners with specific material support and guidance on community engagement and outreach.

The contractor reviewed existing program materials and is conducting three rounds of focus groups that involve DOEE program staff, stakeholders, and communities as part of the Marketing and Engagement Research and Analysis deliverable. The first round of focus groups were held in November and December of 2018 with DOEE program staff to obtain detailed background on programs and desired outcomes. Staff filled out surveys identifying program goals, target audiences, stakeholders, and program misperceptions. The contractor then convened four focus groups around Litter Removal and Pollution Prevention, Economic Incentives, Outreach and Education, and Ecosystem Preservation and Restoration. Key findings from these surveys and focus groups include: Key findings will be included here in the final Phase III WIP Document.

The contractor will next conduct group interviews and surveys with stakeholders identified by DOEE. The list of stakeholders will include organizations, businesses, individuals and others who have been involved in implementing DOEE programs and/or work in similar industries with shared goals as DOEE and thus had valuable feedback on engaging our shared target audience. The stakeholder focus groups will provide an opportunity for the contractor to evaluate program goals, the impact of existing outreach and business incentives, as well as understand the spheres of influence of these stakeholders and how they could be leveraged to support DOEE outreach efforts. Key findings will be included here in the final Phase III WIP Document.

The contractor will conduct the final round of focus groups and surveys with community members in all eight wards. This information will be used to determine environmental needs of the community, individual incentives and belief in their power to help, and general attitudes of residents towards pollution prevention, ecosystem restoration, environmental education, and other DOEE goals.

Key findings will be included here in the final Phase III WIP Document.

Upon completion of these focus groups, the contractor will provide a report with an inventory of target audiences which segments highest impact areas and subsequent demographics. Based on results of the market research and analysis, the contractor will then develop topline creative messaging appropriate to the identified target audiences, develop a comprehensive media inventory tool and produce prototypes for use by DOEE to implement the recommended marketing strategy. DOEE expects the contractor to complete these deliverables by September 2019.

5.5 OTHER STAKEHOLDERS EVENTS/FORUMS

The fifth element of DOEE's local engagement strategy involves engaging stakeholders who may not have been involved in the other efforts described above. A unique challenge in District given its small size is to not overwhelm the same stakeholders with too many requests for feedback. Therefore, DOEE worked to build on existing events to further engage stakeholders in the Chesapeake Phase III WIP development process. DOEE provided background on the Chesapeake Bay restoration effort, an overview of the District's Phase III WIP development process, a summary of DOEE watershed protection resources and programs, and requested feedback during the following events:

TABLE 5-4: STAKEHOLDER EVENTS

DATE	EVENT	AUDIENCE
September 18, 2018	DOEE Community Stormwater Solutions Grant Writing Workshop	25 District Residents
October 22, 2018	Watershed Stewards Academy	20 Watershed Stewards
December 12, 2018	Anacostia Watershed Society Watershed Wednesdays	15 District Residents
Anticipated:		
March 26, 2019	Watershed Stewards Academy	# Watershed Stewards
Date TBD	DOEE Director Wells Quarterly Environmental Stakeholder Meeting	# Environmental Stakeholders
Date TBD	Anacostia Coordinating Council	# District Orgs and Residents
Dates TBD (between April 12 & June 7, 2019)	Draft Phase III WIP Public Meetings	# District residents and stakeholders

Chapter 6 Strategies to Meet and Maintain Planning Targets

Chapter 6 provides the planning goals by source sector and agency ownership that, together, meet the District's nitrogen and phosphorus planning targets, including further reductions to address the impacts of climate change. The Chapter also describes the pollution control practices that will be implemented to meet these goals, as well as the strategies and resources that support this implementation. The chapter includes the sediment loads associated with these pollutant load practices. The Chesapeake Bay Program will use this information to calculate sediment planning targets.

Table 6-1, Table 6-2, and Table 6-3 summarize the nitrogen, phosphorus and sediment 2025 Phase III WIP scenario results, respectively, by source sector and agency ownership that collectively meet the District's planning goals targets.

Table 6-4 and Table 6-5 compare the 2025 Phase III WIP scenario results to the local planning goals by agency for nitrogen and phosphorus, respectively. As mentioned, implementation strategies to meet these goals for nonfederal land are included in Chapter 6. Federal agency submissions and their justifications for meeting targets are included in Appendix F.

Appendix B divides nutrient planning goals by the areas draining to separate Chesapeake Bay tidal segments.

TABLE 6-1: DISTRICT-WIDE EDGE OF TIDE NITROGEN PLANNING GOALS BY SOURCE SECTOR AND AGENCY (POUNDS/YEAR)

	AGENCY	2009 PROGRESS	2017 PROGRESS	2025 PHASE III WIP SCENARIO
				Point Source
Wastewater	Nonfederal	2,480,704	1,273,157	2,182,504
CSOs	Nonfederal	87,019	85,685	3,496
Urban Runoff	Nonfederal	127,613	117,091	112,886
	Department of Agriculture	102	169	168
	Department of Defense	766	932	800
	General Services Administration	1,829	1,855	1,748
	National Park Service	10,407	10,674	10,418
	Other Federal	9	31	11
	Smithsonian	8	257	8
	Subtotal	140,735	131,008	126,039
				Nonpoint Source
Urban Runoff	Nonfederal	9,940	9,491	9,657
	Department of Agriculture	784	805	805
	Department of Defense	10,380	10,460	10,083
	General Services Administration	255	255	201
	National Park Service	10,826	10,946	10,844
	Other Federal	98	98	98
	Smithsonian	79	79	72
	Subtotal	32,363	32,135	31,760
Natural and Nontidal Atmospheric Deposition	Nonfederal	7,760	7,075	1,069
	Department of Agriculture	367	354	354
	Department of Defense	1,058	996	989
	General Services Administration	10	9	-55
	National Park Service	14,209	13,668	13,325
	Other Federal	22	22	22
	Smithsonian	350	356	335
	Subtotal	23,776	22,479	16,039
Septic	Nonfederal	194	173	173
Reserve Developed Load				58,726
Total		2,764,791	1,544,637	2,418,738

Notes: * 2025 Phase III WIP values will be updated based on scenarios submitted by federal agencies to DOEE.

TABLE 6-2: DISTRICT-WIDE EDGE OF TIDE PHOSPHORUS PLANNING GOALS BY SOURCE SECTOR AND AGENCY (POUNDS/YEAR)

	AGENCY	2009 PROGRESS	2017 PROGRESS	2025 PHASE III WIP SCENARIO
				Point Source
Wastewater	Nonfederal	34,644	40,947	107,257
CSOs	Nonfederal	18,609	18,324	743
Urban Runoff	Nonfederal	10,916	9,155	8,727
	Department of Agriculture	10	15	15
	Department of Defense	54	65	53
	General Services Administration	126	126	118
	National Park Service	993	977	946
	Other Federal	1	3	1
	Smithsonian	1	20	1
	Subtotal	12,099	10,361	9,861
				Nonpoint Source
Urban Runoff	Nonfederal	776	694	713
	Department of Agriculture	80	79	79
	Department of Defense	875	858	808
	General Services Administration	15	14	11
	National Park Service	1,100	1,067	1,058
	Other Federal	7	7	7
	Smithsonian	7	7	6
	Subtotal	2860	2,727	2,682
Natural and Nontidal Atmospheric Deposition	Nonfederal	4,060	995	-3,742
	Department of Agriculture	12	12	12
	Department of Defense	221	217	217
	General Services Administration	1	0	-54
	National Park Service	2,642	2,508	2,491
	Other Federal	1	1	1
	Smithsonian	95	85	82
	Subtotal	7,032	3,820	-993
Reserve Developed Load				9,487
Total		72,273	76,178	129,037

Notes: 2025 Phase III WIP values will be updated based on scenarios submitted by federal agencies to DOEE.

TABLE 6-3: DISTRICT-WIDE EDGE OF TIDE SEDIMENT LOADS BY SOURCE SECTOR AND AGENCY (POUNDS/YEAR)

	AGENCY	2009 PROGRESS	2017 PROGRESS	2025 PHASE III WIP SCENARIO
				Point Source
Wastewater	Nonfederal	773,910	418,099	3,993,650
CSOs	Nonfederal	2,413,327	2,379,352	209,151
Urban Runoff	Nonfederal	17,776,899	14,722,408	13,977,956
	Department of Agriculture	7,797	12,817	12,791
	Department of Defense	76,923	89,458	81,619
	General Services Administration	155,454	159,945	127,310
	National Park Service	1,069,973	1,101,083	1,060,173
	Other Federal	1,912	4,609	2,369
	Smithsonian	849	26,704	764
	Subtotal	19,089,806	16,126,025	15,262,982
				Nonpoint Source
Urban Runoff	Nonfederal	1,108,964	974,548	995,051
	Department of Agriculture	54,375	55,855	55,855
	Department of Defense	1,066,620	1,074,626	988,393
	General Services Administration	22,874	22,874	16,200
	National Park Service	832,067	846,072	845,159
	Other Federal	9,752	9,752	9,752
	Smithsonian	7,805	7,805	6,684
	Subtotal	3,102,456	2,991,532	2,917,093
Natural and Nontidal Atmospheric Deposition	Nonfederal	9,624,644	8,115,481	-2,588,916
	Department of Agriculture	33,905	32,557	32,545
	Department of Defense	967,260	960,883	957,415
	General Services Administration	5,925	4,950	-161,576
	National Park Service	8,625,717	8,358,136	7,825,687
	Other Federal	1,229	1,194	989
	Smithsonian	145,419	157,947	133,367
	Subtotal	19,404,099	17,631,148	6,299,511
Total		46,096,504	39,546,155	28,682,387

Notes: * 2025 Phase III WIP values will be updated based on scenarios submitted by federal agencies to DOEE.

TABLE 6-4: LOCAL NITROGEN PLANNING GOALS AND 2025 PHASE III WIP RESULTS (POUNDS/YEAR)

AGENCY	2017 PROGRESS*	PLANNING GOAL	2025 PHASE III WIP
Department of Agriculture	1,328	1,212	1,328
Department of Defense	12,388	11,538	11,872
General Services Administration	2,118	1,965	1,894
National Park Service	35,287	35,178	34,588
Smithsonian Institution	691	430	416
Other Federal Land	152	130	131
Nonfederal	133,657	132,298	123,785
Total	**185,622**	**182,750**	**174,013**

TABLE 6-5: LOCAL PHOSPHORUS PLANNING GOALS AND 2025 PHASE III WIP RESULTS (POUNDS/YEAR)

AGENCY	2017 PROGRESS*	PLANNING GOAL	2025 PHASE III WIP
Department of Agriculture	106	83	106
Department of Defense	1,141	941	1,079
General Services Administration	141	109	75
National Park Service	4,553	9,128	4,496
Smithsonian Institution	112	82	89
Other Federal Land	11	9	9
Nonfederal	10,844	10,701	5,697
Total	**16,908**	**21,053**	**11,551**

NOTE: Table 6-4 and 6-5 summarize the results of the most recently draft Phase III WIP planning scenario. Where the Phase III WIP planning results scenario results are higher than the planning goal, that agency will need to identify pollution reductions practices to meet the planning goal. Where the agency s below the planning goal those "spare" pounds still belong to that agency and cannot be assigned to another agency or major source of pollution.

For the non-federal load from developed land, any spare load will be reserved for future developed lands. More information is included in WIP Chapter 6.2.1.

6.1 INDIVIDUALLY PERMITTED WASTEWATER, CSOS AND INDUSTRIAL POINT SOURCES

The wastewater planning goals for significant and nonsigificant wastewater and industrial facilities and combined sewer overflows (CSO) are based on existing permit limits, as summarized in Table 6-6. As applicable, permit limits are based on facilities' design capacity and therefore allow for additional growth in the wastewater sector. Any increase in load at existing facilities beyond their permitted capacity or load from any newly permitted facilities would need to be offset.

TABLE 6-6: PLANNING GOALS FOR INDIVIDUALLY-PERMITTED MUNICIPAL AND INDUSTRIAL FACILITIES

NAME	NPDES	DESIGN CAPACITY	EDGE OF TIDE LOAD (POUNDS/YEAR)		
			TOTAL NITROGEN	TOTAL PHOSPHORUS	TOTAL SUSPENDED SEDIMENT
					Significant
Blue Plains Wastewater Treatment Facility (District Portion)	DC0021199	179.4 MGD	2,114,542	87,994	3,981,989
Combined Sewer Overflows	DC0021199	N/A	3,496	743	209,151
Significant Total			**2,118,038**	**88,737**	**4,191,140**
					Nonsignificant
Georgetown 29K Acquisition	DC0000035	0.11	49.6	43	1,265
Lincoln Memorial Reflecting Pool**	DC0000370	N/A	787**	46**	1,666**
National World War II Memorial	DC0000345	0.04	184	5	264
Navy Yard	DC0000141	0.06	932	183	4,557
Pepco	DC0000094	0.00	7	0	74
Super Concrete Corporation	DC0000175	0.61	2,842	83	4945
Washington Aqueduct	DC0000019	0.05	31	6	487
WMATA	DC0000337	0.01	28	0	69
Aggregate Nonsignificant Total			**5,511****	**321****	**11,660****
Total Wastewater Planning Goals			**2,186,000***	**108,000***	**4,202,801**

- *** Note: Source - NPDES permit limits are based on NPDEs permit for Blue Plains and outputs from the Chesapeake Assessment Scenario Tool (CAST) for the nonsignificant facilities. Total wastewater planning goals are greater than the sum of the individual facilities to accommodate any new potential wastewater loads in the District**
- **** Note: Load planning goals for Lincoln Memorial Reflecting Pool were determined by averaging of the other nonsignificant facilities. Aggregate Load totals do not include Lincoln Memorial estimates.**

Jurisdictions typically use design capacity for both significant and nonsignificant facilities as data inputs to the Chesapeake Bay Program models that calculate resulting loads to the Chesapeake Bay. In addition, due to the lack of flow and concentration data for nonsignificant facilities, jurisdictions often use design capacity when reporting annual implementation progress to the Chesapeake Bay Program, as further described in Chapter 7.

DC Water created the wastewater data inputs for the Phase III WIP 2025 planning scenario for Blue Plains Advanced Wastewater Treatment Plant and the Clean Rivers Project long term control plan to address combined sewer overflows. DOEE worked with EPA to create the Phase III WIP wastewater data inputs for nonsignificant facilities. First, DOEE reviewed past wastewater data inputs that were submitted as part of the Phase II WIP in 2012. Using the past data submission as a template, DOEE either added or removed facilities to include the seven nonsignificant facilities that currently have individual NPDES permits from EPA.

DOEE then annualized monthly data for facility outfall flows and water quality constituent concentration data that was submitted as part of the 2018 implementation progress report (See Figure 6-1). In addition to nitrogen, phosphorus, and total suspended sediment (TSS), DOEE submitted other water quality constituents including total kjeldahl nitrogen (TKN), which is the sum of organic nitrogen, ammonia, and ammonium; ammonia (NH_3); NO_2 and NO_3; and orthophosphate in the wastewater data inputs.

	A	B	C	D	E	F	G	H	I	J	K	L
1	NPDES	OUTFALL	FLOW	BOD5	DO	NH3	TKN	NO2+NO3	TN	PO4	TP	TSS
2			mgd	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
3	DC0000035	2	0.11	0	5	3.67	4.36	0.23	4.59	0.1	0.14	6.92
4	DC0000345	1	0.02	0	3.33	2.45	2.91	0.15	3.06	0.06	0.09	7.79
5	DC0000141	1	0.07	3.31	5	0.86	1.01	0.03	1.06	0.67	0.59	10.41
6	DC0000141	5	0.05	1.13	0	0	0.42	0	0.44	0	0.07	9.3
7	DC0000141	6	0.02	2.18	0	0	0.73	0	0.77	0	0.24	0.65
8	DC0000141	7	0.02	0	0	0	0.49	0	0.52	0	0.03	7.33
9	DC0000141	8	0.12	0	0	0	0.25	0	0.27	0	0.02	0
10	DC0000141	9	0.14	0	0	0	0.6	0	0.63	0	0.04	2.53
11	DC0000141	13	0.07	0	0	0	0.49	0	0.52	0	0.05	1.3
12	DC0000141	14	0	3.98	0	0	0.39	0	0.41	0	0.08	0.95
13	DC0000141	15	0.06	1.18	0	0	0.46	0	0.48	0	0.05	11.88
14	DC0000094	3	0	0	0	0.61	0.73	0.04	0.77	0.02	0.02	10.41
15	DC0000094	13	0	0	0	0	0	0	0	0	0	6.75
16	DC0000094	201	0	0	0	0	0	0	0	0	0	3.78
17	DC0000094	202	0	0	0	0	0	0	0	0	0	0
18	DC0000094	203	0	0	0	0	0	0	0	0	0	0
19	DC0000175	4	0.61	2.53	1.67	1.22	1.45	0.08	1.53	0.03	0.05	2.89
20	DC0000019	2	0.05	0	5	0.17	0.2	0.01	0.21	0.03	0.05	3.67
21	DC0000337	1	0.01	0	5	1.65	2.08	0.3	2.19	0.01	0.01	6.99

FIGURE 6-1: WASTEWATER DATA INPUTS FOR 2025 PHASE III WATERSHED IMPLEMENTATION PLAN

6.2 NON-WASTEWATER

6.2.1 Nonfederal

The following sections describe the nutrient controls or best management practices (BMPs), implementation strategies, and resources to meet the nonfederal nitrogen and phosphorus planning goals from urban runoff, natural areas and septic systems. Figure 6-2 summarizes the BMPs that were credited by the Chesapeake Bay Program in the 1985, 2009, and 2017 progress runs and the BMPs in Phase III WIP scenario that meet the 2025 planning targets and goals. It is important to note that the 2009 and 2017 progress runs generated by Phase 6 of the Chesapeake Bay models credit significantly fewer BMPs in the District than the Phase 5 models and do not represent all of the practices that were in place during those years. This omission could in part be due to new verification program protocols that took place with the Phase 6 models and applied to previous years even though verification information was not previously expected to be submitted. For example, the Phase 5 models credited the District for 2,183 acres of stormwater management in the 2009 progress run, compared to the 295 acres credited by Phase 6 in the 2009 progress run. Further, the Phase 5 model credited the District with 5,381 feet of stream restoration in the 2009 progress run and 36,233 feet in the 2017 progress run, but the Phase 6 Chesapeake Bay Program models gave no credit for this implementation. DOEE is verifying the BMPs included in the 2018

progress run to create a more complete representation of practices in place in that year. This section will be updated when the 2018 progress run is complete.

To develop its 2025 implementation scenario for nonfederal lands, DOEE started with the BMPs credited in the 2017 progress run. DOEE then estimated future implementation that would occur from 2018 through 2025 and added these acres or feet of BMP implementation to the 2017 progress run. DOEE used the runoff reduction performance standard to simulate future BMPs rather than projecting which types of practices would be implemented. The actual BMPs implemented from 2018 through 2025 may vary. DOEE used conservative assumptions regarding future BMP implementation, so the overall nutrient and sediment reductions associated with actual future BMP implementation should be the same as or greater than the reductions simulated in the 2025 Phase III WIP scenario. When the 2018 progress run is complete, DOEE will update its 2025 scenario to be based on 2018 progress and subsequent implementation. DOEE anticipates the final results will be similar, however.

BMP Name	Duration (Cumulative or Annual)	Unit	Amount Implemented			
			1985	2009	2017	2025 WIP
Runoff Reduction Performance Standard	Cumul.	Acres Treated	0	136	120	1,208
Storm Water Treatment Performance Stand.	Cumul.	Acres Treated	0	0	0	65
Wet Ponds & Wetlands	Cumul.	Acres Treated	0	0	132	197
Floating Treatment Wetlands	Cumul.	Acres Treated	0	0	0	0
Dry Ponds	Cumul.	Acres Treated	0	160	844	847
Extended Dry Ponds	Cumul.	Acres Treated	0	0	0	7
Infiltration Practices	Cumul.	Acres Treated	0	0	91	92
Filtering Practices	Cumul.	Acres Treated	0	0	4,056	4,153
BioRetention	Cumul.	Acres Treated	0	0	416	465
BioSwale	Cumul.	Acres Treated	0	0	17	24
Permeable Pavement	Cumul.	Acres Treated	0	0	76	84
Vegetated Open Channel	Cumul.	Acres Treated	0	0	56	63
Urban Filter Strips	Cumul.	Acres Treated	0	0	0	0
Grey Infrastructure(IDDE)	Annual	Acres Treated	0	0	0	0
Impervious Disconnection	Cumul.	Acres Treated	0	0	0	0
Conservation Landscaping Practices	Cumul.	Acres Treated	0	0	0	0
		TOTAL	**0**	**295**	**5,807**	**7,204**
Erosion and Sediment Control	Annual	Acres	0	0	12	11
Impervious Surface Reduction	Cumul.	Acres	0	0	2	2
Urban Forest Buffers	Cumul.	Acres in Buffers	0	0	0	3
Urban Grass Buffers	Cumul.	Acres in Buffers	0	0	0	0
Urban Tree Planting	Cumul.	Acres	0	0	302	463
Urban Forest Planting	Cumul.	Acres	0	0	0	0
Urban Nutrient Management	Annual	Acres	0	0	0	175
Urban Stream Restoration	Cumul.	Feet	0	0	0	93,904

FIGURE 6-2: BMP IMPLEMENTATION

Note: 2009 and 2017 implementation data represent data credited by the Chesapeake Bay Program and are too low. Many BMPs the District reported for progress under the Phase 5 Chesapeake Bay Program Model were not incorporated into the Phase 6 model. This table will be updated to replace previous years with 2018 progress run data when it is finalized. The 2018 progress run data should be more complete and not require as significant an increase in the rate of implementation through 2025 compared to the current progress run data credited by the Chesapeake Bay Program.

Continuing the current rate of annual implementation through 2025 results in nitrogen and phosphorus loads below the District's planning targets. In other words, the current rate of implementation based on existing program capacity and resources is more than enough to meet pollution reduction goals for the Chesapeake Bay. To meet the District's planning targets for nitrogen and phosphorus assigned by the Chesapeake Bay Program, the District assigned the "spare load," or difference between the 2025 Phase III WIP scenario and the planning targets, back to runoff from developed and undeveloped land, shown as "Reserved – Developed Load". As a result, the District

may still meet the planning targets and nonfederal planning goals for urban runoff in the District's Phase III WIP even it if does less implementation by 2025 than the BMPs identified in Figure 6-2.

Local TMDLs for surface waters within the District are more stringent than the Bay TMDL, so the District will not slow down its rate of implementation under the current permit just because the current rate of implementation yields more reductions than necessary to meet the Bay TMDL. The current rate of implementation should continue to address local water quality and restoration goals.

6.2.1.1 MS4 PERMIT REQUIREMENTS

EPA Region III issues the District a NPDES permit for discharges from its MS4. The District's current permit became effective June 22, 2018. The permit establishes requirements for the District's Stormwater Management Program in order to be consistent with TMDLs and local water quality standards. Unlike permits for other point sources, MS4 permits do not set "end of pipe" numeric effluent limits, but rather include a number of quantitative and qualitative measures that represent controlling stormwater discharges to the "Maximum Extent Practicable" (MEP).

The most significant performance metric in the District's current MS4 permit is a requirement to manage stormwater from 1,038 acres of the District's MS4 area during the permit term. That area represents the total to be managed by the District's various programs to install stormwater BMPs, including:

- BMPs required for development and redevelopment projects that are subject to the District's stormwater management regulations.
- BMPs implemented by the District Department of Transportation (DDOT) as part of public right of way (PROW) projects.
- BMPs implemented via voluntary programs including but not limited to tree planting and RiverSmart programs to retrofit homes, schools, faith-based institutions, and other facilities in the District.

A portion of these 1,038 acres managed is required to occur in each of the District's three major watersheds (see Table 2 below), with the balance occurring anywhere within the MS4 area.

TABLE 6-7: ACRES MANAGED BY WATERSHED

MAJOR BASIN	ACRES MANAGED REQUIREMENT
Anacostia River	307
Potomac River	116
Rock Creek	96
Anywhere in the MS4 Area	519
Total	1,038

In addition, the MS4 Permit also sets other numeric requirements for specific practices and/or types of implementation. The permit requires 350,000 square feet of new green roofs to be constructed during the permit term. It also requires a minimum net increase of 33,525 trees, or 111.75 acres of trees using the Chesapeake Bay Program's assumption of 300 trees per acre, in the MS4 area during the permit term. While these are enforceable numeric requirements on their own, these types of implementation will also contribute to achieving the overall Acres Managed requirement.

When developing the CAST scenarios, DOEE divided the implementation requirements for the full permit term by five to calculate average, annual implementation. However, it is important to note that annual implementation will vary from year to year. DOEE expects to meet the MS4 permit requirement to manage 1,038 acres over the course of the five-year permit through the combined impact of the District's regulatory and voluntary efforts, as follows:

- Approximately 85 percent of implementation, or on average 176.5 acres per year, is expected to come from compliance with the District's Stormwater management regulations described in section 6.2.1.2.
    - 85 percent was derived based on a review of long-term averages and multiple forecasts of the amount, type and location of land that is developed or redeveloped within the MS4 area and therefore subject to the District's stormwater management regulations on an annual basis.
    - DOEE used the "runoff reduction performance standard" BMP, which takes into account the drainage area to a BMP and volume of stormwater retained, when simulating future implementation.
    - Of this 85 percent, DOEE conservatively assumes two-thirds of implementation meets the District's 1.2-inch retention standard and one-third occurs within the PROW and only meets a 0.5-inch retention standard based on the MEP at these sites. This is based on a projection of annual implementation of PROW projects by DDOT, as well as a review of the typical level of stormwater retention achieved by DDOT projects subject

to the MEP process. Projects in the PROW often have a lower MEP due to site constraints such as buried utilities.

- Approximately 11 percent of implementation, or on average 22.4 acres per year, is expected to come from District tree planting and tree canopy efforts described in section 6.2.2.
    - The MS4 permit requires a net increase of 33,525 trees over five years, or an average of 6,705 trees per year. Applying the Chesapeake Bay Program's assumption of 300 trees per acre, this equates to an annual average of 22.4 acres.
- Approximately 4 percent of implementation, or on average 8.8 acres per year, is expected to come from voluntary, incentive-based programs funded by the District on nonfederal lands, such as RiverSmart Homes, described in section 6.2.2.3.
    - This assumption is also conservative, as incentive-based programs have yielded 15.9 acres of implementation per year in recent years and current capacity for these programs is expected to continue.
    - Given that many voluntary BMPs are not required to meet the District's 1.2-inch performance standard for stormwater management, DOEE simulated these BMPs using the "stormwater treatment" BMP and assumed a performance standard of only 0.5 inches.

Although the current permit expires in 2023, DOEE assumed these annual implementation rates would continue through 2025. DOEE therefore developed CAST scenarios that multiplied the annual implementation rate by seven and added these new BMPs to existing implementation captured in the 2017 progress run. DOEE will update this scenario when the 2018 progress run is finalized. In addition, DOEE added stream restoration efforts for which planning is underway and projects are expected to be completed by 2025. Finally, DOEE also added in implementation associated with other programs that do not count towards the MS4 permit's "acres managed" requirements, such as erosion and sediment control and street sweeping, and assumed these programs would continue at their current capacity. As discussed in the introduction to this section, the sum of these practices resulted in more nitrogen and phosphorus reductions than necessary to meet the District's nonfederal planning goals. Therefore DOEE assumes that maintaining the current capacity for existing programs is sufficient to meet the District's Chesapeake planning targets.

Best management practices (BMPs) do not reduce as much pollution as designed if they are not properly maintained. Increasing the number of BMPs within the District increases the level of effort needed for BMP maintenance and inspections to verify proper maintenance. Strategies to fulfill these growing maintenance and inspection needs are described in the remainder of Chapters 6 and 7.

6.2.1.2 STORMWATER MANAGEMENT REGULATIONS

Approximately 43 percent of the District is impervious surface. DOEE estimates that it would cost at least $7 billion to construct green infrastructure (GI) in the areas served by the MS4 to reduce stormwater runoff and fully restore the District's rivers. One of the primary drivers of GI in the District is the regulation of major development activity, which requires the installation of GI during the construction process.

Development activity in the District primarily consists of redeveloping existing impervious areas that drain to impaired water bodies, as compared to development of landscaped or natural areas draining to relatively healthy water bodies. This means that when regulated developers install GI, it will almost always result in a significant reduction in stormwater runoff. In this way, the District's regulations are key to reducing pollutant loads to the District's rivers and streams.

The District's stormwater management regulations apply to major land-disturbing activities. Projects that disturb at least 5,000 square feet must install GI with the capacity to retain the first 1.2 inches of stormwater runoff. The regulations also affect major renovations of existing structures if the combined footprint of the renovation and land disturbance is at least 5,000 square feet and if the cost of the renovation is at least 50 percent of the pre-project value of the structure. These projects must install GI with the capacity to retain the first 0.8 inches of stormwater runoff. In addition to the GI retention requirement, projects in the MS4 must also retain or treat stormwater runoff from each drainage area on the site and from the entire vehicular access area. These requirements ensure that water quality treatment is occurring for more of the first flush volume in the MS4, particularly from vehicular areas.

The regulations allow flexibility to achieve up to 50 percent of the GI retention capacity off-site, rather than requiring that all of the GI retention capacity be built on the site of the regulated development. The flexibility to comply off-site creates the potential for projects in the Combined Sewer System (CSS) area to meet their requirements by installing GI in the MS4 area. More information about the benefits of this type of off-site compliance is available in the Stormwater Retention Credit (SRC) section of the WIP.

GI installed to comply with the stormwater management regulations or to generate SRCs must be designed and built in accordance with the District's Stormwater Management Guidebook (SWMG). The SWMG includes detailed calculations for determining the amount of stormwater runoff in the 1.2 or 0.8-inch storm and the amount of stormwater runoff retained by GI. Each regulated site must obtain DOEE approval of a Stormwater Management Plan (SWMP) that contains the site design, GI design, and retention calculations.

Each regulated site must be inspected regularly during construction to ensure the site is built according to the DOEE-approved SWMP. DOEE will also conduct post-construction maintenance inspections to ensure that the GI continues to function, as further described in Chapter 7. The owner of each regulated site must sign a legal agreement to maintain the GI and land cover at the site. The agreement is included within the declaration of covenants filed for the property, meaning future property owners also must comply with these maintenance requirements.

In an average year, approximately 270 acres are approved for redevelopment under the District's stormwater management regulations. Approximately 700 development projects have triggered the 2013 Stormwater Rule. When constructed, these projects will result in a combined retrofit of over 750 acres with GI.

6.2.1.3 VOLUNTARY INCENTIVE-BASED PROGRAMS

DOEE has taken or is exploring numerous actions through its voluntary, incentive-based programs to address challenges and recommendations raised by the Chesapeake Partner Advisory Group (C-PAG, described in Chapter 5) and other stakeholders. DOEE was already considering or implementing some of these actions, but C-PAG feedback is further reinforcing and informing these efforts. The following activities apply to multiple DOEE programs.

Community Outreach and Engagement Support

C-PAG members reported that grantees experience time limitations when conducting meaningful outreach and engagement within the scope of the grant without going over budget. Furthermore, they feel meaningful engagement requires robust staff time for planning, outreach, recruitment, engagement, and post-engagement, and time and resources necessary for meaningful engagement are often underestimated. In response, DOEE is assessing which grant opportunities can support additional expenses associated with staff time, food for meetings, and other resources that would support more meaningful engagement with community members. Identified grant opportunities will include meaningful engagement in the RFA, allowing grantees to budget their time and resources accordingly.

Additionally, C-PAG members find it difficult to conduct engagement around DOEE programs with communities throughout all 8 wards. In some areas in particular, potential partners are more receptive to hear from neighbors or peers than the District government or grantees. To address this barrier, DOEE proposes to explore ways to support local champions by providing incentives and tools to amplify their voices. Furthermore, DOEE will explore best practices for engagement to equitably advertise

programs across the District. DOEE will also leverage the marketing and design contract to identify community outreach tools to better reach all 8 wards.

To further community outreach and engagement efforts, DOEE has achieved in the past year or is currently conducting the following activities:

- Led Community Stormwater Solutions Grant Writing Workshop Series

DOEE hosted a free hands-on grant writing workshop series as part of the Community Stormwater Solutions Grant program. The goal of the series was to provide support and resources for those who are seeking funding for community-based projects but do not know where to start. Building Bridges Across the River (BBAR), a nonprofit organization based in the District's Ward 8, hosted the workshop. The vast majority of participants were from Wards 7 and 8 and had never previously applied for DOEE grants. DOEE is considering hosting similar workshops in the future. Presentations, workbook activities, and hand-outs are publicly available here: **https://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/DOEE%20Grant%20Writing%20Workshop%20Materials.pdf**

- Watershed Protection Resources and Program Flyer

DOEE created a Watershed Protection Resources and Programs outreach flyer for DOEE watershed protection grant programs, resources for property owners, and additional programs for citizens and businesses (Appendix C). The flyer includes a summary of programs, who can apply, and when they can apply. The flyer is available online, and DOEE is distributing it at a range of events.

- Environmental Education Flyer

DOEE created an outreach flyer that contains environmental education programs, resources, and opportunities for parents, teachers, and students in the District. The flyer includes a summary of programs, the target audience, and DOEE point of contact. (Appendix D).

- Website Updates

DOEE is currently reorganizing and updating the content of its website. Resources such as the grant writing materials, calculator tools, and other data will be more accessible. The website may also have a way to more prominently showcase past grant recipients, partners interested in future collaboration opportunities, and property owners who are interested in green

infrastructure. DOEE is considering the issues raised and proposals prioritized by the C-PAG as it makes these updates.

Funding Opportunities

C-PAG members typically learn about funding opportunities in an inconsistent manner through various listservs or word-of-mouth. These inconsistences make it difficult for members to identify funding resources with enough time to put together strong applications reflective of DOEE priorities. Acknowledging this issue, DOEE created the Watershed Resources and Programs information flyer described above that includes eligibility and when funding is typically available or applications are due.[4] Additionally, DOEE is working to create one online platform where organizations can sign up to receive DOEE funding alerts and include funding opportunities in pre-existing DOEE newsletters such as the monthly Field Guide and Sustainable DC.

Partnership Opportunities

Several C-PAG members acknowledged it was useful to meet with each other and DOEE in a setting that encourages feedback from stakeholders and is not focused on one specific project. DOEE proposes to organize semi-annual meetings with stakeholders to provide the opportunity to collaborate, ask questions and learn from each other, as well as for DOEE to share upcoming opportunities and seek feedback, as appropriate. These meetings will help identify, develop, and support non-traditional and new partnerships to strengthen project ideas and increase community input. When applicable, DOEE grantees' will be allowed to charge their time attending these meetings.

Supporting Local Champions

The C-PAG voiced that more resources need to be available for projects in priority areas where participation rates are lower. Several DOEE programs are now offering more points on grant applications for projects that occur in the targeted subwatersheds identified in Chapter 4. DOEE's marketing and outreach contractor described in Chapter 5 will develop recommendations for how to better communicate programs in targeted areas or among targeted audiences. Finally, DOEE is considering other recommendations to support local champions as described in subsequent sections, including efforts to utilize these champions to support local buy-in for BMP projects on public lands or in the public right-of-way.

Communicating Benefits and Co-Benefits

DOEE's marketing and outreach contractor described in Chapter 5 is further exploring how best to communicate the benefits and co-benefits of green infrastructure. DOEE is

also working with universities, organizations, associations and other partners to increase understanding and awareness of co-benefits.

Grants Management

The C-PAG recommended greater consistency among DOEE grant managers. They raised the need for DOEE to take steps to avoid lapses in grant funding and provide timely feedback on draft final reports. DOEE is conducting internal processes to support grants management and address these recommendations as appropriate.

BMP Maintenance

As discussed in Chapter 5, BMP maintenance was the issue that received the most votes from C-PAG members during the voting on potential proposals. Maintenance needs increase with the growing number of BMPs in the District. Efforts to inspect and report BMP maintenance are described in Chapter 7.

Some types of voluntary programs can incentivize BMP maintenance. For example, participants in the Stormwater Retention Credit (SRC) and RiverSmart Rewards programs described below only generate revenue or savings from their projects if inspectors certify BMPs are properly maintained. Other programs that support voluntary BMP implementation may require different approaches given maintenance may not be an enforceable requirement. Some DOEE grant programs, such as Community Stormwater Solutions and the Green Zone Environmental Program (GZEP), provide funding for innovative projects that address maintenance needs. DOEE is also using its River Corps workforce development program to inspect and conduct maintenance on streams and 20 low impact development (LID) sites annually, as further described below.

DOEE is considering options to further collaborate with other District agencies on maintenance contracts for stormwater management BMPs. These contracts could include residency and certification requirements, thus becoming a source of green jobs for District residents who have participated in green workforce development programs. DOEE is also evaluating workforce development programs currently available and what skills are most important to employers. DOEE will assess whether changes to existing programs could better support jobs creation. DOEE is also further exploring approaches that could support the growing need for BMP maintenance and inspections.

Actions that address C-PAG feedback but are specific to particular programs are described in the following sections on individual programs.

6.2.1.3.1 Stormwater Retention Credit Program

The 2013 Stormwater Rule created a first-of-its-kind off-site stormwater management compliance program. The Stormwater Retention Credit (SRC) trading program allows regulated properties to achieve compliance by purchasing SRCs generated from GI installed voluntarily at other locations in the District. One of DOEE's primary goals in implementing the SRC trading program is to increase the amount of GI located in areas that drain to the municipal separate storm sewer system (MS4) since runoff in these areas flows untreated into the District's streams and rivers.

An important starting point for considering off-site compliance is that the location of a particular regulated development in the District is not necessarily the best location to build GI from the standpoint of improving water quality. While GI practices provide environmental and community benefits wherever they are installed, they provide a greater water quality benefit when installed in the MS4. Combined sewer overflows (CSOs) caused by mixing sewage and stormwater from the combined sewer system (CSS) are being reduced under a court-ordered consent decree to construct large storage tunnels that will ensure the vast majority of runoff originating in the CSS area will be collected and treated before discharging into the District's water bodies. In contrast, stormwater in the MS4 area drains directly into the District's water bodies, often without treatment. Thus, a greater water quality benefit can be achieved when a regulated project in the CSS achieves compliance by building GI in the MS4, thereby reducing urban runoff in areas where it has the largest water quality benefit (Figure 6-3).

FIGURE 6-3: SRCS MOVING TO MS4 FROM CSS
SOURCE: DOEE

In this way, the SRC program has the potential to maximize the water quality outcomes of the stormwater management regulations. GI has other benefits as well, including reducing urban heat island, improving air quality, and beautification. By encouraging SRC-generating GI in areas that are not otherwise undergoing major redevelopment activity, the SRC program has the potential to maximize health and community outcomes. This helps to focus limited private investment in GI in the areas of the District that will benefit most from GI.

As stated previously, DOEE estimates that it would cost at least $7 billion to construct green infrastructure in the MS4. Over time, as regulated development occurs in the MS4, the total MS4 area retrofitted with GI will increase. However, if projects in the CSS purchase SRCs generated by voluntary projects in the MS4, this increases the pace of GI implementation in the MS4 by providing additional funds for GI in the MS4.

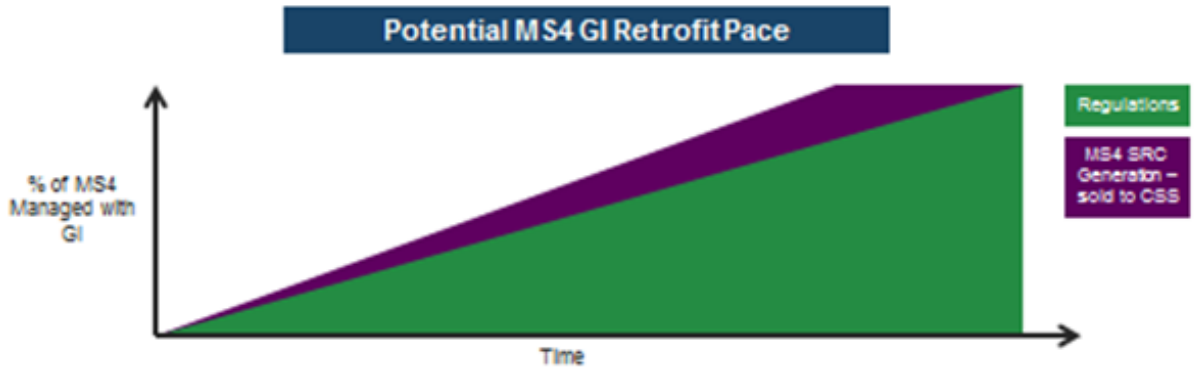


FIGURE 6-4: POTENTIAL MS4 GI RETROFIT PACE
SOURCE: DOEE

In addition to focusing private investment in the areas where GI has the maximum benefit for the District, the SRC program also encourages long-term GI maintenance. Properties that generate SRCs can only receive SRC certification (and the associated revenue) on an ongoing basis if they have a maintenance contract in place for the period of SRC certification. Each SRC represents a 1-year time period, and DOEE will certify a maximum of 3 years at a time. DOEE conducts a maintenance inspection prior to each new period of SRC certification (i.e. every 3 years). In other words, the SRC program creates a monetary incentive to maintain GI.

Once SRCs are generated, the SRC seller has the option to sell the SRCs to a regulated developer, bank the SRCs for use on another regulated property, or sell the SRCs to DOEE through the SRC Price Lock Program (described in further detail below). In a typical SRC-generating model, an SRC aggregator partners with a property owner to construct GI. SRC aggregators may offer a payment of some kind to the property owner in exchange for the right to construct GI on their property and generate SRCs. The property owner benefits from the property improvement, any arrangement they may have with the SRC aggregator, and from enrollment in the RiverSmart Rewards program through which they earn a discount on the stormwater impervious fees on the water bill. The SRC aggregator benefits from the ability to generate and sell SRCs. The District benefits from the installation of the GI project.

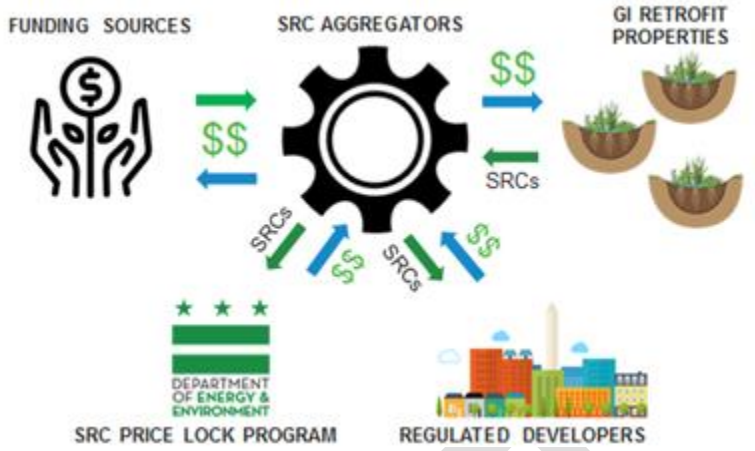


FIGURE 6-5: SRC FLOW
SOURCE: DOEE

The SRC aggregator will typically enroll in the SRC Price Lock Program to have the option to sell SRCs to DOEE at the fixed prices in an SRC Purchase Agreement. Once SRCs are generated, the SRC aggregator will typically try to negotiate an SRC sale to a regulated developer at a price higher than the fixed price in the SRC purchase agreement. If they are not able to negotiate an SRC sale on the market, the SRC aggregator will sell SRCs to DOEE and DOEE will retire the SRCs. Whether the SRCs are sold on the market or sold to DOEE, the SRC Aggregator receives funds from the sale of the SRCs, which can be used to fund additional SRC-generating GI projects.

SRC trading activity has grown each year since the program was launched. As of December 2018, approximately 14 percent of regulated projects have opted to meet some portion of their regulatory compliance off-site. Full details about SRC market activity are available at http://doee.dc.gov/src. Trading activity as of December 12, 2018 is included in Table 6-8 below.

TABLE 6-8: STORMWATER RETENTION CREDIT PROGRAM ACTIVITY

YEAR	NUMBER OF SALES	SRCS TRADED	VALUE OF SRC TRADES	AVERAGE PRICE
2018	20	119,290	$247,211.52	$2.07
2017	15	108,537	$218,912.70	$2.02
2016	8	24,972	$46,284.40	$1.85
2015	1	11,013	$20,924.70	$1.90
2014	1	11,013	$25,000.00	$2.27
Total/Average	45	274,825	$558,333.32	$2.03

6.2.1.3.2 SRC Price Lock Program

DOEE purchases and retires SRCs through the SRC Price Lock Program. DOEE purchases SRCs generated only by newly-constructed, voluntary GI in the MS4. When DOEE purchases SRCs, this is similar in concept to grant or rebate programs through which DOEE funds GI directly. DOEE retires the SRCs purchased through the SRC Price Lock Program, which removes the SRCs from the market so that they cannot be re-sold and cannot be used to meet a regulatory requirement.

DOEE enters into agreements to purchase SRC prior to construction of GI. In addition to a construction schedule, the agreement contains fixed prices at which DOEE will purchase SRCs from the project for the first 12 years of SRC certification. The agreement is structured to allow participants to sell their SRCs on the market with no penalty if they are able to negotiate a sale that they prefer to their option to sell to DOEE (e.g. a sale at a higher price). The effect of the SRC Price Lock Program is to provide confidence about the ability to sell SRCs at a fixed price. This is similar in concept to a price floor or off-take agreement.

DOEE offers prices for the first 6 years of SRC certification that are expected to help recover capital costs for GI projects. DOEE offers prices for years 7 through 12 of SRC certification that are expected to cover ongoing maintenance costs. DOEE also offers higher prices for projects in areas that drain to tributaries to encourage GI that protects these upstream water bodies. The prices DOEE currently offers are summarized Table 6-9.

TABLE 6-9: STORMWATER RETENTION CREDIT VALUES UNDER DOEE'S PRICE LOCK PROGRAM

	YEARS 1 THROUGH 6	YEARS 7 THROUGH 12
MS4: Streams/Tributaries	$1.95/SRC	$0.40/SRC
MS4: Tidal River	$1.70/SRC	$0.40/SRC
CSS:	N/A	N/A

Compared to other DOEE programs to fund GI construction, purchasing SRCs through the SRC Price Lock Program likely decreases the risk the GI will not be maintained since DOEE purchases SRCs only following a successful maintenance inspection and review of a 3-year maintenance contract. DOEE also does not bear the burden of finding cost-effective GI opportunities.

As DOEE only purchases SRCs in the MS4, SRC aggregators are focused on SRC-generating projects in the MS4, supporting the supply of SRCs from the MS4 that regulated developers can use to meet their stormwater retention requirements. Over time as regulated demand for SRCs continues to grow, DOEE can phase out its purchases.

DOEE started the SRC Price Lock Program with a commitment to purchase $11.5 million worth of SRCs and started accepting applications in November 2017. When DOEE signs a purchase agreement, DOEE reserves all of the necessary funds to purchase SRCs over the first 12 years of SRC certification. As of December 2018, five projects are enrolled in the SRC Price Lock Program. DOEE has reserved approximately $3.2 million to purchase SRCs from these projects. DOEE has made one purchase of 28,278 SRCs for a total cost of $55,142.10.

FIGURE 6-6: PURCHASED SRCS PLUS FUTURE PURCHASES
SOURCE: DOEE

The first three projects supported by the SRC Price Lock Program have finished construction. These projects achieved a combined 7.5 acres of area managed with GI in the MS4 (of which approximately 1.5 acres is impervious). The two additional projects enrolled in the SRC Price Lock Program are in the permitting and construction process. These two projects will result in a combined 12.4 acres of area managed with GI in the MS4, of which approximately 2.5 acres is impervious.

6.2.1.3.3 SRC Aggregator Startup Grant Program

The SRC Aggregator Startup Grant Program provides up to $75,000 to SRC aggregators to fund their initial technical and outreach work to identify potential GI locations. These grants help SRC aggregators get started on their first GI projects.

Typically, grantees will go through an iterative process of identifying and narrowing down potential sites that are good candidates for the SRC Price Lock Program. Funds must be used to identify GI opportunities within the MS4 and cannot be used to develop designs to comply with the stormwater management regulations.

Grantees will typically

1. Start with a relatively large number of sites that meet initial criteria established by the grantee (e.g. large parking lots that offer opportunities for bioretention installation). This may involve a desktop analysis of prospective sites.
2. Narrow down the list of sites by conducting outreach to identify interested property owners and by conducting technical analysis of the site to determine the cost effectiveness of installing GI. This may involve field assessment of the sites.
3. Narrow the list further to a relatively small number of locations that are the best opportunities for GI installation. This may involve more detailed field analysis such as infiltration testing.
4. Develop preliminary GI designs, including calculation of approximate SRC-eligible retention volume.

Since the launch of the SRC Aggregator Startup Grant Program in November 2017, eight grants have been awarded.

6.2.1.3.4 SRC Site Evaluation Program

DOEE offers free technical assistance to property owners who want to determine the viability of GI retrofits on their properties. Properties of at least 0.5 acres that are located in the MS4 are eligible for this assistance. The preliminary GI design a property owner receives through the program can be the basis for participation in the SRC Price Lock Program. The SRC Site Evaluation Program helps properties that want to participate in the SRC Program but don't intend to work with an SRC aggregator.

Since the launch of the SRC Site Evaluation Program in November 2017, one SRC Site Evaluation has been provided.

DOEE Priorities to Continue to Expand the SRC Program

DOEE continues to enhance the SRC program to encourage more GI construction in the MS4. DOEE's priorities include increasing the demand by regulated developers for SRCs from the MS4 and increasing the number of properties in the MS4 that are partnering with SRC aggregators on SRC projects. Specific actions DOEE will pursue include:

- Continuing to find new ways to actively encourage regulated developers, particularly those working in the CSS, to purchase SRCs from the MS4 to meet their stormwater management performance requirements:
    - Improving developers' awareness of the SRC program earlier in the planning process, including through efforts to identify project decision-makers and provide them with information about the SRC program while design choices are still ongoing.

  - Partnering with other District agencies involved in the permitting process when appropriate to encourage the use of SRCs.
  - Updating program guidance documents to communicate to developers the benefits of off-site compliance and to address perceived risks regarding the use of SRCs.
  - Updating program procedures related to off-site compliance.

- Expanding the resources that help SRC aggregators partner with property owners to construct GI:
  - Expanding use of the list of property owners who are interested in GI. The list is publicly accessible and can help SRC aggregators find project partners.
  - Improving communication of the benefits of GI to encourage property owners to partner on SRC projects.
  - Improving guidance on the process to generate SRCs, including the permitting process for GI projects.
  - Continuing to evaluate SRC program incentives to encourage more construction of green infrastructure in the MS4.

- Expanding the resources that are available to SRC generators:
  - Improving access to GIS data and analysis tools.
  - Creating new guidance documents, including clarifying the permitting processes.

Many of these actions address feedback and recommendations made by the Chesapeake Partner Advisory Group (C-PAG).

6.2.1.3.5 Stream Restoration

Stream restoration is the act of modifying the existing channel of a stream in an attempt to improve water quality and habitat conditions in the waterway. All District streams face similar threats from urbanization due to high stormwater flows from impervious surface runoff. Erosion in an urban stream is the stream's way of adjusting to accommodate the new flow regime where stormwater is the dominant channel-altering force. Stream restoration attempts to create a new channel that has a stable stream bed and stream banks and to improve habitat conditions for aquatic and terrestrial life along the stream corridor. DOEE's stream restoration program has restored almost 50,000 feet of stream bank over the last decade and will continue to restore more streams to improve water quality and enhance habitat conditions in streams and rivers throughout the District.

In recent years, DOEE completed stream restoration projects for Nash Run, Watts Branch, Pope Branch, Alger Park, Springhouse Run, Broad Branch, Linnean Park, Milkhouse Run, and Bingham Ford. In the coming years DOEE looks to double this number. These past and planned projects are summarized in Table 6-10. DOEE has and is planning to use a variety of funding sources to fund these restoration projects, including EPA's 319 Nonpoint Source and Chesapeake Bay Implementation grants; EPA's Clean Water State Revolving Fund; Innovative Nutrient and Sediment Reduction and Small Watershed grants administered by the National Fish and Wildlife Foundation under EPA's Chesapeake Stewardship Fund; local revenue sources including the Anacostia River Cleanup and Protection Fund and Stormwater Enterprise Fund generated by MS4 and disposable bag fees; and funds appropriated by the DC Council.

Stream restoration project are designed and constructed to be self-sustaining and stable. To ensure projects meet their functional goals, DOEE has developed the River Corps green jobs training program with the Latin American Youth Center. Twice a year, River Corps members photo-document restored streams to ensure the streams remain stable based on visual indicators. River Corps members also perform maintenance services on 20 low impact development (LID) sites per year to help protect our streams.

DOEE also conducts monitoring to understand the maintenance needs or lack thereof for each stream project. DOEE funds the Metropolitan Washington Council of Governments to do survey work annually on restored streams to ensure both vertical and lateral stability of stream beds and banks. DOEE has also conducted additional monitoring at some sites to assess the effectiveness of regenerative stream design projects. The data helped show regenerative stream channel design projects effectively raise the water table, which can help transition intermittent streams into perennial streams.

As discussed in Chapter 5, one of the factors for prioritizing subwatersheds for BMP implementation was to protect areas draining to completed or planned stream restoration sites. Given that urban runoff is a major source of impairment for these streams, upland practices that reduce runoff will protect investments in stream restoration.

NASH RUN STREAM CONDITION PRIOR TO RESTORATION
PHOTO SOURCE: DOEE

NASH RUN STREAM CONDITION POST-RESTORATION
PHOTO SOURCE: DOEE

FIGURE 6-7: STREAM RESTORATION PRE AND POST CONSTRUCTION PHOTOS

TABLE 6-10: STREAM RESTORATIONS

STREAM NAME	STREAM BANK LENGTH (FEET)	COMPLETION YEAR
Sheila's Tributary	1,000	Pre-2010
Watts Branch - Upper	17,952	2011
Bingham Run	1,700	2012
Milkhouse Ford	2,150	2012
Pope Branch RSCs (2)	650	2012
Linnean Park	2,000	2014
Linnean Gully (Soapstone)	400	2014
Park Drive	650	2014
Broad Branch	3,800	2014
Broad Branch RSCs (2)	1,550	2014
Nash Run	2,800	2016
Pope Branch	8,400	2016
Texas Ave/Alger Park	3,000	2017
Springhouse Run	3,800	2017
Spring Valley	2,200	Expected 2019
Stickfoot	1,600	Expected 2020
Fort Dupont	20,000	Expected 2021
Pinehurst Branch	15,800	Expected 2021
Oxon Run**	32,000	Expected 2028
Outfall Restoration Projects**	3,000	Expected 2022

Notes:
*** The Chesapeake Bay Program modeling tools credit stream bank restored rather than stream length. Because stream restoration restores both banks, stream bank length is double the length of stream restored.**

**** DOEE included all streams to be restored by 2025 in the Phase III WIP scenario. DOEE did not include Oxon Run, as that will be completed after 2025, or outfall restoration, as it is not a BMP currently fully credited by the Chesapeake Bay Program.**

6.2.1.3.6 Tree Canopy and Planting

Urban tree canopy (UTC) is the layer of leaves, branches, and stems of trees that cover the ground when viewed from above. In urban areas, the UTC provides an important stormwater management function by intercepting rainfall that would otherwise run off of paved surfaces and be transported into local waters though the storm drainage system, picking up various pollutants along the way. UTC also reduces the urban heat island effect, reduces heating and cooling costs, lowers air temperatures, reduces air pollution, increases property values, provides wildlife habitat, and provides aesthetic and community benefits such as improved quality of life.

In 2009, Mayor Adrian Fenty announced the ambitious but attainable 40 percent by 2035 Urban Tree Canopy Goal for Washington. Compared to the existing canopy at that time of approximately 35 percent, this represented an almost 15 percent increase in tree cover. Mayor Vincent Grey committed to support and revise the goal to 40 percent by 2032 as part of the Sustainable DC Plan in 2013.[12] Tree canopy measurements are made on 5-year increments with the use of satellite imagery and LIDAR. In 2016, the canopy cover was approximately 38 percent. Annual tree planting and management activities have since been largely driven by the development of these goals and subsequent government and community efforts to reinforce the goals, bolster tree protection, and enhance canopy efforts in various ways.

In 2016, The District's **Urban Forest Preservation Act** of 2002 was amended and revised with a number of changes impacting management, protection, jurisdiction and coordination of tree canopy activities. Specifically, the Act expanded the Urban Forestry Division's (UFD) jurisdiction to manage all tree activities on District-owned lands. All public tree-related activities, including inspection, pruning, removal, and planting trees on District land are now integrated into the District's 311 service request program and are directed to the UFD.

The UFD also manages the tree permit removal process. The 2016 Act revised the process to create two designations:

1. **Special Trees** have circumferences between 44 inches and 99.9 inches, and can be removed via a permit process with a fee schedule of $55 per inch circumference.

[12] District of Columbia, 2011, Sustainable DC Plan

2. **Heritage Trees** have a circumference of 100 inches or more and are protected from removal unless deemed hazardous. Fees and fines collected in association with both designations go into the Tree Fund for replanting activities.

The Urban Forestry Advisory Council was established by the 2016 Act and co-chaired by DDOT-UFD and DOEE, with representatives from key agencies, partners, and community members. The council meets quarterly and includes representatives from Department of Parks and Recreation, Department of General Services, National Park Service, U.S. General Services Administration, DC Water, Pepco and Casey Trees. The functions of the council are to: ensure coordination for achieving the District's tree canopy goals between agencies and stakeholders; advise regarding policies, programs, partnerships, and the use of funding; and provide input on the 5-year urban forest report and master plan required by the Act. Other agencies are also invited to participate, including DC Public Schools and the DC Office of Planning.

Tree planting activities have been funded in multiple ways. UFD's annual planting is typically funded by DDOT's capital and operating funds. Over the years, DOEE's planting activities have been funded by various federal and local sources, including EPA's 319 Nonpoint Source Pollution grant, EPA's Clean Water State Revolving Fund, the local Stormwater Enterprise Fund and the Anacostia River Clean Up and Protection Fund. Only very recently has funding been provided to DOEE by DDOT through a memorandum of understanding (MOU) to utilize Tree Fund dollars on DOEE-funded tree planting efforts.

The MOU between DOEE and DDOT is a critical development to enable fund transfer from the DDOT Tree Fund to enable DOEE to ramp up grant-funded tree planting activities. It has increased from $300,000 to $500,000 per fiscal year and is now providing core funding for plantings on private and public lands, including RiverSmart Homes and Large Parcel Planting programs.

The RiverSmart Homes program offers tree planting as well as other practices described in section 6.2.1. It is open to all residential homeowners across the District, although there have been efforts to prioritize work in areas that are priority subwatersheds for restoration, have low participation rates, and/or low canopy cover. Homeowners are required to pay a $50 copay per tree, and there are limits on trees per property based on available planting space. Currently DOEE is considering whether to reduce or waive the co-pay altogether or base it on prioritization mapping to reduce barriers to enrollment.

From 2010 through 2012, DOEE funded the program to plant 500 trees annually. Since then, DOEE has provided funding for up to 700 trees per year, although implementation has averaged 600 trees annually.

Any private property is eligible for the RiverSmart Tree Rebate program, including residential, commercial, university, and faith-based institutional properties. The program is limited to 25 trees per property. It has a two-tiered structure to incentivize native shade trees: $100 for large native shade trees and $50 for most other smaller, ornamental, non-native, and standard fruit trees. Currently the Rebate program results in 300 trees planted annually, with $16,000 paid in rebates leveraging a total private investment of $46,000 in trees.

The Large Parcel Planting Program complements the RiverSmart Homes effort. The program prioritizes any property in the District that can accommodate a minimum of 25 trees, such as schoolyards, parks, cemeteries, university campuses, housing complexes, and military bases. This program consolidates several previous planting efforts, including Sustainable DC, Canopy 3000, Schoolyard and Parkland Canopy Plans and Planting. The program currently plants on average 1,500 trees per year, with an approximate distribution of 500 trees on District Department of Parks and Recreation property, 500 trees on National Park Service land, 250 trees at District public and charter schools, and 250 trees across other sites.

DDOT-UFD's street tree planting efforts occur District-wide and are prioritized by citizen 311 requests District-wide and UFD arborist planning. The street tree planting efforts have ramped up from 4,000 to 8,000 trees annually due to a variety of factors including the setting of the tree canopy goal, MS4 permit obligations, and broad stakeholder support for increasing the planting budget. As street tree planting locations approach full stocking levels, UFD is expanding its focus to begin planting on other District government properties, including District parks and schoolyards, as enabled by the 2016 Act.

There are various other planting efforts by third parties that are self-funded and prioritized in different ways across the District. Examples include Trees for Georgetown; PEPCO's Right Tree, Right Place; and the National Cherry Blossom Festival. These result in several hundred additional trees planted annually across the District.

While the annual tree planting totals are on track and aligned with the long-term canopy goal, there are several opportunities identified by the Chesapeake Partner Advisory Group (C-PAG) that DOEE could further explore to enhance tree canopy efforts:

- Utilizing local champions and partners to promote planting efforts in areas of low canopy, low past participation, and/or mapped as having higher urban heat island impacts.
- Ongoing and innovative outreach and engagement to ensure future demand for new tree planting.

- Increasing tree planting as a design consideration in parking lots and other areas of high impervious cover and/or mapped as having higher urban heat island impacts.
- Enhance tree establishment activities in the post-planting out years beyond the typical 1-2 year warranty period in order to improve maintenance of urban trees.

A NEWLY PLANTED DOGWOOD TREE INSTALLED AS PART OF THE RIVERSMART TREE REBATE PROGRAM PHOTO SOURCE: DOEE

A HOMEOWNER STANDS NEXT TO A NEWLY PLANTED REDBUD TREE. PHOTO SOURCE: CASEY TREES

FIGURE 6-8: TREE PLANTING PHOTOS THROUGH RIVERSMART HOMES PROGRAM

6.2.1.3.7 Clean Water Construction

The mission of the District of Columbia's Clean Water Construction (CWC) program is to fund the design and construction of voluntary projects that work to provide clean water to District streams and rivers. Details on this program can be found on the **CWC website**.

The program receives funding from the **U.S. Environmental Protection Agency Clean Water State Revolving Fund** for up to 55 percent of a project's cost per Title 33 USC §1384. Project applicants must provide for 45 percent of their project's costs using any non-federal funding source. The annual budget for awards is $3 million. A typical project award is about $1 million; however, funding requests have ranged from $100,000 to $10 million. A Request for Applications is held each year, and all submission are ranked and added to the District's CWC Project Priority List. Projects are then funded in rank order.

District agencies and nonprofit organizations are eligible to apply. The program can fund clean water projects throughout the District. Targeted projects that meet DOEE priorities rank more highly on the project priority list. These priorities include work in the MS4; work in targeted watersheds, which could be aligned with the WIP's targeted watersheds in future revisions to the program's Project Priority Ranking System; work

that assists efforts to meet **NPDES requirements**; and work that supports other District environmental initiatives.

Projects receiving CWC funding that were completed in 2017 and 2018 include the construction of six green alleys; six RiverSmart Schools LID retrofits; tree plantings on streets, schools, and parks; the Alger Park Stream Restoration; the construction of 11 bioretention cells in Oxon Run Park; and the design of three watershed-wide LID retrofit projects. All of these projects were in the MS4.

BMPs installed with the support of the CWC program are tracked in DOEE's Stormwater Database. The overwhelming majority of GI projects funded have been led by either DOEE or DDOT. District agencies are in the process of establishing coordinated approaches for ensuring that voluntary BMPs implemented by District agencies are routinely inspected and maintained so they continue to function as designed. In 2018, all CWC-funded BMPs with permeable pavers were formally added to the Department of Public Works (DPW) maintenance inventory. Additionally, DOEE inspects CWC-funded BMPs at least annually and coordinates required maintenance with responsible parties.

OUTDOOR CLASSROOM AT RIVERSMART SCHOOLS SITE, LUDLOW-TAYLOR ELEMENTARY SCHOOL
PHOTO SOURCE: DOEE

FORT DAVIS LID RETROFITS IN PUBLIC RIGHT OF WAY
FOREGROUND: BIORETENTION CONSTRUCTED IN A CURB BUMP OUT; BACKGROUND: PERMEABLE PARKING LANE
PHOTO SOURCE: DOEE

FIGURE 6-9: BMPS IN THE DISTRICT

6.2.1.3.8 Low Impact Development

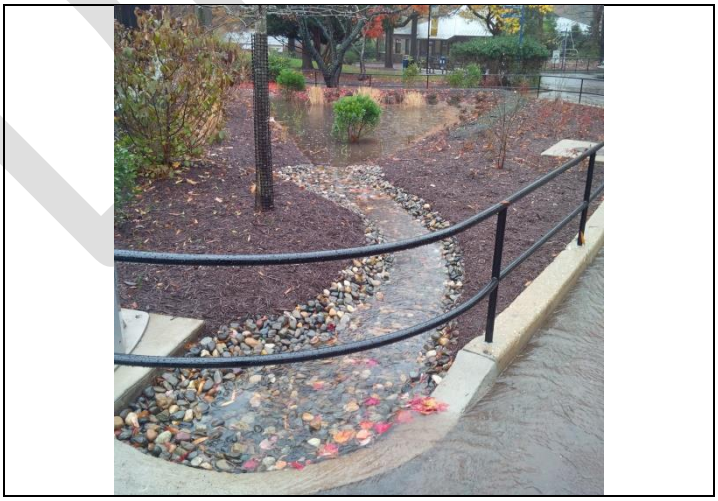
The mission of the District of Columbia's LID program is to facilitate the installation of innovative approaches to stormwater control and treatment in the District's watersheds using LID, GI or other such ecologically-focused methods to improve water quality. Requests for applications (RFAs) are typically released annually and can include one or multiple projects. While the goal of the program is the installation of LID projects to retain and treat stormwater, some eligible projects also focus on education

and outreach programs. The program is open to all entities (i.e., private, nonprofit, religious, and academic institutions)

The funding available varies depending on the nature of the project, but typically is $200,000 to $500,000 per project. The 2018 LID RFA listed five projects for a total of approximately $1.5 million. Funding sources include the EPA's 319 Nonpoint Source Implementation Grants and local funds, such as the Anacostia River Clean Up and Protection Fund generated from $0.05 fee on disposable bags, and the Stormwater Enterprise fund generated by the MS4 fee and DDOT's Transportation Alternatives Grant.

LID projects have taken place throughout the District, however the targeting of locations depends on the source of funding or other priorities in a given year. For example in the past, projects were expected to be installed in the MS4 area if the source of local funding was through the Stormwater Enterprise Fund. Watersheds draining to stream restoration sites have also been a priority for their continued ability to retain and treat stormwater. Moving forward, the program is now using the targeted subwatersheds described in Chapter 4 for prioritizing projects in order to reduce polluted runoff and erosion to newly restored streams, improve the health of local water quality impairments, and enhance resilience in areas particularly vulnerable to the impacts of climate change.

As these are voluntary projects, maintenance of the BMP cannot be enforced; however, recipients of these awards are required to sign a maintenance agreement with the expectation that the installations will function in perpetuity. Twenty LID projects per year, including projects installed under this program, are inspected and maintained by River Corps, a green jobs training program funded by DOEE.



A LID RAIN GARDEN INSTALLED AT THE NATIONAL ZOO
PHOTO SOURCE: DOEE

FIGURE 6-10: LID GARDEN

6.2.1.3.9 RiverSmart Homes

RiverSmart Homes (RSH) is an incentive-based program designed to encourage residential property owners to adopt stormwater best management practices (BMPs) such as rain barrels, shade trees, rain gardens, BayScaping (landscaping conservation gardens), permeable pavers, and impervious surface removal projects that will reduce pollution from their properties. The program began in 2008 as a pilot project in the Pope Branch subwatershed of the Anacostia River. It has since been expanded to the entire District.

The program uses an average of $1.5 million annually to fund the installation of the BMPs it offers. The main sources of funding for the program are the EPA's Chesapeake Bay Implementation grant, the District's Stormwater Enterprise Fund, the Anacostia River Clean Up and Protection Fund, and the DDOT Tree Fund. The District awards a grant every 2 years to an organization to administer the RSH rain barrel, shade tree, and landscaping programs. The organization is responsible for coordinating BMP installations, creating outreach and maintenance materials for homeowners, and strengthening District residents' understanding of stormwater issues and management. In addition, RSH inspects around 10 percent of its past installations on an annual basis. Past projects are inspected by RSH auditors, GZEP participants and RiverCorps members. If RiverSmart Homes recipients also sign up for RiverSmart Rewards to receive MS4 stormwater fee discounts in exchange for implementing green infrastructure, they must prove once every 3 years that they are maintaining their BMPs. Participants are currently subject to DOEE inspections and may be eligible to participate in DOEE's Self-Inspection/Self-Reporting (SISR) program described in Chapter 7 as the program expands.

The RSH program offers technical and financial incentives of up to $4,000 per property to all District homeowners, including renters, who are willing to install BMPs on their homes. The program is limited to residential properties with up to four units. Homeowners are responsible to submit a small copay of $50-70 for rain barrels and $100 for rain gardens and/or BayScaping projects, which covers the remaining costs of installation. A copay is no longer required for shade tree planting.

To date, the program has completed more than 1,400 audits of properties to assess BMP opportunities and installed over 16,000 BMPs. In an average year, the RSH

program installs about 850 rain barrels, 120 rain gardens, 175 BayScaping projects, 700 shade trees, 25 permeable pavers, and 5 impervious surface removal projects.

The RSH program currently offers the same incentives to all homeowners District-wide. However, there have been various efforts in the past to prioritize outreach and increase incentives in specific targeted watersheds, neighborhoods with low historic participation rates and/or areas with flooding issues. Currently the program is working to increase participation in historically under-represented communities, particularly in Wards 7 and 8. DOEE is considering reducing or waiving the copays for homeowners and/or increasing the incentives the program offers in these Wards. DOEE is also considering increasing RSH incentives to properties in the MS4 area, which includes the majority of Wards 7 and 8, and targeting priority sub-watersheds.

The program's priorities include maximizing stormwater infiltration, improving pollution reduction, and extending the lifespan of the BMPs the program offers. To address this, the RSH program has created a web-based tool to provide homeowners with maintenance resources for their BMPs. The new RSH website is available at: **https://www.riversmarthomes.org**. The program has also produced **bilingual maintenance videos** to provide homeowners with visual guidance on how to properly take care of their BMPs. RiverSmart Homes is also working on a program for landscaping contractors to provide homeowners with one-on-one maintenance assistance via the phone, email or a site consultation, and homeowner guidebooks with specific maintenance and troubleshooting tips.

One of the recommendations of the Chesapeake Partner Advisory Group (C-PAG) is to support and amplify the efforts of local champions or early adopters of practices in an area. RSH will aim to support local champions by providing them with RiverSmart Homes yard signs for their properties to showcase their participation in the program. DOEE is also considering nominating RSH program ambassadors in different neighborhoods and wards who can help increase participation by showcasing the BMPs they installed at their homes, host neighborhood outreach events or maintenance workshops, or simply spread the word about the program. DOEE has worked with enthusiastic homeowners in the past but has not formally recognized them as local champions or program ambassadors yet.

RIVERSMART HOMES RAIN GARDEN, RAIN BARREL, AND YARD SIGN AFTER RECEIVING OVER 4 ½ INCHES OF RAIN. PHOTO SOURCE: DOEE

FIGURE 6-11: BMP AT RESIDENCE

6.2.1.3.10 RiverSmart Communities

The RiverSmart Communities program aims to reduce stormwater pollution via partnerships with selected 501(c)(3) non-profit organizations or houses of worship. RiverSmart Communities does not offer funding for multi-family housing complexes, but these complexes are eligible to apply for other stormwater management rebate programs such as the pervious paver rebate program. The RiverSmart Communities program is unique in its ability to achieve multiple policy outcomes including reducing stormwater runoff, providing non-profit organizations with financial relief, and facilitating community outreach concerning the issues of stormwater runoff.

Over the past 10 years, the Clean Rivers Impervious Area Charge (CRIAC) rates, which are paid via water utility bills, have increased to finance DC Water's Clean Rivers Project to eliminate the vast majority of combined sewer overflows. This effort, further described in Chapter 3, is a legal obligation under the federal Clean Water Act. CRIAC fees reflect a land parcel's size and its impervious surface area. Given that non-profits and houses of worship often have large parcels with parking lots, these organizations have experienced sharp increases in their water bills. By facilitating the installation of BMPs to reduce stormwater runoff on non-profit property, RiverSmart Communities enables these non-profits to become eligible for relief on their CRIAC fees.

In return, the selected organizations agree to reach out to the communities they serve, including neighbors, members, and interconnected organizations, to educate them about water pollution, methods to reduce it, and District programs that help fund stormwater management. Applicants wishing to install stormwater best management

practices (BMPs) on property through this program must: 1) provide a plan for reaching their audience through outreach and engagement opportunities, and 2) demonstrate their ability and long-term commitment to maintain the installed BMPs. Their maintenance abilities are weighted heavily during the competitive review and selection processes. DOEE also considers maintenance needs of potential BMPs during the design phase. Eligible BMPs include, but are not limited to, shade trees, rain gardens/bioretention cells, impervious surface removal and replacement with pervious/vegetated surfaces, cisterns that drain to other BMPs, stormwater planters, and swales. A key goal is to install BMP projects appropriate to the applicant's expected future maintenance abilities. This consideration increases the likelihood the applicant will be able to maintain the features. Finally, a custom maintenance manual is created for each site and a walk-through of each maintenance task is conducted with the site managers. All applicants sign a detailed maintenance agreement to effectively maintain the feature for its entire life cycle.

Now in its sixth year, RiverSmart Communities funds three to five projects per year with a total annual project installation budget of $180,000, averaging $36,000 per project. Of the total annual budget of $250,000, about two-thirds comes from the Stormwater Enterprise Fund and must be used in the MS4 while one-third comes from the Anacostia River Clean Up and Protection Fund that is matching EPA's Chesapeake Bay Implementation Grant and can be used to fund projects in the combined sewer system area.

RIVERSMART COMMUNITIES, PEACE LUTHERAN
PHOTO SOURCE: ANACOSTIA WATERSHED SOCIETY

RIVERSMART COMMUNITIES, LUTHER PLACE
PHOTO SOURCE: ANACOSTIA WATERSHED SOCIETY

FIGURE 6-12: RIVER SMART COMMUNITIES

6.2.1.3.11 RiverSmart Schools

Since 2013 the RiverSmart Schools program has worked with applicant schools to install LID practices to control stormwater. These practices are specially designed to be functional as well as educational to fit with the school environment. Further benefits of the schoolyard green space include wildlife habitat, improved aesthetics of school

grounds, water conservation, stormwater management, and student and community pride.

In addition to installing new schoolyard green spaces, the RiverSmart Schools program provides teachers with training and resources on how to use their schoolyard as an outdoor classroom that will enhance many areas of study, including science, reading, and math. Teachers receive a minimum of 16 hours of professional development on watershed ecology, designing and installing a school garden, and outdoor learning curriculum that supports the District's standards for educational content.

The RiverSmart Schools program supports the 2014 Chesapeake Watershed Agreement's environmental literacy goal and sustainable schools outcome to continually increase the number of schools in the region that reduce the impact of their buildings and grounds on their local watershed, environment, and human health through best practices, including student-led protection and restoration projects.[13]

The RiverSmart Schools program is offered on a yearly basis and all District schools – public, public charter, private, and parochial – are eligible. To facilitate projects in priority areas, additional points are awarded during the review process for schools located in the MS4 areas. Schools apply for the program in the fall. It takes 2 years to complete a project from application to installation,.

Annual funding is approximately $800,000 for five schoolyard sites. The sources of funding for this program vary from year to year. Most recently, funding came from EPA's Clean Water State Revolving Fund, EPA's Chesapeake Bay Implementation Grant, and the Anacostia River Clean Up and Protection Fund. Of the five sites, three receive full LID retrofits while two receive more limited retrofits, such as conservation landscaping. Typically the schools receiving the full retrofits are those that have more available space and/or a stronger school habitat team that can maintain the project. Teachers from all five schools receive the training described above.

To ensure the long-term function of the installed systems, maintenance agreements are signed through the permitting process. Maintenance is conducted by the school staff including garden coordinators and teachers as well as community volunteers. Given that many of these key maintenance partners move on from a school, securing the necessary budget and manpower for maintenance has been a challenge. River Corps, a green jobs training program funded by DOEE, also helps to inspect and maintain sites depending on the needs of a site.

[13] Chesapeake Bay Program, 2018, Environmental Literacy Planning Outcome

J.O. WILSON ELEMENTARY STUDENTS, TEACHERS, PARENTS PLANTING IN THE RAIN GARDENS THAT USE A RAINWATER HARVESTING SYSTEM.
PHOTO SOURCE: DOEE

EXCEL ACADEMY PUBLIC CHARTER SCHOOL BEFORE AND AFTER PHOTOS OF RAIN GARDEN AND OUTDOOR CLASSROOM INSTALLATIONS ADJACENT TO PARKING LOT.
PHOTO SOURCE: DOEE

FIGURE 6-13: RIVERSMART SCHOOLS

6.2.1.3.12 Pervious Paver Rebate Program

Through the Pervious Paver Rebate Program, DOEE provides property owners with rebates to retain stormwater runoff on their properties. Rebates are issued as a direct reimbursement to owners at a rate of $10.00 per square foot of impervious surface removed and replaced with permeable pavers and $5.00 per square foot of impervious surface removed and replaced with vegetation. On average, the cost of installing permeable pavers or re-vegetating an area is approximately $25 or $6-$13 per square foot, respectively. The maximum rebate amount for any project falling within the CSS area of the city is $12,000. There is no maximum rebate amount for projects located in the MS4 area of the city, but all rebates are subject to available funds. DOEE is considering implementing a further reduction in the funding available to projects in the CSS area, with the goal of increasing the number of projects installed in the MS4 area.

Property owners of residential buildings, commercial buildings, community spaces, and houses of worship in the District are eligible, including those who have already received RiverSmart Homes or RiverSmart Communities funding. Rebate funding cannot be used to fulfill a DOEE-required Stormwater Management Plan.

To be eligible, property owners must be replacing or removing an existing impervious surface. Qualifying impervious surfaces include but are not limited to driveway, patio, or parking areas made of asphalt, concrete, and/or brick pavers. Walkways and small patios are not eligible. The minimum square footage that must be replaced with permeable pavers is 100 square feet, and the minimum square footage that must be

replaced with vegetation is 200 square feet. For more information visit the **Landscaping Rebate program** page.

Started in 2013, the Pervious Paver Rebate Program funds around 70 impervious surface removal/permeable paver projects per year. Of the total annual budget of $475,000, approximately two-thirds comes from the Stormwater Enterprise Fund and must be used in the MS4 drainage area while one-third comes from the Anacostia River Clean Up and Protection Fund matching EPA's Chesapeake Bay Implementation Grant and can be used to fund projects in the CSS area.

As with all stormwater management practices, maintenance is a critical issue. To participate in this program, all applicants must sign a maintenance agreement. This agreement requires the property owner to promise to maintain the installed GI project for its life cycle, including adequate watering of any installed plants, weeding, sweeping or vacuuming pavers, replenishing joint material between pavers, and regularly cleaning filters. The agreement also allows a DOEE representative to conduct site visits to inspect the project's installation or maintenance. DOEE also provides seasonal maintenance videos and emails to past participants to encourage and develop good maintenance habits.

PERMEABLE PAVER REBATE PROGRAM, 13TH STREET NW
PHOTO SOURCE: QUEEN RICHARDSON

FIGURE 6-14: PERMEABLE PAVER REBATE PROGRAM

6.2.1.3.13 RiverSmart Rooftops Program

The mission of the District of Columbia's RiverSmart Rooftops program is to encourage the voluntary installation of green roofs on non-regulated properties as a means to control, prevent and remediate sources of stormwater pollution. To this end, DOEE

offers rebates for qualifying projects. The specific rebate amount depends on whether the proposed green roof is located within the areas draining to the MS4 ($15 per square foot) or CSS ($10 per square foot).

There is no cap on the size of projects eligible for the rebate; residential, commercial, and institutional properties of all sizes 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. Green roofs installed to comply with the District's stormwater management regulations are not eligible for the rebate.

Since its start in 2006, the RiverSmart Rooftops program has contributed greatly to the installation of green roofs on non-regulated properties. In 2018, DOEE set aside $300,000 for the RiverSmart Rooftops program. Typically, $75,000 of the budget is used for the administration of the program, while $225,000 is allotted directly for rebates. Of the total annual budget, two-thirds comes from the Stormwater Enterprise Fund and must be used in the MS4, while one-third comes from various funding sources – most recently from the Anacostia River Clean Up and Protection Fund – to provide rebates for projects that reduce runoff in the CSS.

Like all stormwater practices, green roofs require ongoing care to maintain their function. Property owners receive information on how to maintain their rooftops and sign a maintenance agreement, but the agreement is not enforceable since these are voluntary projects. DOEE only inspects rooftops if they are generating Stormwater Retention Credits or participating in RiverSmart Rewards to receive discounted stormwater fees.

A GREEN ROOF INSTALLED ON A GARAGE STRUCTURE AS PART OF THE RIVERSMART ROOFTOPS PROGRAM
PHOTO SOURCE: DOEE

FIGURE 6-15: GREEN ROOF

6.2.1.3.14 Community Stormwater Solutions

Community Stormwater Solutions Grants provide short-term start-up funding of up to $20,000 for innovative, community-oriented projects aimed at improving water quality in the District, reducing trash, and raising awareness about what citizens can do to restore the District's rivers, streams, and parks. Two challenges the Chesapeake Partner Advisory Group (C-PAG) identified are: 1) developing or supporting new or nontraditional partnerships, and 2) engaging partners in DOEE programs throughout all 8 wards. This grant program is uniquely positioned to address these challenges. The program started in 2016 with the goal of expanding DOEE's work with community partners and strengthening existing relationships by supporting projects that are inspired and supported by the community. In total, DOEE has awarded 41 grants totaling $764,627.

Funding for this program is provided by the Stormwater Enterprise Fund and the Anacostia River Clean Up and Protection Fund. DOEE annually budgets $200,000 total for this program. DOEE posts a Request for Applications (RFA) once a year in the fall and awards projects the following spring. Below is the breakdown in funding and projects to date:

- In 2016, DOEE received 35 proposals and awarded 9 grants totaling $156,500.
- In 2017, DOEE received 40 proposals and awarded 11 grants totaling $208,812.
- In 2018, DOEE received 27 proposals and awarded 10 grants totaling $181,985.
- In 2019, DOEE received 22 proposals and will award 11 grants totaling $217,330.

The target audience for this program is any individual, group, business, or organization located in the District that is interested in implementing projects to improve the District's water bodies. The program has successfully partnered with non-environmental organizations to help expand the reach of the program. Individuals or unincorporated groups interested in these grants may apply through a fiscal agent. In line with the goal to reach new community partners and build capacity among small business and community-based organizations, DOEE implemented several measures with the intent to make the application process more accessible, including:

- Use of an online application system.
- Offer of five pre-application meetings, with three held at community spaces in the evening and two held at DOEE offices during a work day.
- Leading a free grant-writing workshop series in Ward 8 attended by 121 participants, most of whom were from Wards 7 and 8.

DOEE evaluates lessons learned and stakeholder feedback and considers options to improve the program's accessibility and effectiveness.

Projects funded by this program can take place anywhere in the District. However, DOEE has assigned location-based points to focus projects on specific target areas,

which are informed by the priorities of the source of its funding. The Stormwater Enterprise Fund prioritizes projects in the MS4 areas of the District that reduce the volume of stormwater runoff and the amount of pollution in the runoff. The Anacostia River Clean Up and Protection Fund prioritizes education and restoration projects in the Anacostia Watershed. In addition to these target areas, the 2019 RFA included special focus areas: (1) Kingman and Heritage Islands and (2) the **Targeted Subwatersheds** identified in Chapter 4 that offer greater co-benefits for priorities within the District, including improving local water quality, reducing runoff and erosion to stream restoration sites, and reducing vulnerabilities associated with climate change. Projects in these focus areas received additional points in the application review. Each year, DOEE revisits the priority and focus areas as a mechanism to support DOEE's current work and priorities.

Projects must accomplish one or more of the following project areas:

- Install GI
- Maintain existing GI
- Provide pathways to green jobs focused on stormwater solutions
- Restore natural habitat
- Clean up an area affected by high volumes of litter and address causes of litter
- Reduce sources of pollution to District water bodies
- Engage communities, raise awareness, and bring about behavior change on issues impacting water quality

Within each of these project areas, DOEE offers project ideas that support DOEE's existing efforts and priorities. Projects are not required to use the project ideas provided, but those that do support an existing effort or priority will receive up to 10 points in the 2019 RFA.

The RFA also provides applicants with additional guidance on what DOEE values in a project and reflects these values in the scoring criteria, including projects that:

- Are developed with community partners and involve these partners in the project's execution
- Engage, educate, and lead to behavior change among a target population to improve the health of the District's water bodies
- Produces quantifiable outcomes that improve water quality and lead to behavior change
- Use art or another creative solution to communicate a message or create a result

Table 6-11 includes program performance measures for 2016 and 2017 grantees.

TABLE 6-11: COMMUNITY STORMWATER SOLUTIONS PERFORMANCE MEASURES

ACTIVITY	2016 GRANTEES	2017 GRANTEES	TOTALS
Number of grantees	9	11	20
			Community Engagement
Community members engaged in project activities	1,771	663	2434
Stakeholder organizations consulted		21	21
Students reached	598	219	817
			Outreach/Education Events
Clean up and other events	15	128	143
Educational lessons, including field trips and trash audits	19	40	59
Site assessments		6	6
			Educational Resources Created
Educational signs	13	9	22
Field manual for GI maintenance		1	1
"River of Resilience"/Anacostia Watershed StoryMap created		1	1
"Inspector Green" Smart Phone app created		1	1
Anacostia Watershed Photo Database (includes 200 photos)		1	1
Stormwater coloring book created	1		1
Mason bee houses created	395		395
			Restoration Efforts
Pounds of leaves removed from storm drain inlets		356	356
Pounds of recycling collected	270	25	295
Pounds of trash collected	25,405	5,402	30,807
Rain garden installed (square feet)		500	500
Native plants planted	3,648	1,379	5,027
Invasive species removed (square feet)	68,200		68,200
Impervious surface removed (square feet)	750		750
Litter cans installed and maintained	4		4
Pet waste stations installed	5		5
Rain barrels installed	4		4
			Art Installations
Stormwater-focused public artwork installed	4	29	33
Storm drain murals installed		27	27
Student-created native species mosaics		8	8

COMMUNITY STORMWATER SOLUTIONS GRANTEE ENGAGE WITH DC STUDENTS IN LOCAL WATERWAYS
PHOTO SOURCE: BUILDING BRIDGES ACROSS THE RIVER

FIGURE 6-16: 2017 CSS GRANTEE *BUILDING BRIDGES ACROSS THE* RIVER

6.2.1.3.15 GZEP Watershed Protection Grants

Each summer, the Green Zone Environmental Program (GZEP) provides paid training and work experiences to approximately 350 teenagers and young adults ages 14-24 through the Marion S. Barry Summer Youth Employment Program (SYEP). The GZEP Watershed Protection Grants fund outside organizations to provide education, training, and hands-on activities to GZEP participants. The goal is for projects to raise awareness, educate, and ultimately lead to behavior changes that will help improve water quality in the District's watersheds. DOEE first offered these grants in 2017 and has completed two full years of projects, awarding a total of 6 grants totaling $97,037.

Funding for this program is provided by the Stormwater Enterprise Fund and the Anacostia River Clean Up and Protection Fund. In 2017 and 2018, DOEE budgeted $60,000 total for this program. In 2019, DOEE is increasing available funding to $80,000 and increasing the funds per project from $15,000 to $20,000 to determine whether this increase will lead to more quality projects. DOEE posts a Request for Applications (RFA) once a year in the winter and awards projects the following spring for implementation in summer. Below is the break-down in funding and projects to date:

- In 2017, DOEE awarded two grants totaling $37,050.
- In 2018, DOEE awarded four grants, totaling $59,987.

The target audience for participating in these grants is GZEP participants. Nonprofits, businesses, and universities are eligible to apply.

GZEP cohorts are dispersed throughout the District, and applicants are encouraged to site their projects close to the GZEP assembly sites. Therefore, there are no location-based priority points associated with this grant.

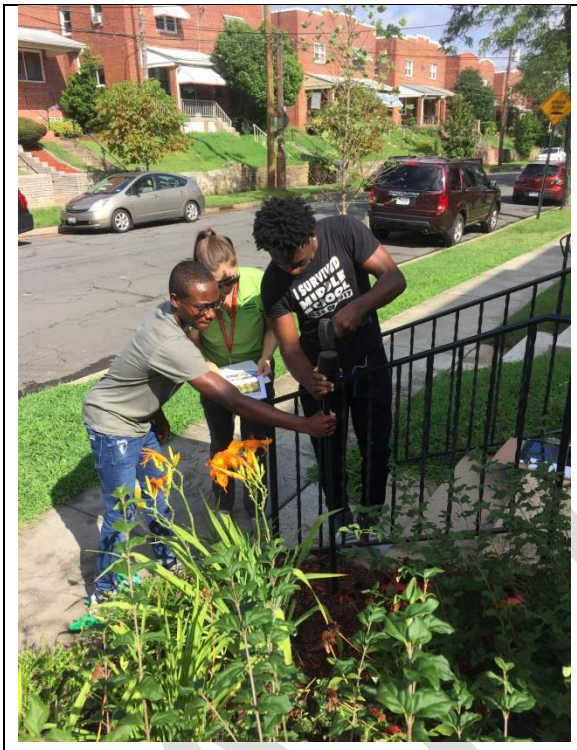
Projects must accomplish one or more of the following project areas:

- Site assessment and design of GI
- Install GI
- Inspect and maintain existing GI
- Restore natural habitat
- Educate and engage communities on issues affecting watershed health
- Reduce sources of pollution to District water bodies
- Clean up an area affected by high volumes of litter and address causes of litter
- Foster engagement in, restoration of, and support for existing efforts at Kingman and Heritage Islands, including projects in the adjacent communities

Table 6-12 includes program performance measures for 2017 and 2018 grantees:

TABLE 6-12: GZEP PERFORMANCE MEASURES

ACTIVITY	2017 GRANTEES	2018 GRANTEES	TOTALS
Grantees	2	4	6
GZEP participants engaged	60	147	207
Hands-on training and educational lessons conducted	18	44	62



GZEP PARTICIPANTS LEARNED ABOUT RIVERSMART HOMES WITH DOEE STAFF AND INSTALLED EDUCATIONAL SIGNAGE. PHOTO SOURCE: DOEE

FIGURE 6-17: GZEP PARTICIPANTS

6.2.1.3.16 Vision for the Anacostia River Corridor

Decades of industrial activity and urban development have led to excessive contamination of Anacostia River sediment with PAHs, PCBs, heavy metals, pesticides and other harmful compounds, degradation of upland and riverine habitat, and loss of recreational opportunities. The District, in partnership with the National Park Service (NPS), is implementing the Anacostia River Sediment Project (ARSP) to characterize the extent of contamination, evaluate potential human health and ecological health risks, study the feasibility of alternative remediation options, and establish a Record of Decision (ROD) that specifies the best sediment cleanup method(s). Similar processes are underway at multiple potential environmental cleanup sites adjacent to the Anacostia River.

Separately, a natural resource damage assessment (NRDA) for the river will be developed to evaluate the resources necessary to make "whole" the injuries caused by decades of environmental contamination. Responsible parties will likely pay millions of dollars to support resource restoration in the coming years and decades. The NRDA process will be overseen by the NRDA Trustees, which will likely include:

- DOEE
- Maryland Department of the Environment
- National Oceanic and Atmospheric Administration (NOAA)
- Department of Interior (includes NPS and U.S. Fish and Wildlife Service)

In order to increase the benefit of any resources that may be generated from the NRDA process, DOEE and NRDA trustees are currently identifying and compiling potential restoration opportunities along the Anacostia River, which will also inform the ARSP, as appropriate.

One of the issues raised at the second Chesapeake Partner Advisory Group (C-PAG) roundtable was DOEE's programs are too siloed, miss opportunities to leverage efforts, and could risk undermining each other.

DOEE and stakeholders identified a similar need in the summer of 2018 as part of an effort to inform the development of the District's Resilience Strategy, further described in Chapter 8. The "Honor the Anacostia" Working Group convened by the District's Resilience Office recommended developing a living vision for the Anacostia River corridor that could inform future decisions on remediation, restoration, flood management, public access, and recreation efforts along the corridor.

DOEE and stakeholders recognize there is no comprehensive plan or vision that integrates diverse priorities and can be used to future decisions. DOEE has begun working with sister agencies including the District's Office of Planning, Department of Parks and Recreation (DPR), and Office of Resilience; the Anacostia Watershed Society; the Anacostia Waterfront Trust; Washington Parks and People; and other members of the Anacostia Park and Community Collaborative (APACC) to consider next steps and resources to create the "Anacostia River Corridor Vision." The Vision will encourage a resilient waterfront that supports flood risk reduction, fish and wildlife habitat protection and restoration, increased public access and recreational use, and water quality improvements that will enhance the value of the Anacostia waterfront to District residents, visitors, developers, and the environment alike. Rather than being a static plan, DOEE and stakeholders are exploring creating a Corridor Vision that could be continually updated as new information becomes available so it can inform decisions and actions within the Anacostia River corridor over time.

Many of the potential restoration opportunities that will be assessed as part of the NRDA process and Corridor Vision development have nutrient and sediment reduction benefits, including the restoration and/or establishment of streams, wetlands, submerged aquatic vegetation (SAV), freshwater mussels and living shorelines. The comprehensive Corridor Vision creates the opportunity to prioritize these efforts and other projects yielding local benefits including reduced flood risk, improved public

access, and enhanced recreational opportunities. The expectation is that an integrated vision developed with inclusive stakeholder engagement will increase the likelihood of its implementation. Although none of the practices that will be assessed as part of the NRDA effort or Corridor Vision development will be included in the scenarios for meeting the District's nutrient planning goals for the Chesapeake Bay, DOEE will track implementation of these practices and credit them accordingly.

6.2.2 Federal

Each federal agency has provided detailed information on their strategies and implementations required to meet and maintain their planning targets as a part of Washington DC's overall targets. This information from each Agency is included in Appendix F.

Chapter 7 Crediting, Tracking, Reporting, and Verification

Chapter 7 describes DOEE's methods for determining how pollution control practices are credited among wastewater facilities, federal agencies, or nonfederal lands, and DOEE's protocols for tracking, reporting and verifying pollution control practices to the Chesapeake Bay Program.

7.1 CREDITING

In general, who leads the implementation of a pollution control practice and what source of pollution the control is addressing determines whether credit is applied toward planning goals for wastewater, federal urban runoff or nonfederal urban runoff.

7.1.1 Wastewater

The Chesapeake Bay Program determines loads from wastewater treatment plants and holders of individual NPDES permits based on permit information about a facility's capacity and discharge monitoring reports. If a practice is installed to reduce pollution, the discharge monitoring data will document the impact of the control. The Chesapeake Bay Program uses this monitoring information to assess progress towards meeting wastewater planning goals.

7.1.2 Federal vs Nonfederal Developed Loads

The process for determining the nitrogen, phosphorus, and sediment reduction credit from urban runoff on developed lands is based on the number, location, and type of best management practices (BMPs) to reduce pollution. Through expert panels and partnership review, the Chesapeake Bay Program modeling tools determine how much pollution BMPs reduce from different sources of pollution. For example, expert panels and the partnership have established distinct pollutant reduction values for trees based on whether they are planted over streets, turf, or natural understory. The Chesapeake Bay Program will assign credit only for BMPs that have been through the expert panel process and have partnership-approved pollution reduction values. The Chesapeake Bay Program will credit BMPs regardless of whether they were installed due to compliance with regulatory requirements or as part of voluntary, incentive-based programs so long as the District can verify BMPs continue to function as designed. Broad categories of urban BMPs creditable by the Chesapeake Bay Program include stormwater capture, tree planting, erosion and sediment controls,

stream and wetland restoration, urban nutrient management to reduce fertilizer application, and street sweeping.

Whether the District credits BMPs to federal or nonfederal agencies is determined by who secured funding and led BMP implementation efforts, as opposed to the location of the BMP. As described in Chapter 6, DOEE has worked for years to restore streams and install BMPs on federal lands using local revenue and funding secured by the District. Federal agencies have also initiated projects on federal land. To date, DOEE has assigned credit for BMPs and restoration efforts on federal lands based on installation effort. For example, a federal agency will receive credit for planting trees on their property so long as data is reported in a format that can be used by the District's Stormwater Database and Chesapeake Bay Program models. However, if DOEE secures funding and coordinates a stream restoration on federal lands, the resulting pollution reduction credit is applied as nonfederal.

To date, all stream restoration and LID projects the District has coordinated on federal lands receive nonfederal credit. However, DOEE recognizes that a portion of these projects is funded by stormwater fees paid in part by federal agencies. If federal agencies determine past efforts and projected BMP implementation will not meet federal planning goals, DOEE will work with them to assign some pollution reduction credit for pollution reduction practices funded by federal stormwater fees. In addition, DOEE encourages federal agencies to apply for District funds for BMP implementation. DOEE is also willing to collaborate with federal agencies on securing funds, coordinating projects, and technical assistance to support pollution reduction and restoration practices on federal land.

7.2 TRACKING AND REPORTING

7.2.1 WASTEWATER: THE POINT SOURCE APP

Starting with the 2018 progress reporting period covering July 1, 2017, through June 30, 2018, DC Water and DOEE used EPA's new Chesapeake Bay Program Point Source Application (App) to report flow, nutrient, and sediment data for individually-permitted wastewater data. DC Water used the App to report data for Blue Plains Advanced Wastewater Treatment Plant and combined sewer overflows, and DOEE used the App to report data for nonsignificant facilities with individual NPDES permits. Through the Point Source App, users can download facility data, find available discharge monitoring report (DMR) data, submit data via the application, and prepare the submission spreadsheet. The App also enables users to edit facility information, do quality assurance checks, view datasets, and generate reports (Figure 7-1).

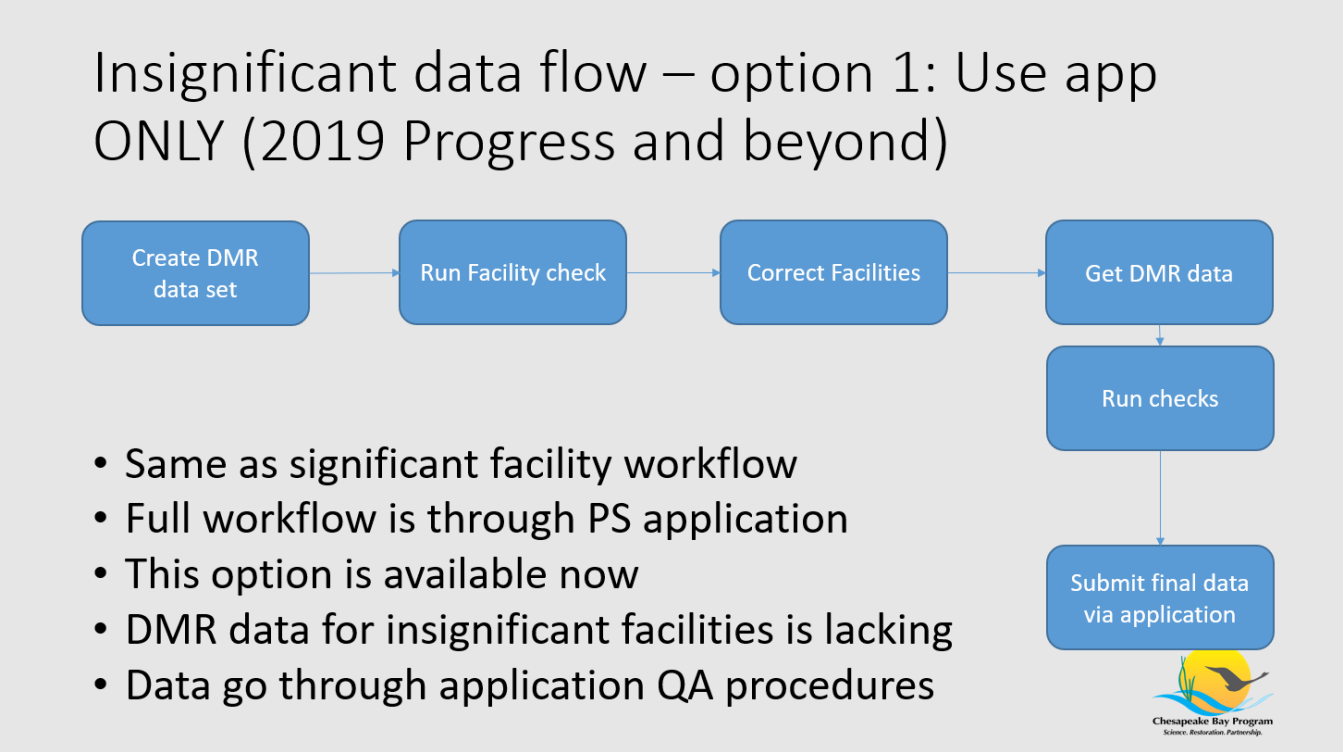


FIGURE 7-1: PROPOSED DATA SUBMISSION FOR FUTURE PROGRESS YEARS. SOURCE: EPA CHESAPEAKE BAY PROGRAM

During the latter part of 2018, the Chesapeake Bay Program (CBP) convened a user group and had several meetings to discuss the use of the App. CBP provided a schedule to roll out the use of the Point Source App to jurisdictions (See Figure 7-2). Most of the interactions between CBP and the jurisdictions occurred between October and early December 2018. During that period:

- DOEE and DC Water received log-in credentials to the App.
- EPA CBP submitted data-clean up questions to DOEE.
- DOEE provided responses to the questions and suggested that EPA R3 NPDES Section also provide responses.
- EPA CBP Point Source App was released.
- EPA CBP held individual jurisdiction one-on-one sessions to help jurisdictions create the 2018 progress dataset using the Point Source App.
- DOEE submitted progress data on nonsignificant facilities.

Action	Date	Responsibility
Phase 1: Data review	June 4 – July 13	CBP
• Refine data retrieval process to replicate jurisdiction-submitted data for 2017 Progress: COMPLETE		
Phase 2: Requirements gathering & application development	July 16 – August 24	CBP & jurisdictions
• Resolve data issues identified in Phase 1: ONGOING (11/29) • Identify and build remaining QA checks: COMPLETE • Identify and build remaining data "fixes": ONGOING (11/5)		
Phase 3: Application development & testing	August 6 – October 5	CBP & jurisdictions
• Define and develop jurisdiction approval process: DRAFTED; will implement after 2018 progress • Define and develop additional necessary reports: TO DO; after 2018 progress • Test application using 2018 progress data: TO DO		
Phase 4: Application refinements	October 8 – November 16	CBP & jurisdictions
• Implement application changes/updates based on state testing		
Phase 5: Final release	November 19	CBP
• Use application to submit 2018 Progress data		

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FIGURE 7-2: POINT SOURCE APP REVIEW SCHEDULE
SOURCE: EPA CHESAPEAKE BAY PROGRAM

For nonsignificant facilities, DOEE based the NPDES permitted facility outfalls that were actively discharging to receiving waters on the outfalls that were discharging on a continuous or intermittent basis. DOEE also included any outfall data being pulled by the Point Source App from ICIS-NPDES. EPA Region 3's NPDES Section that issues the permits for wastewater discharges in the District also provided information to complete the data submission for nonsignificant facilities.

The 2018 progress reporting dataset for nonsignificant facilities with an EPA-issued NPDES permit required data from the 2017 and 2018 calendar years. DOEE used the CBP's Point Source App to download annual DMR data for calendar year 2017 (Figure 7-3). There was no dataset for the 2018 calendar year, so DOEE worked with CBP to create a 2018 dataset using the Point Source App. DOEE then combined the 2017 and the 2018 datasets into a reporting period of July 1, 2017, through June 30, 2018.

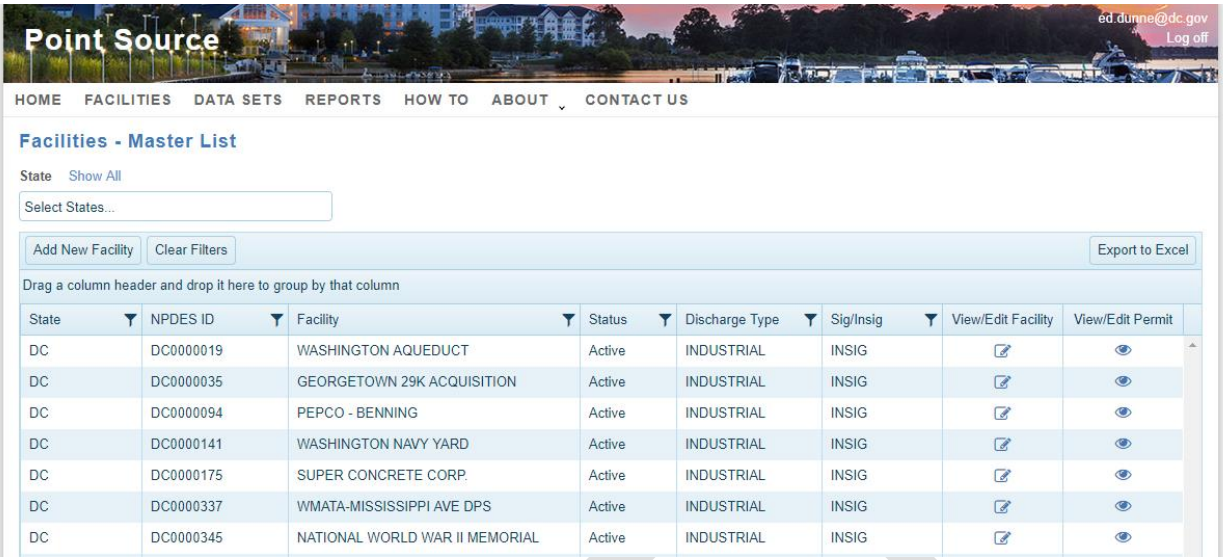

FIGURE 7-3: SCREENSHOT OF THE POINT SOURCE APPLICATION SHOWING SEVERAL OF THE ACTIVE NONSIGNIFICANT FACILITIES IN THE DISTRICT OF COLUMBIA.
SOURCE: CHESAPEAKE BAY PROGRAM

The combined dataset included NPDES ID, facility name, whether the facility was significant or nonsignificant, outfall number, discharge type (industrial or municipal), period (which was on a month basis, each row was a month), flow, water quality constituents (BOD5, dissolved oxygen, ammonia, nitrate and nitrite, total nitrogen (TN), orthophosphate, total phosphorus (TP), total suspended solids (TSS), total organic nitrogen, total organic phosphorus), and associated metadata. DOEE reviewed the dataset in collaboration with CBP and EPA Region 3 NPDES Section.

The dataset included facility flow data for 59 percent of the monthly records, TN and TP concentration data for 25 percent of the monthly records, and TSS concentration data for 37 percent of the monthly records across all facilities. For all other water quality constituents, there was data for about 10 percent of the monthly records.

For progress reporting, all monthly flow and water quality constituent concentrations need an input value. If there were no values in the 2018 DMR dataset downloaded from the Point Source App but there were values in the 2017 dataset, the 2017 value was included for 2018. If there were no value in either year, DOEE used a zero.

Since 2018 was the first year the App was available, jurisdictions also had the option to submit progress reporting data for permitted facilities via spreadsheet. In future years, DOEE anticipates the App will be used for data submission. DOEE will update its Verification Plan further described in section 7.3 by December 31, 2019, to describe this new process.

The App is an improvement over past reporting protocols. It utilizes existing datasets that undergo thorough review before submission to EPA and makes it easier to compile these data for use by CBP.

7.2.2 NON-WASTEWATER: THE STORMWATER DATABASE

DOEE uses the Stormwater Database (SWDB) to track BMPs installed in the District through regulated and voluntary programs. Each BMP record contains a unique ID, coordinates, BMP type, contributing drainage area (area managed), and retention calculations for green infrastructure practices. The SWDB also includes inspection data so DOEE can track when BMPs are constructed and the current maintenance status of each BMP.

DOEE uses the SWDB to run custom queries on BMP projects, pull data into the TMDL Implementation Plan Modeling Tool that DOEE uses for local TMDLs, and report externally to EPA, the Chesapeake Bay Program, and others. BMP data is also shared publicly through the District's OpenData platform, where a GIS shapefile with BMP points is updated on a weekly basis.

7.2.2.1 REGULATED BMPS

DOEE's Stormwater Management Plan (SWMP) permitting process is conducted electronically through the SWDB. Engineers seeking DOEE SWMP approval enter detailed site and BMP design information into the SWDB, ensuring the entries correspond to the design documented in the SWMP. These entries include the BMP type, coordinates, contributing drainage area, and retention calculations. The SWDB has built-in evaluations that ensure projects are proposing BMPs sufficient to meet the minimum on-site performance requirements of the stormwater management regulations. The SWDB also calculates any Off-Site Retention Volume (Offv) obligation.

DOEE staff is responsible for reviewing the project design submitted on a Stormwater Management Plan (SWMP) and verifying that corresponding information has been entered into the SWDB. Plan reviewers upload comments to the database and return the entry to the applicant for revision. Each revision must be documented in the SWDB under the same SWMP number used to track the project.

When a SWMP is ready for approval, the applicant uploads a final PDF copy, which is approved and stamped electronically through the SWDB by the DOEE plan reviewer. Reports from the database are required to be included directly on the SWMP, including a signed maintenance responsibility statement. If applicable, an Off-Site Retention Volume (Offv) responsibility statement is included as well.

During construction, DOEE inspectors record in the SWDB each construction inspection of the project. The SWDB is used to receive the as-built SWMP and issue the Final Approval Notice. If a project has an Offv, DOEE also uses the SWDB to verify that the annual Offv requirement is met prior to the final inspection through the use of stormwater retention credits (SRCs) or payment of an in-lieu fee (ILF). Ongoing maintenance is tracked through the SWDB, along with ongoing compliance with an Offv requirement if applicable.

7.2.2.2 VOLUNTARY BMPS

Many voluntary programs also use the SWDB. Some of these programs enter BMP data following the SWMP process described for regulated BMPs. For example, all SRC-generating projects must obtain DOEE approval of a SWMP. Many projects installed through RiverSmart Communities, RiverSmart Schools, Clean Water Construction, stream restoration, and other programs also obtain SWMP approval, which may depend on the size of the project.

The River Smart Homes program has a SWDB module that includes a field audit component. The audit is conducted through an ArcGIS Online application that syncs with the SWDB. Quarterly spreadsheets are uploaded to the SWDB to document the BMPs that are installed.

Other voluntary projects that do not go through DOEE's SWMP review process such as RiverSmart Homes or stream restoration projects are often submitted to the SWDB on an ad hoc basis or when a site enrolls in the RiverSmart Rewards program. DOEE is working to integrate tree planting data from DDOT's Urban Forestry Administration as well.

7.2.2.3 FEDERAL BMPS

Federal agencies receive an annual data call from DOEE and the Chesapeake Bay Program to submit voluntary BMPs in a spreadsheet format that is compatible with the SWDB. BMPs that were installed due to regulatory requirements should already be in the SWDB, but federal agencies have used this data call to submit regulated BMPs as well. DOEE and federal agencies are committed to continuing to validate the universe of BMPs on federal lands and get these BMPs credited in the annual progress runs completed by the Chesapeake Bay Program.

7.3 VERIFICATION

As described above, DOEE's SWDB provides the framework for verification of BMPs reported to the Chesapeake Bay Program. The SWDB tracks and maintains records

and information related to BMPs installed in the District for the purpose of complying with the District stormwater management regulations. The SWDB also tracks and maintains records relating to BMPs installed through many of DOEE's voluntary programs (including the full suite of RiverSmart programs and the Green Roof Rebate program) and voluntary implementation by federal agencies.

Regulated BMPs are subject to maintenance requirements and periodic inspection by DOEE. Inspection and maintenance dates for these BMPs are captured in the SWDB and provide ongoing verification that a given BMP remains in place and is functioning as designed. Maintenance and inspection information for voluntary BMPs is similarly captured in the SWDB in accordance with requirements for the applicable DOEE voluntary program.

Some District implementation efforts are tracked outside the SWDB. Tree planting programs and street sweeping are tracked separately and reported to DOEE by other District agencies. Data from these tracking systems allows for verification of these BMPs, which are reported in program-specific XML files through the National Environmental Information Exchange Network (NEIEN). Soil Erosion and Sediment Control efforts are tracked via the SWDB, but this site-level data is aggregated into an overall level of implementation for the District, which is represented in another program-specific XML.

DOEE's objectives for verifying BMP data and reporting it to the Chesapeake Bay Program include the following:

- Receive data on all BMPs listed under NPDES Permits.
- Receive data on all BMPs being installed and inspected.
- Receive voluntary BMP data on all federal BMPs (BMPs required to comply with District stormwater management regulations are submitted through the Stormwater Database).
- Receive data on all BMPs installed on a voluntary basis (e.g. residential tree planting).
- Verify BMPs installed on a voluntary basis.
- Provide the data through NEIEN.
- Use the SWDB to identify BMPs near or at the end of their creditable lifespan and prioritize those BMPs for inspection.
- Perform ongoing verification efforts for the District's stormwater BMP inventory to validate or otherwise improve these data.

The framework, processes and systems DOEE employs to ensure verification of submitted BMPs are detailed in the **District's 2015 Quality Assurance Project Plan** (QAPP) for data submittals, which will be updated as necessary.

7.3.1 INSPECTIONS AND ENFORCEMENT OF STORMWATER BMPS

Property owners with SWMPs for regulated stormwater BMPs are required to maintain them in accordance with the SWMP for proper operation and promptly repair and restore as needed. They are also responsible for providing maintenance records, contractor work reports, and solid waste disposal manifests to DOEE upon request.

For many years, DOEE has aimed to conduct maintenance inspections of all post-construction stormwater BMPs at least twice during the first five years of operation and at least once every two years thereafter to ensure completion of scheduled maintenance and servicing of stormwater BMPs. Inspectors prioritized maintenance inspections based on the following: a complaint received regarding a location where stormwater BMPs are in use; a request for inspection by the owner or their agent; a request to verify the condition of a stormwater BMP for certification of SRCs, or impervious cover reduction stormwater fee discount; date of final construction of BMP; date of last maintenance inspection; and date of SWMP approval. Because the number of BMPs in the District has increased, DOEE must now utilize innovative solutions to keep up with workload increases due to regulatory compliance, SRC generation, voluntary BMP installations, and intra-construction pollution prevention inspections.

One such approach that DOEE is currently piloting is the Self-Inspection Self-Reporting (SISR) program. When the program is fully implemented, this stormwater BMP maintenance compliance assistance application will be integrated within the SWDB and fill a gap in the current stormwater inspection and maintenance reporting process. It will also allow DOEE inspectors to focus efforts on pollution prevention at active construction sites and ensure that post-construction stormwater BMPs are installed according to the approved SWMP.

The current process states that owners must ensure a BMP is maintained but does not require property owners to report BMP maintenance to DOEE. The SISR application enables property owners with a regulated stormwater BMP to track and submit inspection and maintenance service reports. DOEE inspectors will review each submission to ensure that the reported inspections and maintenance service are sufficient for the BMP type. A complete submission will contain: a completed and signed inspection report, clear before and after photos, and service reports for non-low impact development stormwater practices. Ten percent of the submitted reports will be visually inspected on site by DOEE as part of quality assurance quality control measures. During the pilot phase, DOEE's primary focus is to assist District agencies with properly inspecting and maintaining their stormwater BMPs. However, DOEE hopes to expand the program to cover privately owned or operated BMPs as well.

The success of SISR will result in an overhaul of current maintenance inspection operations. All SWMP owners may be expected to report inspection and maintenance through the SISR SWDB application. DOEE will focus maintenance inspections towards commercial, high-density residential, industrial, educational, and medical facilities, with special attention to ensuring that 100 percent of newly constructed BMPs are inspected twelve months after the construction completion date.

Stormwater BMPs part of the Stormwater Retention Credit (SRC) or RiverSmart Rewards programs will still require an inspection as part of the initial application but may be able to submit inspection and maintenance reports through SISR at least 6 months prior to the start of the next 3-year certification period in future phases of the SISR program. DOEE would conduct an inspection if the agency deemed the reported inspection and maintenance information were insufficient. A copy of the stormwater BMP maintenance contract must also be submitted to DOEE prior to recertification to avoid a lapse in the program's certification.

DOEE is committed to working with District Agencies to ensure all stormwater BMPs owned by the District of Columbia are functioning in accordance with the approved SWMP. District Agencies will also be able to utilize SISR to track stormwater management assets, inspection, and maintenance. DOEE currently has a contract and will continue to work with licensed contractors to demonstrate proper maintenance of some LID practices at District-owned facilities. DOEE is exploring options to expand maintenance efforts at District facilities.

If a stormwater BMP is found to be in violation of stormwater management regulations, including required maintenance after an inspection, a notice of violation (NOV) is issued to the property owner or responsible party. If notification is insufficient to correct the violation, "failure or refusal to maintain a stormwater management facility in proper condition shall result in corrective action by the Department, and any violator may be fined in accordance with [Title 21 Chapter 5]" (DCMR Title 21 Chapter 5). Beyond an NOV, a notice of infraction (NOI), which is a civil infraction ticket with a fine assessed, can be issued.

7.3.2 INSPECTIONS AND ENFORCEMENT OF NPDES-PERMITTED FACILITIES

DOEE implements a strict and aggressive inspection and enforcement program to effectively eliminate or reduce the discharge of pollutants in stormwater from all industrial, commercial, institutional, municipal, federal, and other facilities deemed as critical sources of stormwater pollution within the MS4 area. These facilities are inspected a minimum of twice each permit term to ensure proper control measures are deployed and effective. These measures include "good housekeeping" practices, containment structures, pre-treatment devices, sediment and erosion control devices,

and other best management practices (BMPs). Where DOEE inspectors identify insufficient control devices or other non-compliance, they will require immediate corrective action through varying approaches such as compliance assistance, site directives, notices of violation (NOVs), and notices of infraction (NOIs).

Additionally, on behalf of EPA Region 3, DOEE implements a compliance monitoring program for individually-permitted wastewater discharge facilities and facilities covered by the NPDES Multi-Sector General Permit. DOEE conducts Compliance Evaluation Inspections (CEI) of all individual NPDES permitted facilities within the District. A CEI is conducted to verify permittee compliance with regulations, permit conditions, applicable permit self-monitoring requirements, effluent limits, compliance schedules, and the current stormwater pollution prevention plan (SWPPP).

DOEE also implements an Illicit Discharge Detection and Elimination Program (IDDE) designed to detect and eliminate illicit discharges within the District. DOEE, with the support of DC Water and the District's Department of Public Works (DPW), investigates and conducts enforcement actions in accordance with the District's MS4 permit, the District Water Pollution Control Act, and District Surface Water Quality Standards 21 DCMR § 1100 et seq. As part of the program, DOEE responds to reports from the public, non-governmental organizational partners, other DC Agencies, federal agencies, and the National Response Center. DOEE also performs dry weather inspections, surveys, and monitoring of outfalls to identify non-stormwater flows. Illicit discharges are often intermittent, so DOEE inspectors check for non-stormwater flows multiple times in a given location, particularly in priority locations. Routine facility inspections may also identify illicit discharges. Any identified illicit discharges are thoroughly investigated. If a responsible party can be identified, inspectors order swift and strict corrective actions that may include fines and other penalties.

Chapter 8 Climate Change

The District under Mayor Bowser's leadership is a regional, national and international leader in addressing climate change. In December 2017, Mayor Bowser pledged the District will be carbon-neutral and climate resilient by 2050. Efforts to reduce carbon emissions will help prevent the worst climate impacts that could have catastrophic impacts for water quality. In August 2018, Mayor Bowser committed to fully address the impacts of climate change on water quality in its Phase III Watershed Implementation Plan. The Chesapeake Bay Program Principals' Staff Committee expects all states and the District to address climate change qualitatively but made it optional for jurisdictions to quantitatively address climate change through lower planning targets that require more rigorous pollution reduction. As described in Chapter 4, the District was the first jurisdiction to commit to quantitatively addressing climate change by identifying additional nitrogen and phosphorus reductions in its Phase III WIP. Ambitious climate resilience goals will not only make the District safer and more livable, but also will have important co-benefits for water quality.

8.1 IMPACTS OF CLIMATE CHANGE ON POLLUTION SOURCES AND CONTROLS

Climate change impacts such as increased rainfall, more intense storms, and warmer temperatures make it more difficult to achieve water quality goals. Increased stormwater runoff leads to more pollution reaching waterways and greater stream channel erosion. Further, climate change impacts may affect the operation, maintenance, and resiliency of wastewater treatment practices, including conventional wastewater treatment plant processes, land treatment such as spray irrigation, and biosolids management. Climate change on the local and regional scale will also impact collection systems and combined sewer systems, possibly triggering flooding, overflows and backups. Finally, a changing climate can decrease the effectiveness of stormwater management BMPs by causing more frequent inundation, retention of a lower percentage of rainfall events, and/or increased plant mortality in green infrastructure installations.

DOEE is taking steps to address these impacts through its water programs administered by the Natural Resources Administration (NRA). DOEE is exploring revisions to its floodplain regulations to increase the District's resilience. As part of its MS4 permit requirements, DOEE will assess its stormwater performance standards established by the District's stormwater management regulations by 2020. The assessment will consider future precipitation forecasts. As necessary, DOEE will update the District's stormwater regulations and/or guidebook to reflect this assessment. As discussed in Chapter 3, anticipating more extreme weather events associated with climate

change is one reason the Phase III WIP loads for Blue Plains Advanced Wastewater Treatment Facility are based on design capacity rather than current flows. DC Water and the Metropolitan Washington Council of Governments continue to assess Blue Plains' capacity to treat wastewater based on projected future conditions in the Service Area.

As a member of the Chesapeake Bay Program, the District is working through the partnership to better understand and address the impacts of climate change. The partnership will consider new information no later than 2021 on the performance of pollution control practices that are impacted by seasonal, inter-annual climate variability, and weather extremes. Along with other jurisdictions, the District will assess this information and adjust its Phase III WIP through the 2-year milestone process starting in 2022.

8.2 CLIMATE READY DC

DOEE's Urban Sustainability Administration is also leading multiple climate initiatives that affect watershed outcomes. The District released its climate preparedness plan, Climate Ready DC, in 2016. The plan outlines the changes the District is projected to experience due to climate change, including elevated temperatures, longer heat waves, increased rainfall, more flooding, rising tides, and greater storm surge risk. These projected changes will stress the District's built infrastructure, including roads, regional transit, energy, and water infrastructure. The plan also explores risks to people, community resources such as schools and housing, and natural resources. The Climate Ready DC plan identifies strategies aimed at increasing the climate preparedness of utilities, transportation systems, neighborhoods, communities, and buildings.

A number of the actions in Climate Ready DC speak directly to increasing the resilience of drinking water, wastewater, and stormwater systems. For example, the plan suggests updating design standards for water and drainage infrastructure and increasing both combined sewer and separate stormwater system capacity to accommodate more precipitation. The plan also includes goals to promote water efficiency in buildings, restore natural floodplains, and promote neighborhood scale flood management efforts. These actions will protect waterways from increased runoff and sewer overflows during more frequent and heavier rain events. In addition, the plan recommends flood-proofing critical water infrastructure to ensure that sensitive components, such as pumping stations, are not compromised.

8.3 WATTS BRANCH FLOOD RISK REDUCTION

Climate Ready DC identified five areas of the District that are especially vulnerable to climate-related risks. One of these priority areas is the Watts Branch tributary of the Anacostia River. Schools, medical services, and public housing developments within

the neighborhoods along Watts Branch are located in the floodplain. A relatively large proportion of low-income, elderly, and other residents who may be more sensitive to climate impacts also live in proximity to Watts Branch.

The Department of Energy and Environment received a grant in 2017 to pursue a year-long community engagement process in this area so that community members could influence climate planning decisions in their own communities. Each month in 2018, DOEE met with a group of 13 residents living around the Watt Branch to develop a set of community-driven recommendations. The recommendations include goals to integrate workforce development and youth engagement opportunities when pursuing energy and resilience projects such as stream restoration and green infrastructure.

Additionally, through the District of Columbia Silver Jackets program, the District is conducting a 2-year flood risk management study that incorporates climate change projections for the neighborhoods along Watts Branch. The study will help the District identify flood-risk reduction options that can protect people living in this corridor from devastating flooding. In addition to their work looking at the Watts Branch, the Silver Jackets are conducting similar analysis in downtown DC around the Federal Triangle neighborhood.

8.4 RESILIENT DC

In 2016, the District was selected from more than 1,000 cities around the world to become part of the 100 Resilient Cities (100RC) network. As part of the 100RC network, the District receives technical and financial support to devise a strategy to respond to long-term shocks and stressors specific to our region, such as climate change, population growth, and technological change.

While the strategy is still being written, the planning process has emphasized sustainability and water quality-related goals. Early on in the process, the DC Office of Resilience identified five areas for in-depth research. One of these areas was institutionalizing climate resilience by building upon existing climate leadership and further incorporating climate considerations into all public decision-making. This led to an ongoing project to better map and model interior flood risks so that the District can more effectively address urban flooding. It also supported a suggestion that climate risks should be incorporated into capital planning so that major infrastructure developments are designed to weather a changing risk landscape.

Another research task focused on honoring the Anacostia River to generate improved health outcomes, biodiversity, economic activity, connectivity, cultural amenities, and recreation opportunities for District residents. As described in Chapter 6, a recommendation of this effort was to create an integrated, comprehensive vision for

the Anacostia River corridor that integrates remediation, restoration, flood risk reduction, public access and recreational priorities and can be used to inform future decisions. Another recommendation was to explore opportunities to link BMP maintenance to green jobs opportunities. Further research on and resources for these tasks will help guide efforts to revitalize the Anacostia River waterfront, paying special attention to sustainable and nature-based solutions that support a cleaner river.

Chapter 9 Reference

Chapter 1

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APPENDIX A: CPAG Recommendations and Voting Results

Chesapeake Partner Advisory Group Recommendations & Voting Results

Unless otherwise noted, the issues below were identified at the first C-PAG roundtable and follow-up survey. Proposals are based on C-PAG feedback and/or DOEE internal discussions. Including these proposals does not represent a commitment to implement all of them, and DOEE may implement more than one proposal per issue. Votes reflect top priorities of C-PAG member, not including DOEE staff.

ISSUE 1: Identifying Partnership Opportunities

TOTAL VOTES: 21

Difficult to identify, develop, and support non-traditional and new partnerships to strengthen project ideas and increase community input.

Proposal A:

VOTES: 13

- Expand use of the list of property owners who are interested in green infrastructure which is currently available through the SRC program. Eg, DOEE could ask property owners who are not funded through other DOEE incentive programs if they want to opt-in to this list. Properties on the list would **not** be given preferential treatment nor would the list serve as a formal endorsement from DOEE.
- Create a public sign-up where organizations can self-elect to be included on a DOEE list of potential partnership opportunities. The list would be shared with individuals and organizations who are interested in partnering with an established organization, but don't know where to start. The list could be interactive with drop-down options. All organizations working within the District would be welcome to join. Organizations on the list would **not** be given preferential treatment nor would the list serve as a formal endorsement from DOEE.

Proposal B:

VOTES: 11

- Organize semi-annual meetings with stakeholders to provide the opportunity to collaborate, ask questions and learn from each other, as well as for DOEE to share upcoming opportunities and seek feedback, as appropriate.

Proposal C:

VOTES: 3

- Create an interactive map and/or list of all DOEE-funded projects that includes funding sources, grantee's name, and project description.

ISSUE 2: Identifying Funding Opportunities and Preparing Applications

TOTAL VOTES: 11

Difficult to learn about DOEE funding opportunities and limited time to put together a strong application that is reflective of DOEE priorities and includes all necessary documents and letters of support.

Proposal A:

VOTES: 11

- Create one platform where individuals and organizations can sign up to learn about DOEE opportunities including funding alerts, public meetings, volunteer events, jobs, resources for homeowners, etc. Participants would be able to select which categories they want to be notified about so the message could be catered. Could start with funding opportunities.
- Include funding opportunities in pre-existing DOEE newsletters including Field Guide and Sustainable DC.
- Broadly share the Watershed Resources and Programs information flyer, which includes who is eligible and when funding is typically available or applications are due.

Related Proposals: Issue 1, Proposal B: host semi-annual meetings that could include upcoming opportunities and Proposal C to create interactive map/list of DOEE-funded projects.

ISSUE 3: Supporting Local Champions

TOTAL VOTES: 30

Difficult to engage partners in DOEE programs throughout all 8 Wards. In some areas in particular, potential partners are more receptive to hearing from neighbors or peers than District government.

Proposal A:
VOTES: 13

- Support local champions and recipients of programs by providing tools to amplify their voices and advertise programs. For example, RiverSmart homeowners can now receive a sign for their property.
- Organize events to acknowledge and celebrate local champions.

Proposal B:
VOTES: 12

- Offer incentives or support (Eg. grant funding, training, rebates, etc.) to local champions to become neighborhood ambassadors who increase awareness of and participation in DOEE programs.

Proposal C:
VOTES: 5

- As appropriate and depending on the goals of the program, offer more points on grant applications, higher rebates, or other incentives for projects in targeted areas.

Proposal D: *Adding during the second C-PAG roundtable meeting.*

- Break down siloes among DOEE programs. Leverage exiting community and civic groups to disseminate information about all DOEE projects.

ISSUE 4: Community Outreach and Engagement Support
TOTAL VOTES: 21
Limited time to conduct meaningful outreach and engagement within the scope of the grant without going over budget. Time and resources necessary for meaningful engagement is often underestimated.

Proposal A:
VOTES: 21

- When applicable, clearly specify community outreach and engagement needs and outputs in RFA so grantee can budget accordingly.

Related Proposals: Issue 1, Proposal B: host stakeholder meetings that facilitate collaboration and Issue 3, Proposals A – C to support local champions.

ISSUE 5: Communicating Benefits and Co-Benefits

TOTAL VOTES: 12

Lack of resources and difficult to communicate the benefits and co-benefits of DOEE programs.

Proposal A:

VOTES: 12

- Use DOEE Marketing Contract to understand the co-benefit priorities for different target audiences and develop outreach materials accordingly. This could include the development of tools to assist Stormwater Retention Credit (SRC) generators in communicating the benefits of green infrastructure to property owners.

ISSUE 6: Regulated Properties' Knowledge of SRC Program

TOTAL VOTES: 25

Regulated properties may make decisions about how they meet the District's stormwater management requirements before they are aware of offsite compliance options.

Proposal A:

VOTES: 8

- Work to make developers aware of SRC program earlier in the planning process. This could also involve creation of outreach materials like brochures and decision checklists to help developers pick the stormwater management compliance path that is most cost-effective for their project. DOEE can use Marketing Contract to gather further information from developers, designers, zoning commission, Board of Zoning Adjustment, Department of Consumer and Regulatory Affairs, Deputy Mayor for Planning and Economic Development, and other stakeholders on timing and content.

Proposal B: *Added during the second C-PAG roundtable.*

VOTES: 17

- Actively encourage regulated entities to buy stormwater credits to promote a vibrant market, which the SRC program depends on.

ISSUE 7: Resources for SRC Generators

TOTAL VOTES: 12

SRC generators do not have consistent access to or knowledge of the necessary resources to effectively plan and design projects and recruit interested property owners.

Proposal A:

VOTES: 2

- Work to improve publicly-accessible GIS data and data viewers, such as the recent integration of existing BMPs into impervious surface viewer.
- Explore options for sharing geotechnical data and analyzing potential green infrastructure opportunities.

Proposal B:

VOTES: 10

- Clarify guidelines for obtaining permits to construct green infrastructure projects.

Related Proposals: Issue 5, Proposal A: develop marketing materials that can assist SRC generators in communicating with potential partners about the benefits of green infrastructure on their property.

ISSUE 8: Grants Management

TOTAL VOTES: 4

Clarify DOEE grant manager and grantee roles and responsibilities to improve communication and avoid highly problematic gaps in grant awards.

Proposal A:

VOTES: 4

- Clarify and discuss DOEE grant managers' responsibilities, grantees' responsibilities, and shared responsibilities together during kick-off meeting.

NOTE: DOEE is working on internal processes for grant management.

ISSUE 9: (Raised by DOEE) BMP Maintenance

TOTAL VOTES: 73

Unmaintained best management practices (BMPs) lose their pollution reduction effectiveness.

Proposal A:

VOTES: 7

- Develop and raise awareness of a self-inspection/self-reporting program for facility managers.

Proposal B:

VOTES: 9

- Further utilize Stormwater Database information to prioritize BMPs for inspection.

Proposal C:

VOTES: 9

- Explore opportunities to establish BMP maintenance contracts at District-owned or operated facilities.

Proposal D:

VOTES: 17

- Explore opportunities to link workforce development and green jobs to BMP maintenance.

Proposal E:

VOTES: 12

- Provide funding opportunities for innovative solutions to address BMP maintenance.

Proposal F:

VOTES: 8

- Raise awareness and expand use of BMP maintenance cost calculator.

Proposal G:

VOTES: 11

- Pilot or study innovative strategies to incentivize, fund, and or/support maintenance activities.

APPENDIX B: Nutrient Loads to River Segments By Source Sector & Agency

TABLE B-1 : DISTRICT-WIDE EDGE OF TIDE NITROGEN 2025 PLANNING GOALS BY SOURCE SECTOR AND AGENCY (POUNDS/YEAR)

	AGENCY	POTTF_DC	POTTF_MD	ANATF_DC	ANATF_MD	TOTAL
Point Source						
Wastewater	Nonfederal	2,179,786	32	2,686	0	2,182,504
CSOs	Nonfederal	2,645	-	555	296	3,496
Urban Runoff	Nonfederal	51,332	8,230	43,430	9,894	112,886
	Department of Agriculture*	2	-	166	-	168
	Department of Defense*	135	56	609	0	800
	General Services Administration*	314	5	1428	-	1,747
	National Park Service*	4,336	287	5,412	383	10,418
	Other Federal	0	-	2	8	10
	Smithsonian*	8	-	-	-	8
	Subtotal	56,127	8,578	51,047	10,285	126,038
Nonpoint Source						
Urban Runoff	Nonfederal	6,032	20	2,939	665	9,657
	Department of Agriculture*	0	-	805	-	805
	Department of Defense*	5,938	265	3,880	0	10,083
	General Services Administration*	80	0	122	-	202
	National Park Service*	5,076	13	5,701	55	10,845
	Other Federal	24	-	72	3	99
	Smithsonian*	72	-	-	-	72
	Subtotal	17,222	298	13,519	723	31,763
Natural and Nontidal Atmospheric Deposition	Nonfederal	662	56	213	138	1,069
	Department of Agriculture*	1	-	353	-	354
	Department of Defense*	565	273	150	0	988
	General Services Administration*	-27	-10	-17	-	-54
	National Park Service*	8,332	33	4,841	119	13,325
	Other Federal	2	-	20	0	22
	Smithsonian*	335	-	-	-	335
	Subtotal	9,870	352	5,560	257	16,039
Septic	Nonfederal	112	0	0	61	173
Reserve Developed Load						58,726
Total		2,317,094	17,491	116,798	21,516	2,418,738
Notes: * 2025 Phase III WIP values will be updated based on scenarios submitted by federal agencies to DOEE. Scenarios were due December 10, January 3, but scenarios have yet to be submitted.						

TABLE B-2: DISTRICT-WIDE EDGE OF TIDE PHOSPHORUS PLANNING GOALS BY SOURCE SECTOR AND AGENCY (POUNDS/YEAR)

	AGENCY	POTTF_DC	POTTF_MD	ANATF_DC	ANATF_MD	TOTAL
Point Source						
Wastewater	Nonfederal	106,975	7	275	0	107,257
CSOs	Nonfederal	531	0	111	100	743
Urban Runoff	Nonfederal	3,908	587	2,830	1,401	8,726
	Department of Agriculture*	0	0	15	-	15
	Department of Defense*	11	3	39	0	53
	General Services Administration*	21	1	97	-	119
	National Park Service*	364	25	482	76	947
	Other Federal	0	0	0	1	1
	Smithsonian*	1	0	-	-	1
	Subtotal	4,305	616	3,463	1,478	9,861
Nonpoint Source						
Urban Runoff	Nonfederal	446	-	181	84	711
	Department of Agriculture*	0	-	79	-	79
	Department of Defense*	514	21	273	0	808
	General Services Administration*	4	0	7	-	11
	National Park Service*	469	1	577	11	1,058
	Other Federal	2	-	4	1	7
	Smithsonian*	6	1	-	-	7
	Subtotal	1,442	24	1,121	96	2,682
Natural and Nontidal Atmospheric Deposition	Nonfederal	-1,295	2	-2,460	11	-3,742
	Department of Agriculture*	0	-	12	-	12
	Department of Defense*	198	10	9	0	218
	General Services Administration*	-27	-8	-19	-	-54
	National Park Service*	2,109	1	374	7	2,491
	Other Federal	0	-	1	0	1
	Smithsonian*	82	-	-	-	82
	Subtotal	1,068	6	-2,083	18	-993
Septic	Nonfederal	0	0	0	0	0
Reserve Developed Load						9,487
Total		114,321	652	2,887	31,692	129,038

Notes:
*** 2025 Phase III WIP values will be updated based on scenarios submitted by federal agencies to DOEE. Scenarios were due December 10, January 3, but scenarios have yet to be submitted.**

APPENDIX C: DOEE Watershed Protection Resources and Programs

Document included on subsequent pages.

DEPARTMENT OF ENERGY & ENVIRONMENT
WATERSHED PROTECTION RESOURCES AND PROGRAMS

GRANT PROGRAMS

Clean Water Construction (CWC) Program funds the design and construction of voluntary stormwater green infrastructure and habitat restorations that help to improve District water quality. Projects in the Municipal Separate Storm Sewer System (MS4) area receive priority. $40,000 - $1,800,000 per project is available.
Who can apply? Nonprofits Organizations, Government Agencies, Faith-based Organizations, Universities/ Educational Institutions, and Private Enterprises
When can they apply? March

Community Stormwater Solutions Grants funds community-oriented projects that improve water quality, raise awareness, and achieve behavior change about what citizens can do to restore our rivers, streams, and parks. Projects in the MS4 area receive priority. Up to $20,000 per project is available.
Who can apply? Nonprofits Organizations, Faith-based Organizations, Universities/ Educational Institutions, and Private Enterprises
When can they apply? November

Green Zone Environmental Program (GZEP) Watershed Protection Projects funds hands-on activities and curriculum that restore District water bodies and raise awareness about the impacts of stormwater runoff on the District's watersheds. The projects are carried out with DOEE's Green Zone Environmental Program (GZEP), which provides paid training and work experiences to approximately 350 teenagers and young adults ages 14-24. $15,000 per project is available.
Who can apply? Nonprofits Organizations, Faith-based Organizations, Universities/ Educational Institutions, and Private Enterprises
When can they apply? January

Innovative LID Grant funds low impact development or green infrastructure projects that retain and treat stormwater. Projects in the MS4 area receive priority. $100,000- $500,000 per year available in total. Multiple projects awarded.
Who can apply? Nonprofits Organizations, Individuals, Faith-based Organizations, Universities/ Educational Institutions, and Private Enterprises
When can they apply? Spring

RiverSmart Communities Demonstration funds 100% of the cost to install green infrastructure on eligible properties. Projects are selected through a competitive review process focused on environmental benefits of the project, plan for community engagement, and project cost effectiveness and feasibility. $20,000-$30,000 per project is available.
Who can apply? Nonprofits Organizations and Faith-based Organizations
When can they apply? Spring

RiverSmart Schools funds design, installation, professional development, and curriculum development of schoolyard greening projects. Up to $300,000 is available.
Who can apply? District of Columbia Public Schools, Charter Schools, and Private Schools
When can they apply? October

Stormwater Retention Credit (SRC) Aggregator Startup Grant funds SRC aggregators to design green infrastructure practices, typically across multiple sites, through technical and outreach work. Projects must occur in the MS4 area. $75,000 per organization is available.
Who can apply? Organizations who want to form an SRC-generating business
When can they apply? Anytime. For more information, visit: http://doee.dc.gov/src

Other Potential Opportunities: The Watershed Protection Division, Restoration Branch will accept suggestions from non-profit organizations for projects or programs that do not currently exist within DOEE. If deemed feasible and beneficial, DOEE may award grant funding to support the project if deemed feasible and supportive of agency priorities.
Contact: Steve Saari at 202-535-2961 or steve.saari@dc.gov

Department of Energy and Evironment
The Government of the District of Columbia
1200 First St NE, 5th Floor
Washington, DC 20001
(202) 535-2600

DEPARTMENT OF ENERGY & ENVIRONMENT
WE ARE WASHINGTON DC
GOVERNMENT OF THE DISTRICT OF COLUMBIA
MURIEL BOWSER, MAYOR

RESOURCES FOR PROPERTY OWNERS

Large Parcel Tree Planting funds 100% of design and implementation of large-scale tree plantings for properties throughout the District.
Who can apply? Nonprofits Organizations, Faith-based Organizations, and Private Enterprises
When can they apply? Anytime

RiverSmart Homes is a program that offers incentives to homeowners interested in reducing stormwater runoff from their properties. Homeowners receive a free stormwater audit, which determines their eligibility for subsidies to adopt one or more landscape enhancements including: rain barrels, shade trees, rain gardens, and BayScaping with a co-payment of $50-$100 for each enhancement.
Who can apply? District homeowners
When can they apply? Anytime. For more information visit: https://doee.dc.gov/node/9492
RiverSmart Permeable Service Program provides rebates for property owners who voluntarily remove impervious and compacted surfaces and replace them with permeable pavement and/or vegetation.$5-$10/sq. ft. rebate depending on if in MS4 area.
Who can apply? District homeowners
When can they apply? Anytime. For more information visit: https://doee.dc.gov/node/9492

RiverSmart Homes Rain Barrel Rebate Program provides rebates for property owners who purchase and install rain barrels or cisterns. Up to $1,000 per property is available.
Who can apply? District homeowners
When can they apply? Anytime. For more information visit: https://doee.dc.gov/node/9492

RiverSmart Homes Rain Garden Rebate Program provides rebates for property owners who install rain gardens. Up to $2,000 per property is available.
Who can apply? District homeowners
When can they apply? Anytime. For more information visit: https://doee.dc.gov/node/9492

RiverSmart Rooftops Rebate Program funds rebate for property owners who voluntarily install green roofs. $10-$15 / sq. ft. rebate depending on if in MS4 area.
Who can apply? District homeowners
When can they apply? Anytime. For more information visit: https://doee.dc.gov/node/9492

RiverSmart Trees Rebate Program funds rebate of $50 or $100 to individuals who purchase and plant trees on private residential or commercial property.
Who can apply? District homeowners
When can they apply? Anytime. For more information visit: https://doee.dc.gov/node/9492

ADDITIONAL PROGRAMS

Adopt-Your-District is a volunteer program that supports residents interested in adopting a block, park, or stream to keep their neighborhoods safe and clean for their community to enjoy.
Who can apply? District residents
When can they apply? Anytime. For more information visit: https://cleancity.dc.gov/adopt-your-district

GreenWrench Technical Assistance Program provides free pollution prevention guidance and training to District mechanics and auto body shops and includes onsite technical assistance, newsletter, workshops, and a certification program so customers can easily find shops that are working to support healthy watersheds.
Who can apply? Auto body and repair shops at businesses, universities, government facilities, and other locations, mobile repair businesses included.
When can they apply? Anytime. For more information visit: https://doee.dc.gov/service/greenwrench or by calling 202-645-4231.

Stormwater Retention Credit (SRC) Price Lock Program funds the purchase of SRCs from new, voluntary green infrastructure projects located in the MS4 at fixed prices. The program allows participants to sell SRCs to DOEE for the first 12 years of SRC certification if they do not negotiate a higher market price. $11,500,000 available in total.
Who can apply? Any SRC generator with a preliminary design for a qualifying project
When can they apply? Anytime. For more information visit: http://doee.dc.gov/src

Stormwater Retention Credit (SRC) Site Evaluation Program funds free technical assistance to evaluate green infrastructure opportunities on sites of at least 0.5 acres in the MS4.
Who can apply? Property owners
When can they apply? Anytime. For more information visit: http://doee.dc.gov/src

APPENDIX D: DOEE Environmental Education Programs

Document included on subsequent pages.

DEPARTMENT OF ENERGY & ENVIRONMENT
ENVIRONMENTAL EDUCATION PROGRAMS

Anacostia Environmental Youth Summit is a city-wide showcase in May that spotlights youth voice, demonstrates environmental literacy, and encourages stewardship for the Anacostia and Potomac Rivers and the Chesapeake Bay.
Learn more here: https://doee.dc.gov/service/anacostia-environmental-youth-summit
Who? Grades 4th - 8th and their teachers
Questions? Contact Patricia (Trinh) Doan; Patricia.Doan@dc.gov; 202- 535-1653

Anacostia River Explorers Program provides year-round free, guided motorboat tours for all ages along the Anacostia River. The tours focus on the history, wildlife, environmental threats, and solutions that help residents and visitors realize the river's full potential.
Learn more here: https://doee.dc.gov/service/anacostia-river-explorers
Who? Grades Pre-K - 12th.
Questions? Contact Matt Robinson; Mathew.Robinson@dc.gov; 202-442-3204

Aquatic Resources Education Center (AREC) Student Field Trips include a free field trip destination in Anacostia Park featuring close encounters with local aquatic animals and inquiry-based lessons aligned to District of Columbia Science Standards. AREC tours and lessons are also offered year-round in conjunction with the DOEE Anacostia River Explorers Program.
Learn more here: https://doee.dc.gov/arec
Who? Grades Pre-K - 12th
Questions? Contact Kathleen McNamee; doee.arec@dc.gov; 202-727-7400

AREC Educator Workshops are a suite of free professional development opportunities to assist educators with using hands on approaches to communicating environmental science and conducting field investigations and inquiry activities with students. Participants receive free standards aligned curriculum and activity guides and explore educational methodologies for teaching about water resources, aquatic ecology, and nature-based learning. Workshops are held in the fall and winter. Learn more here: https://doee.dc.gov/arec
Who? Instructors of Early Childhood - 12th grade students
Questions? Contact Rachel Gauza; doee.arec@dc.gov; 202-440-3951

AREC Family Programs are free year-round family-focused environmental education events exploring aquatic resources and angler education including the Family Discovery Days program series, annual Family & Youth Casting Call, and family fishing clinics. Learn more here: https://doee.dc.gov/arec
Who? Families with youth ages 2 - 15
Questions? Contact Teresa Rodriguez; doee.arec@dc.gov; 202-535-2276

Community Stormwater Solutions Grants provide start-up funding for innovative, community-oriented projects aimed at improving water quality in the District, reducing trash, and raising awareness about what citizens can do to restore our rivers, streams, and parks. Applications are typically released in November.
Learn more here: https://doee.dc.gov/service/community-stormwater-solutions-grants
Who? Educational Institutions, Nonprofits, Faith-based Organizations, and Private Enterprises
Questions? Contact Emily Rice; Emily.Rice@dc.gov; 202-535-2679

Electric Vehicle Grand Prix is an event in the spring where student teams apply engineering, science, and math principles and strategy to construct and race battery powered electric cars.
Learn more here: https://doee.dc.gov/page/electric-vehicle-grand-prix
Who? Grades 9th -12th
Questions? Contact Eric Campbell; Eric.Campbell@dc.gov; (202) 671-1744

Green Zone Environmental Program partners with the Marion Barry Summer Youth Employment Program to provide over 300 youth and young adults, with an opportunity to learn about energy and environmental issues, complete community-based environmental projects such as rain gardens and storm drain markers, and prepare for careers. Learn more here: https://doee.dc.gov/summer
Who? Grades 9th -12th or ages 14-24
Questions? Contact Johnnie Philson; Johnnie.Philson@dc.gov

Overnight Meaningful Watershed Education Experience is a free program that offers 5th graders attending attending District of Columbia Public Schools or District of Columbia Public Charter Schools with a three-day, two-night overnight field study on watersheds and sustainability during the school year. Learn more here: https://doee.dc.gov/service/overnight-meaningful-watershed-educational-experience
Who? Grade 5th
Questions? Contact Kara Pennino; Kara.Pennino@dc.gov; (202) 654-6131

RiverSmart Schools includes free installation of a schoolyard green space that improves water quality and serves as an outdoor learning tool for teachers to provide hands-on learning. Applications are due at the end of October. Learn more here: https://doee.dc.gov/service/riversmart-schools
Who? Grades K - 12th
Questions? Contact Patricia (Trinh) Doan; Patricia.Doan@dc.gov; (202) 535-1653

Trash Free Schools is a free program that educates and empowers students, faculty, and staff to reduce their school's waste footprint by providing education and resources, to aid in rethinking, reducing, reusing, and recycling. As part of the project, students and staff will have the resources needed to investigate an environmental issue while implementing a strong waste reduction and litter prevention strategy.
Who? Grades 1st - 5th
Questions? Contact Lillian Power; Lillian.Power@dc.gov; (202) 671-0080

Trash-Focused Meaningful Watershed Education Experiences are free multi-day programs that teach students about their local watersheds and the Chesapeake Bay through classroom lessons, field experiences, action projects, and reflection activities. Programs are offered throughout the school year. Learn more here: https://doee.dc.gov/page/meaningful-watershed-educational-experiences-mwees
Who? Grades 3rd -8th at Title 1 schools in Ward 7 and 8.
Questions? Contact Patricia (Trinh) Doan; Patricia.Doan@dc.gov; (202) 535-1653

River Corps provides a free field experience and classroom instruction, including job readiness training, certifications, and career development opportunities. Participants engage in monitoring DC streams, invasive species management, and inspection and maintenance of RiverSmart homes and other bio-retention and low-impact development sites.
Who? 18-24 year old District residents
Questions? Contact Josh Burch; Josh.Burch@dc.gov; (202) 734-9527

Watershed Stewards Academy is a free 8-week hands-on certification course offered twice a year in the fall and spring to District residents seeking to address local pollution problems in their local watersheds by becoming a certified Watershed Steward.
Learn more here: https://doee.dc.gov/service/national-capital-region-watershed-stewards-academy
Who? District residents
Questions? Contact Kara Pennino; Kara.Pennino@dc.gov; (202) 654-6131

APPENDIX E: Chesapeake Bay Program Quality Assurance Project Plan

Document included on subsequent pages.

DISTRICT OF COLUMBIA
CHESAPEAKE BAY PROGRAM
BEST MANAGEMENT PRACTICES
DATA SUBMITTAL

QUALITY ASSURANCE PROJECT PLAN FOR THE 2014 DATA SUBMITTAL

Urban Best Management Practices Database

December 2015

District of Columbia Chesapeake Bay Program Best Management Practices (BMP) Data Submittal for the 2014 Data Submittal

Quality Assurance Project Plan (QAPP)

Prepared by:

Martin Hurd
DDOE Watershed Protection Division

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Program and/or Project Description

As a part of its Chesapeake Bay Program commitments, the District of Columbia reports its nutrient and sediment load reduction activities and those of federal agencies within its borders to the Environmental Protection Agency, Chesapeake Bay Program (CBP) Office. The District Department of the Environment (DDOE) is the District government agency tasked with collecting this information and verifying that it is correct.

Stormwater best management practices (BMPs) data for the Bay Program are tracked on a continuous basis but reported annually. The data are cumulatively reported and incorporated into the CBP's Watershed Model to estimate progressive nutrient load reductions from implementation of these BMPs over time. Data are divided by into HUC 11 watersheds tracked in acres for erosion and sediment controls as well as for stormwater management practices. The District also tracks which of these practices are located in the combined sewer system those that in the separated sewer system.

On July 19, 2013, DDOE released the 2013 Rule on Stormwater Management and Soil Erosion and Sediment Control (2013 SW Rule), which amended Chapter 5 (water Quality) of Title 21 (Water and Sanitation) of the District of Columbia Municipal Regulations (DCMR). The new requirements are based upon standards for volume retention, representing a shift of focus from the 1998 regulations, which were more focused on water-quality treatment. Major land-disturbing activities must retain the volume from a 1.2-inch storm event, and major substantial improvement activities must retain the volume from a 0.8-inch storm event. By keeping stormwater on site, retention practices effectively provide both treatment and additional volume control, significantly improving protection for District waterbodies. This Stormwater Retention Volume (SWRv) can be managed through runoff prevention (e.g., conservation of pervious cover or reforestation), runoff reduction (e.g., infiltration or water reuse), and runoff treatment (e.g., plant/soil filter systems or permeable pavement). In 2013, DDOE also developed the Stormwater Management Guidebook, which provides technical guidance on complying with the 2013 Rule on Stormwater Management and Soil Erosion and Sediment Control (2013 SW Rule).

DDOE also launched a new Stormwater Database that will enhance transparency and effectiveness of the stormwater plan review process for regulated and voluntary projects. Applicants are now able to check the status of plans being reviewed by DDOE and submit supporting documentation online. The new database also streamlines participation in the Stormwater Retention Credit (SRC) and RiverSmart Rewards programs, which incentivize installation of runoff-reducing Green Infrastructure (GI). Applications for these programs can also be completed through the database using information already submitted in a stormwater plan. Further, the database will support participation in the SRC trading program by providing public access to the SRC registry, which lists SRCs that are currently for sale. Access to the online database and documentation is provided in the stormwater management database user manual.

The stormwater management data provided by DDOE consists of point source reductions from DC Water, urban BMPs that treat stormwater from new development or redevelopment, retrofits

of existing areas, and non-structural BMPs such as street sweeping, urban stream restoration work, and changes in land use through activities such as tree planting. The District's primary reductions come from upgrades to the Blue Plains waste water treatment plant, the Long Term Control Plan to reduce combined sewer overflows, and from permitted stormwater treatment facilities installed as a part of new development or redevelopment of areas larger than 5,000 square feet.

DC Water is tasked with overseeing and implementing upgrades to it Blue Plains waste water treatment plant and to it combined sewer system. These upgrades are closely tracked by DC Water and are regulated by the EPA as a part of its discharge permit and it's Long Term Control Plan. The permitting of stormwater treatment facilities is regulated and permitted by DDOE's Watershed Protection Division (WPD), Technical Services Branch and their installation and maintenance is overseen by WPD Inspection and Enforcement Branch. DDOE WPD keeps a database of all permitted stormwater facilities and of all inspection and enforcement efforts.

The WPD Planning and Restoration Branch and the Stormwater Management Division (SMD) are charged with compiling, geo-coding, and processing the stormwater BMPs installed and non-structural stormwater BMP activities. DDOE WPD and SMD collect stormwater BMP data from several sources, verifies its location through geo-coding, and organizes this information and reports it to the CBP.

The purpose of this Quality Assurance Project Plan is to document:

- How the District of Columbia collects information on the BMPs installed throughout the city for CBP reporting purposes;
- How the District maintains it database of BMPs installed;
- How the District performs quality assurance/quality control (QA/QC) to identify and replace inaccurate and missing data;
- How the District tracks the maintenance, verification and removal of installed BMPs; and
- How the District reports BMP data to the CBP.

Federal Grants Associated with the Program

a. EPA Section 319(h) Grant
b. EPA Chesapeake Bay Program Implementation Grant
c. EPA Chesapeake Bay Program Regulatory Assistance Program Grant

Program and/or Project Organization and Responsibilities

Task Organization

District Department of Transportation (DDOT) Trees QA/QC Responsibilities –
DDOT Trees is responsible for tracking the number and location of trees planted in the public right of way. DDOT Trees QA/QC's this data and then provides it to DDOE Planning and Restoration Branch for reporting to the CBP.

DC Water QA/QC Responsibilities –
DC Water is responsible for tracking the implementation of the District's Long Term Control Plan and upgrades to the Blue Plains Wastewater Treatment facility. DC Water also monitors discharges from the Combined Sewer System and Blue Plains, QA/QC's these point source loads, and reports the load data to DDOE Planning and Restoration Branch and to the Metropolitan Washington Council of Governments for reporting to the CBP.

District Department of Public Works (DPW) QA/QC Responsibilities –
DPW is responsible for tracking the lane miles swept, how often they are swept, the type of sweeper used, and the location of street sweeping activities as a part of the District's street sweeping efforts. DPW is also be responsible for tracking the actual amount of material collected through their street sweeping efforts. DPW QA/QC's this data and provides it DDOE's Stormwater Division who also QA/QC's it and reports it to the CBP.

Federal Agency QA/QC Responsibilities –
Federal agencies are responsible for tracking the BMPs installed on their lands. The federal agencies should submit their plans for BMPs to DDOE for stormwater plan review and approval as all other projects are required to do in the District. If federal agencies fail to follow stormwater regulations, the federal agencies can report their activities directly to SMD, however projects not properly permitted and inspected may not be accepted by DDOE nor reported to the Bay Program.

DDOE QA/QC Responsibilities –
DDOE has multiple roles and responsibilities for assuring QA/QC of data reported to CBP. These roles are broken out by DDOE branches below.

DDOE Stormwater Management Division – Collects the street sweeping data from DPW, QA/QC's it and reports to the Bay Program. They also coordinate the collection of data on BMPs installed on federal lands, QA/QCs it, and ensures it does not duplicate records of BMPs in the DDOE plan review database.

DDOE WPD Plan Review Branch – Tracks, reviews, and records all plans for new development or redevelopment in the District. The Plan Review Branch ensures that all permitted construction over 50 square feet has a plan to have appropriate erosion and sediment control devices in place and that all permitted construction over 5,000 square feet has plans to install stormwater suitable BMPs. The Plan Review Branch records all submitted construction plans in its plan review database, manages the database, and QA/QCs the recorded data.

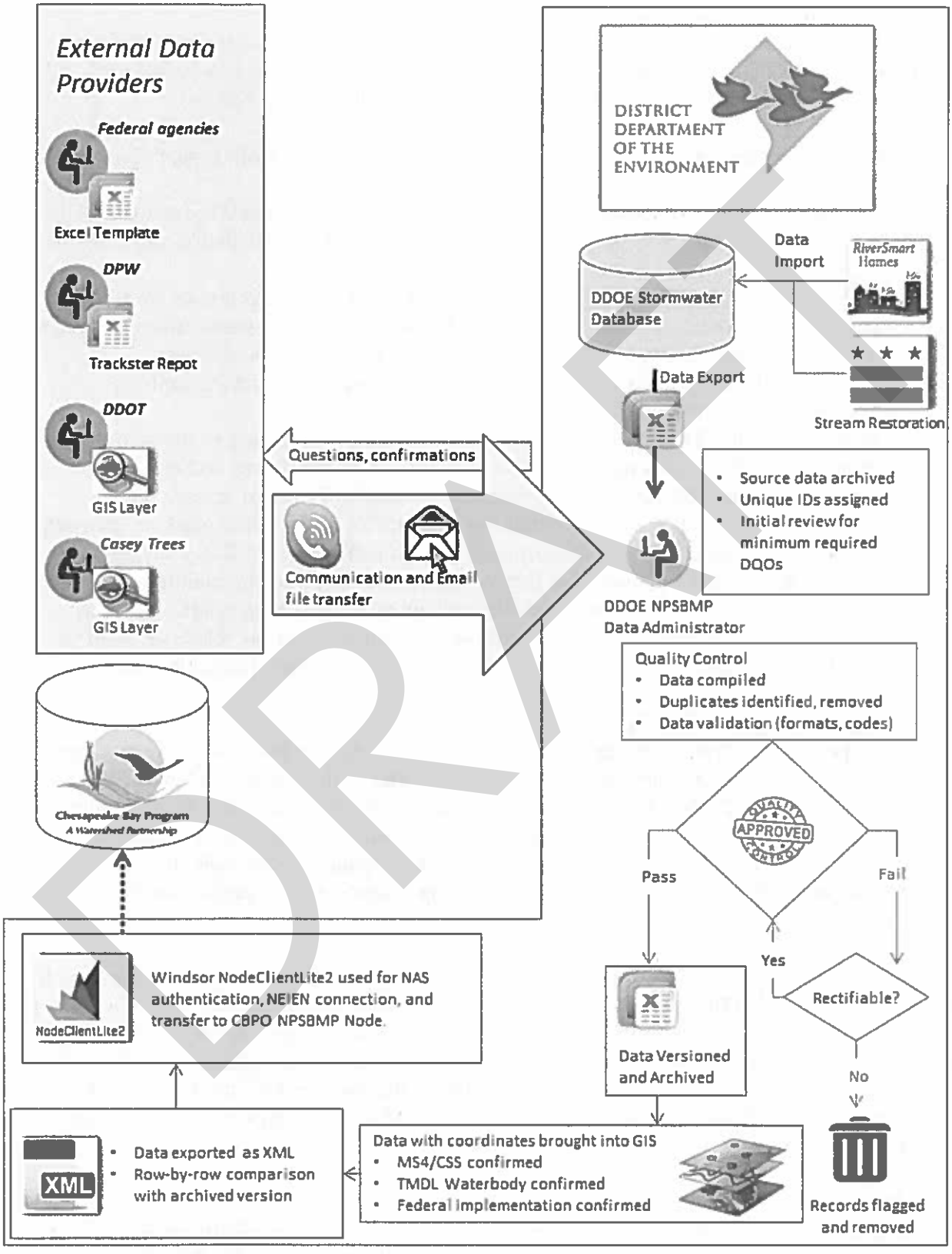
DDOE WPD Inspection and Enforcement Branch – Inspects sites under construction to make sure that they are in compliance with erosion and sediment control regulations, performs inspections during the installation of BMPs, the final inspection on constructed BMPs, and maintenance inspections of installed BMPs. This Branch inspects all installed BMPs every five years to ensure that they are in good working order. If the BMPs require maintenance the Branch requires the landowner to perform the required maintenance to bring it into compliance. The Inspection and Enforcement Branch maintains records of inspections and QA/QCs recorded data.

DDOE WPD Planning and Restoration Branch – Compiles, geo-codes, QA/QCs the information on stormwater BMPs installed and non-structural stormwater BMP activities from the various reporting agencies, divisions and branches. The Planning and Restoration Branch also maintains and manages a database of stormwater BMPs that it or its grantees install that are not tracked in any other database. DDOE WPD then works with SMD to report the BMP data to the CBP including the location of the BMP, the type of BMP installed, the volume capture of the BMP, and the number of acres treated by the BMP. DDOE WPD and SMD also QA/QC and report the inspection, maintenance and/or removal of any previously installed and reported BMP. .

General Reporting Data Flow

The reporting data flow for this QAPP is shown in Figure 1 below. For each reporting flow path shown in Figure 1 we will document how the data is collected, recorded, reported to the Bay Program.

Figure 1: Reporting Data Flow



BMP Verification and Validation

BMPs and associated data are verified and validated multiple times from the time they are reported to DDOE to the time they are reported to the Bay Program. Typical verification and validation protocols for stormwater BMPs and stream restoration are as follows:

1) Plans are submitted to DDOE including location information, BMP type, volume capture, and area treated;
2) WPD Plan reviewers check the information provided and, if needed request revisions;
3) Once the plan is accepted as final the project is permitted for installation and construction begins;
4) WPD Inspection and Enforcement inspectors oversee the construction of the BMP, verify that it has been done according to plan, and if changes are made ensure that as-built plans are submitted including new volume capture and area treated calculations;
5) Once the BMP is installed to the satisfaction of the inspector, final inspection is performed and a final approval is issued;
6) At this point the DDOE PRB and SMD perform a final verification of the record to ensure it is accurate, it is not duplicative of other agency reporting, and the data is properly formatted for the CBP and uploaded to the Bay Program servers;
7) Once a final approval is issued a countdown begins for the installed practice. Inspectors perform BMP inspections on all permitted District BMPs prior to five years post their final inspection date to ensure that they continue to be in place and maintained per their design. If they are found to not meet their design or be in need of maintenance the inspectors require that this work is performed to their satisfaction. Once the BMP is found to be in good working order the clock begins for the next inspection date.

Point Source Reductions (Blue Plains)

The majority of the District's load reductions reported to the Chesapeake Bay Program come from point source pollution reductions either from upgrades to the Combined Sewer System as a part of the Long Term Control Plan, or from modifications to the Blue Plains Waste Water Treatment Plant that reduce loads discharged from the facility. Reductions associated with upgrades to the sewer system and wastewater treatment are generally episodic in nature with long periods of no change followed by a dramatic drop in loads when a project has been completed.

As stated earlier, DC Water is legally responsible for the upgrades to both its combined sewer system and to the Blue Plains Wastewater Treatment facility through EPA permits. DC Water monitors discharges from the Combined Sewer System and Blue Plains, QA/QC's its point source loads, and reports them to the EPA as a part of their permit compliance activities. They also annually report this information to both the DDOE Planning and Restoration Branch and to the Metropolitan Washington Council of Governments (MWCOG). MWCOG is responsible for reporting this data directly to the Bay Program.

Tree Planting

The District currently tracks tree planting in the city from three sources: District Department of Transportation, Urban Forestry Administration (UFA) tree planting activity, DDOE grant funded

tree planting activities, and tree planting efforts reported by other non-funded groups such as the National Park Service and Casey Trees.

The reporting for each of these activities is on a "pull" basis where DDOE makes an information request to the major tree planters requesting the tree planting information. UFA provides DDOE with a list of planted trees, their species and the closest address to their planting location. DDOE grantees are required to report on their deliverables and DDOE WPD confirms that the grantee has indeed completed the reported work. Finally, DDOE asks other tree planting organizations to provide information on the number and location of trees they planted over the past fiscal year. These plantings are non-regulatory and the numbers are not confirmed. DDOE PRB collects this information from each of these sources, geocodes the data when possible, and QA/QCs it. PRB and SMD transmits the geocoded data to the Bay Program. Trees that were planted but not geocoded are assigned proportionally to each of the District's four 10 digit Hydrologic Unit Code watersheds and reported to the CBP.

Stream Restoration

The majority of stream restoration work is initiated by PRB. , Regardless of the originator of stream restoration work, these projects must be reviewed and approved by the Plan Review Branch of the Watershed Protection Division. Submitted plans and their treatment areas are entered into a database and are double-checked by the engineer performing the plan review. On an annual basis, the Planning and Restoration Branch queries the database for stream restoration projects installed, geocodes the locations of each project, determines the linear feet of stream restored, and reports it to the CBP. If the project utilizes enhanced stream restoration techniques, PRB ensures that it has proper documentation to meet this standard and reports the linear feet of these projects to the CBP.

Street Sweeping/Catch Basin Inserts

The District Department of Public Works (DPW) is the lead agency for sweeping District of Columbia roadways. DPW uses an ArcGIS database of polygons representing the boundaries of signed sweeping routes along with arterial and highway sweeping routes. DPW also uses Trakster®, a web-based software application designed specifically for public works operations. The FieldTrak module of Trakster® stores data on the dates, sweeping routes, mileage of road swept, and the type of sweeper used. This information is then passed on to the SMD who QA/QCs the data and reports it to the CBP.

Development/Redevelopment and all other BMPs

The second largest proportion of load reduction acreage reported to the Bay Program after point source load reductions comes from the redevelopment of the District. The vast majority of the District was developed before the advent of stormwater BMPs so new development in the District invariably reduces stormwater and pollutant loads to our local waterways.

New development and redevelopment projects, including ones on federal lands, must apply for permits through the District Department of Consumer and Regulatory Affairs (DCRA). Construction projects that disturb 50 square feet are automatically directed to DDOE Plan Review Branch for erosion and sediment control plan review. Likewise, construction that disturbs over 5,000 square feet must meet District stormwater regulations and their plans are sent

to the Plan Review Branch for stormwater plan review. All of these projects are logged into a tracking database that tracks the geographic coordinates the project location, the type of BMPs installed, the stormwater retention volume, and their contributing area. The data in the database is maintained and verified by the engineers of the Plan Review Branch. The PRB and SMD query this database on an annual basis, QA/QCs the data, and reports it to the CBP.

Additionally DDOE oversees several incentive programs aimed at encouraging stormwater retrofits. These programs include RiverSmart Homes, RiverSmart Communities, RiverSmart Rooftops, and RiverSmart Rewards. The BMPs installed through these programs often do not meet the size threshold to require stormwater review so they are not captured in the plan review database. Instead DDOE has developed separate databases to track these installs. With each of these programs DDOE staff visit the property to verify that the installs did indeed take place and they perform follow up visits on a subset of the installations on an annual basis to ensure that BMPs are still present and are being properly maintained. The geocoded location of each BMP, the area treated, and the volume of stormwater retained are reported annually to the Bay Program by PRB and SMD.

Below is the list of District agencies and partners that collect data utilized by the Planning and Restoration Branch for reporting to the CBP and information on the type of database maintained by the agency.

Table 1: Reporting Agencies and the Type of Databases they Utilize

Type	Agency/ Organization	Type of BMP	Contact Person	Database
Local	WMCOG (DC Water)	Point Source - Blue Plains	tspano@mwcog.org	Custom Excel Report
Local	DDOT UFA	Urban Tree Planting	earl.eutsler@dc.gov	ArGIS Layer
Local	Casey Trees	Urban Tree Planting	JSanders@caseytrees.org	ArGIS Layer
Local	DDOE Planning & Restoration Branch	Urban Tree Planting	lauren.linville@dc.gov	Custom Excel Report
Local	DPW	Street Sweeping	eetienne@dpwsolutions.com	Trakster
Local	DDOE Plan Review Branch	New Development & Redevelopment	matthew.espie@dc.gov	QuickBase
Local	DDOE Plan Review Branch	Stream Restoration	josh.burch@dc.gov	Custom Excel Report
Federal	AOC	New Development & Redevelopment	dhelmann@aoc.gov	NEIEN Excel Template
Federal	AFRH	New Development & Redevelopment	David.Watkins@afrh.gov	NEIEN Excel Template
Federal	USACE	New Development & Redevelopment	Heather.R.Cisar@usace.army.mil	NEIEN Excel Template
Federal	DOD	New Development & Redevelopment	jennifer.l.steele@navy.mil	NEIEN Excel Template
Federal	DOD	New Development & Redevelopment	Shabir.A.Choudhary@usace.army.mil	NEIEN Excel Template
Federal	DOD	New Development & Redevelopment	Lia.Gaizick@us.army.mil	NEIEN Excel Template

Type	Agency/ Organization	Type of BMP	Contact Person	Database
Federal	DOD	New Development & Redevelopment	Jagdish.P.Tarpara@usace.army.mil	NEIEN Excel Template
Federal	FRA (Fed Railroad Admin)	New Development & Redevelopment	Sydney.schnier@dot.gov;	NEIEN Excel Template
Federal	FRA (Fed Railroad Admin)	New Development & Redevelopment	david.valenstein@dot.gov	NEIEN Excel Template
Federal	GSA	New Development & Redevelopment	nia.francis@gsa.gov	NEIEN Excel Template
Federal	GSA	New Development & Redevelopment	phyllis.carr@gsa.gov	NEIEN Excel Template
Federal	GSA	New Development & Redevelopment	robin.snyder@gsa.gov	NEIEN Excel Template
Federal	NPS	New Development & Redevelopment	Tammy_Stidham@nps.gov	NEIEN Excel Template
Federal	NPS	New Development & Redevelopment	Kristen_Hamilton@nps.gov	NEIEN Excel Template
Federal	NPS	New Development & Redevelopment	Nick_Bartolomeo@nps.gov	NEIEN Excel Template
Federal	NPS	New Development & Redevelopment	marian_norris@nps.gov	NEIEN Excel Template
Federal	Smithsonian	New Development & Redevelopment	SpoffordM@si.edu	NEIEN Excel Template
Federal	Smithsonian	New Development & Redevelopment	trowbridgea@si.edu	NEIEN Excel Template
Federal	USDA	New Development & Redevelopment	Cary.coppock@ars.usda.gov	NEIEN Excel Template
Federal	USDA	New Development & Redevelopment	Ramon.Jordan@ars.usda.gov	NEIEN Excel Template
Federal	USDA	New Development & Redevelopment	donald.williams@ars.usda.gov	NEIEN Excel Template
Federal	USDA	New Development & Redevelopment	Dana.Jackson@ARS.USDA.GOV	NEIEN Excel Template

Quality Assurance Objectives

The stormwater management data collected by PRB and SMD from other agencies is not provided on a mandatory basis, but instead are provided through inter-agency cooperation. DDOE's Planning and Restoration Branch objectives for reporting to the Bay Program are:

- To receive data on all BMPs listed under NPDES Permits (ongoing)
- To receive data on all BMPs being installed and inspected (ongoing)
- To receive data on all federal BMPs (ongoing)
- To accurately record location data for all BMPs in the database (ongoing)
- To update the database to meet new District stormwater regulations which require a stormwater retention standard (complete)
- To receive data on all BMPs installed on a voluntary basis (non-permitted activities such as tree planting) (ongoing)

- To verify BMPs installed on a voluntary basis (ongoing)
- To provide the BMP data in the format necessary for the CBP Model (ongoing)
- To provide the CBP with stormwater volume capture data (stormwater performance standard information) for each newly installed BMP (ongoing)
- To provide the data through the National Environmental Information Exchange Network (NEIEN) (ongoing)
- To perform a comprehensive, one-time, verification effort of the District's stormwater BMP inventory (ongoing: estimated completion date: May 2016)
- To post the BMP data and their associated load reduction estimates on the internet for the public (May 2015)

Data Processing Procedures, System Audits and Quality Assurance Corrective Action Plans

Upon receiving BMP data, the PRB and SMD staff edit the data. This includes the following steps:

- Site descriptions and addresses are standardized so that they can be properly geo-coded. This facilitates sorting and helps in the recognition of replicates.
- Site locations without addresses are geo-referenced manually to ensure that as many projects are geo-referenced as is possible.
- The data are imported to Arc GIS, and intersected with the district's TMDL Water body delineations, the boundary between the combined and separate sewer system (CSS and MS4), and the CBP Federal Lands layers.
- The compiled data is verified to include geospatial information, BMP type, stormwater volume captured and area treated by each BMP.
- The data is converted to a NEIEN-NPSBMP compliant XML file, and submitted to the CBP.
- DDOE works with CBPO staff to review any processing errors to resolve issues. This can be accomplished by contacting the data source and reconciling issues in the source data and simultaneously updating XML documents.
- All supporting data is compiled and stored in Access and Excel databases as well as in Outlook email archives. This data is backed up weekly by DDOE information technology staff.

Table 2: BMP Structures Currently Reported to the Bay Program

Structure Name	Structure Function	Reporting Units
Bio-retention	Landscape designed such that stormwater runoff collects in shallow depressions before filtering through fabricated planting soil media	Acres treated/volume captured
Cisterns/Rain Barrels	Rain barrels and cisterns capture and store stormwater runoff from rooftops and other impervious catchment areas, providing water for non-potable uses such as landscape irrigation.	Acres treated/volume captured
Detention Structure (Dry Pond)	Designed to store runoff without creating a permanent pool	Acres treated/volume captured
Extended Detention Structure (Two types):	Designed to temporarily detain a portion of runoff for 24 hours after a storm using a fixed orifice to regulate outflow at a specific rate, allowing solids & associated time to settle out	Acres treated/volume captured

Structure Name	Structure Function	Reporting Units
1) Extended Detention Structure, Dry 2) Extended Detention Structure, Wet	Designed for the temporary storage of runoff associated with at least a 24 hour 1-year storm without creating a permanent pool of water. Designed for the storage of runoff associated with at least a 24 hour 1-year storm. The detained water drains partially & the remaining portion creates a permanent pool .	
Bioswale	Open vegetated channel used to convey runoff and provide treatment by filtering pollutants and sediment.	Acres treated/volume captured
Green Roof	Green roofs absorb, store, and later evapotranspire initial precipitation, thereby acting as a stormwater management system and reducing overall peak flow discharge to a storm sewer system.	Acres treated/volume captured
Hydrodynamic Structure aka: 1) Oil grit separator 2) Bay Saver© 3) Stormceptor©	An engineered structure used to separate sediments and oils from stormwater runoff using gravitational separation and/or hydraulic flow.	Acres treated/volume captured
Infiltration Basin	Designed to allow stormwater to infiltrate into permeable soils. It differs from a retention structure in that it may include a back-up underdrain pipe to ensure eventual removal of standing water.	Acres treated/volume captured
Disconnection of Rooftop Runoff	Impervious area reduction	Acres treated/volume captured
Infiltration Trench (Three types): 1) Complete Exfiltration 2) Partial Exfiltration 3) Water Quality Exfiltration	An excavated trench that has been backfilled with exposed or unexposed stones to form an underground reservoir (Also see Dry Well) Runoff can only exit the trench by exfiltrating through the stone reservoir into the underlying infiltration system. Runoff exits the trench by exfiltrating a) through the stone reservoir into the underlying soil, and b via a perforated underdrain at the bottom of the trench that diverts runoff to a central outlet Storage volume is set to receive only the first ½" of runoff (first flush) from an impervious area of the watershed	Acres treated/volume captured
Porous Pavement	A porous asphalt surface designed to have bearing strength similar to conventional asphalt but provides a rapid conduit for runoff to reach a subsurface stone reservoir	Acres treated/volume captured
Sand Filter	A bed of sand to which the first flush of runoff is diverted. Water leaving the filter is collected in underground pipes & returned to a waterway. A layer of peat, limestone, and/topsoil may be added to improve removal efficiency	Acres treated/volume captured
Stream Restoration	Stream restoration in urban areas is used to restore the urban stream ecosystem by restoring the natural hydrology and landscape of a stream, help improve habitat and water quality conditions in degraded streams.	Linear feet restored/linear feet restored – enhanced treatment
Wetlands	A structure with a permanent shallow pool planted with wetland vegetation often designed to provide extended detention	Acres treated
Vegetated Buffer	A vegetated protective zone of variable width located along both sides of a waterway	Acres treated

Table 3: Non-Structural BMPs Currently Reported to the Bay Program

Structure Name	Practice Function	Reporting Units
Street Sweeping	Street sweeping on a regular basis reduces nitrogen, phosphorus, and sediment whereas less regular street sweeping reduces only sediment.	Acres swept
Urban Nutrient Management	An urban nutrient management plan is a written, site-specific plan which addresses how the major plant nutrients (nitrogen, phosphorus and potassium) are to be annually managed for expected turf and landscape plants and for the protection of water quality.	Acres managed
Tree Planting	Urban tree planting is planting trees on urban pervious areas.	Number of trees
Erosion & Sediment Control	Erosion & Sediment control BMPs help prevent destruction of property and natural resources caused by soil erosion, sedimentation and nonagricultural runoff from land-disturbing activities.	Acres treated

For additional information on BMPs, please see the attachment titled "*DDOE QAPP Attachment A (NEIEN Appendix)*.xlsx."

Identification of Customers and Stakeholders

- Customers: U.S. Environmental Protection Agency
- Stakeholders: District of Columbia government agencies, DC Water, federal agencies, and the general public.

Procedures for Emergency Situations

The data submitted to the CBP and all supporting data is compiled and stored in QuickBase, Access, and Excel databases, DC Geographic Information System open data, as well as in Outlook email archives. This data is backed up weekly by District government information technology staff. The District government has contingency plans in case of an information technology disaster. DDOE IT Branch maintains this plan.

Reporting Requirements

The DDOE Planning and Restoration Branch reports on its CBP funded grant activities on a semi-annual basis and annually reports load reduction data for inclusion in the Bay Program model.

APPENDIX F-1: US Department of Agriculture Submission

No narrative was provided by USDA before the draft deadline. The final WIP submission will include information from USDA on their WIP requirements.

APPENDIX F-2: US Department of Defense Submission

Federal Facility Descriptions and Source Details

Facility Name

The following Department of Defense (DoD) installations are located within the jurisdictional boundaries of Washington D.C. (i.e. the District).

- Army Reserve National Guard (DC)
- Joint Base Myer-McNair (Fort McNair)
- Joint Base Anacostia – Bolling
- Marine Barracks Washington
- Naval Research Laboratory (HQ)
- Naval Support Activity Washington - Naval Observatory
- Naval Support Activity Washington - Washington Navy Yard
- US Soldiers' and Airmen's Home National Cemetery

Property Boundaries

GIS property boundary information for each of the installations can be found in the Chesapeake Assessment and Scenario Tool (CAST) located at the following link under the Spatial Data heading: http://cast.chesapeakebay.net/Documentation/BMPsModelsGeography.

Land Cover

The land cover on DoD installations within the Chesapeake Bay watershed is comprised of developed and natural acres. Table F-2.1 summarizes the acres of various load source groups extracted from CAST for DoD lands. Although CAST does not include the acres of active construction sites on DoD installations, these activities are part of the land cover condition. Once the construction activities are completed, both the developed and natural load source groups will be updated based on the land use changes. As of December 2018, there were nine active construction permits on DoD installations. There are no wastewater treatment plants owned or operated by DoD installations within the District.

Area

In total, DoD installations cover 1,391.8 acres within Washington D.C. See Table F-2.2 for a breakdown by Installation.

TABLE F-2.2: ACREAGE OF DEPARTMENT OF DEFENSE INSTALLATIONS WITHIN THE DISTRICT

	Acreage of DoD Installations		
Installation	Total Area	Impervious Area	Pervious Area
Army Reserve National Guard (DC)	9.8	8.6	1.2
Joint Base Myer-McNair (Fort McNair)	108.0	60.0	48.0
Joint Base Anacostia - Bolling	966.0	373.0	593.0
Marine Barracks Washington	12.4	2.0	10.4
Naval Research Laboratory (HQ)	131.2	94.0	37.2
NSA Washington - Naval Observatory	72.1	15.0	57.1
NSA Washington - Washington Navy Yard	76.3	62.1	14.2
US Soldiers' and Airmen's Home National Cemetery	16.0	1.5	14.5
Total	1,391.8	616.2	775.6

Land Use Types

DoD installations are composed of military, industrial, administrative, recreational, residential and open space land uses.

Nature of Activities

DoD installations in Washington D.C. are engaged in a variety of activities including military training, weapon testing, ceremonial activities, research and development, environmental compliance and natural resources protection, enhancement, and restoration.

Description and Estimation of Current Releases of Nitrogen, Phosphorus and Sediment from those Federal Lands or Facilities (Point and Non-Point Sources) and an Estimate of Anticipated Growth Through 2025

Each year, the DoD collects stormwater Best Management Practice (BMP) records from installations. Those records are then consolidated and reported to all of the Chesapeake Bay Jurisdictions, including the District. From there, the

records are entered into a jurisdiction record and assigned state unique ID numbers. Jurisdictions then report their entire progress from all partners, which is then compiled in the National Environmental Information Exchange Network (NEIEN). After passing through NEIEN, the stormwater BMP data is uploaded into CAST with the state unique ID. The state unique ID number allows DoD to track crediting through the various stages of reporting. Stormwater BMP crediting is an important step in understanding current releases of total nitrogen (TN), total phosphorus (TP), and total suspended solids/sediment (TSS) because it allows DoD to determine if the Partnership's annual progress scenario properly characterizes our implementation and nutrient and sediment load reductions.

Using preliminary data from an initial 2018 Partnership Scenario, the BMP crediting analysis indicated that 0% of the implemented BMPs reported to the District were credited to DoD. Therefore, DoD implementation is significantly under-represented in the initial versions of the Phase 6 Model for 2018 Progress. DOEE is working with the Chesapeake Bay Program to address this. In the interim, DoD developed an alternate 2018 Progress Scenario that characterizes our current TN, TP and TSS loads based on installation BMP implementation.

DoD also developed two additional scenarios to assist in understanding the change in TN, TP and TSS loads for the developed and natural load source groups only; there are no regulated wastewater sources applicable for DoD in the District.

The first scenario, which DoD refers to as the 2010 DoD Baseline, included BMPs implemented between July 1, 1984 and June 30, 2009 at the State-Chesapeake Bay Watershed only area (State CBWS-only) scale. This scenario helps to determine the loads at the end of the 2009 Progress year. The second scenario, called the 2018 DoD Progress Scenario, included all BMPs implemented between July 1, 1984 and June 30, 2017 at the State CBWS-only scale. This scenario quantifies DoD TN, TP, and TSS loads at the end of the 2018 Progress year. Tables F-2.3 through F-2.55 provide the DoD DC-CBWS only TN, TP, and TSS loads at the Edge of Stream (EOS) and Edge of Tide (EOT) in pounds per year and the 2010 Baseline scenario.

TABLE F-2.3: DEPARTMENT OF DEFENSE TN LOADS (IN LBS/YEAR)

Jurisdiction	2010 Baseline (EOS)	2018 DoD Progress (EOS)	2010 Baseline (EOT)	2018 DoD Progress (EOT)
Washington, D.C.	12,609	12,709	12,061	12,140

TABLE F-2.4: DEPARTMENT OF DEFENSE TP LOADS (IN LBS/YEAR)

Jurisdiction	2010 Baseline (EOS)	2018 DoD Progress (EOS)	2010 Baseline (EOT)	2018 DoD Progress (EOT)
Washington, D.C.	1,042	1,029	1,122	1,108

TABLE F-2.5: DEPARTMENT OF DEFENSE TSS LOADS (IN LBS/YEAR)

Jurisdiction	2010 Baseline (EOS)	2018 DoD Progress (EOS)	2010 Baseline (EOT)	2018 DoD Progress (EOT)
Washington, D.C.	1,929,785	1,939,068	2,069,378	2,071,375

Developing the 2010 DoD Baseline and 2018 Progress TN, TP, and TSS loads allowed DoD to determine the changes in TN, TP, and TSS loads (i.e. reductions) at the EOS and EOT in pounds per year between 2010 and 2018 on DoD installations in the District (Table F-2.6). Between 2010 and 2018, loads increased for both TN and TSS, while there was a reduction in loads for TP.

TABLE F-2.6: DOD CHANGE IN LOAD (IN LBS/YEAR EOS AND EOT) BETWEEN 2010 AND 2018

Jurisdiction: Washington D.C.	TN	TP	TSS
EOS	↑ (100)	↓12	↑ (9,283)
EOT	↑ (79)	↓14	↑ (1,997)

Verified Records of the Existing BMPs that have been Implemented and Maintained through 2017

Installations are responsible for ensuring stormwater best management practices are inspected and maintained according to design standards and permit requirements. In the District, installations inspect BMPs at least every three years. Maintenance requirements differ based on the type of BMP, but is performed based on available funding or when inspections note BMP failure. In-ground practices are maintained annually via contract. It is important to note that the DCMR (2013 Stormwater Rule) cites maintenance requirements for BMPs. The guidebook associated with the rule states that a BMP's preventative maintenance will be ensured through inspection of all BMPs by DOEE.

Each year, the DoD collects BMP records from installations. Those records are then consolidated and reported to the jurisdiction by the DoD Chesapeake Bay Program (DoD CBP).

TABLE F-2.6: DOD ESTIMATE OF ANTICIPATED GROWTH THROUGH 2025 (ACRES) IN THE DISTRICT

Installation	2018 New Development	2018 Redevelopment	New Development Through 2025	Redevelopment Through 2025
Army Reserve National Guard (DC)	0.0	0.0	0.0	0.0
Joint Base Meyer-McNair (Fort McNair)	0.0	0.0	0.0	0.0
Joint Base Anacostia - Bolling	0.0	0.0	0.0	0.0
Marine Barracks Washington	0.0	0.0	0.0	0.0
Naval Research Laboratory (HQ)	0.0	5.0	0.0	3.0
NSA Washington - Naval Observatory	0.0	0.0	0.0	0.0
NSA Washington - Washington Navy Yard	0.0	0.0	0.0	0.0
US Soldiers' and Airmen's Home National Cemetery	0.0	0.0	0.0	0.3
Total	0.0	5.0	0.0	3.3

As part of DoD's overall reporting framework, which strives to improve the data quality reported by installations, DoD integrated verification into their FY2018 Annual BMP datacall. DoD flagged specific BMPs within the historical record on (1) their inspection and maintenance status and (2) if a BMP was not installed or had not been inspected in the past five years. Installations were expected to update BMP information with inspection dates, inspection status, and maintenance performed

In 2019, DoD will be developing a BMP crediting report that highlights those BMPs that lost credit due to missing inspection and/or maintenance information. The report will be used to communicate with the installations and leadership the long term consequences that translates into annual nutrient and sediment reductions that DoD cannot get credit for as a result of not providing the required maintenance information or not performing the appropriate maintenance. DoD's intent is to ensure long term credit in the model and acknowledges the importance of proper BMP operations and maintenance. Throughout 2019, DoD will be evaluating the best methods to ensure long term funding of BMP maintenance.

Strategies to Meet and Maintain Planning Targets

Description of Existing Programs, Policies, and Strategies (with examples) Used to Drive BMP Implementation

There are several existing policies and programs that, since their promulgation, have provided the necessary drivers for DoD to fund projects and ultimately drive stormwater BMP implementation. The following provides those existing polices internal and external to DoD.

Compliance with the Clean Water Act (CWA): DoD installations within the District do not hold their own MS4 Permits. Installations are located within the combined sewer system (CSS) that is covered by the Blue Plains permit, located within the MS4 drainage area and covered by the District's MS4 permit, or are located outside of the CSS and MS4 areas and drain directly to District waterways, or a combination of the above.

Installations within the MS4 Boundary: As EPA administers the MS4 permit to the District, all tenants within DC proper pay stormwater fees based on the square footage of their impervious area (similar to any other municipality that collects stormwater fees from citizens, businesses, etc.). The payment of stormwater fees directly to the District is in accordance with Section 313(c) of the CWA. That section allows Federal entities to pay "reasonable service charges" for stormwater discharge or runoff from Federal property or a Federal facility. The fees are used to pay or reimburse the costs associated with any stormwater management program including the full range of programmatic and structural costs attributable to collecting stormwater, reducing pollutants in stormwater, and reducing the volume and rate of stormwater discharge. A portion of the revenue collected by the District's stormwater fee is used to implement BMPs, therefore there is an equivalent nutrient and sediment reduction that results from the DoD's contribution. DoD fully supports partnering efforts to evaluate BMP opportunities funded by stormwater fee payments on our installations.

Installations within the CSS Boundary: Installations located entirely within the combined sewer system (CSS) boundary are included in the ongoing "Clean Rivers Project" initiated by DC Water to reduce combined sewer overflows into the District's waterways—the Anacostia and Potomac Rivers and Rock Creek. These installations pay fees directly to DC Water to implement the long term strategy to curtail combined sewer overflows and meet the requirements of the consent decree. The payment of these fees is in accordance with Section 313(c) of the CWA.

Compliance with the District's 2013 Stormwater Management Rule - Stormwater Management regulations governing development and re-development requirements: The regulations require stormwater retention for new development and redevelopment projects (1.2 inches of retention for major land disturbing activities and 0.8 inches for substantial improvements). DoD expects that additional nutrient and sediment reductions will largely be met through redevelopment projects. Electronic submittal of plans for review and approval via the Stormwater Database is required. Stormwater management practices will continue to be reported annually as part of the DoD Chesapeake Bay Annual Progress data call once constructed/installed.

2014 Chesapeake Bay Watershed Agreement: DoD was one of the first federal agencies to become formally involved in the Chesapeake Bay restoration effort in 1984, and in 1990 we further strengthened our participation and role by linking DoD environmental initiatives to the EPA's Chesapeake Bay Program. The latest Chesapeake Bay Watershed Agreement, signed in 2014, identifies specific Goals and Outcomes for the restoration of the Chesapeake Bay. As an engaged partner towards clean water, DoD committed to the 2017/2025 WIP Outcome as a participating agency. In addition, the DoD monitors, assesses, and reports on installation efforts that enhance abundant life, conserve lands, and engage communities.

Local Area Planning Goals/Federal Agency Planning Goals: By definition, local planning goals "are not finer scale wasteload and load allocations in the Bay TMDL, but when added together are expected to equal the relevant state-basin TMDL allocation caps." [1] DoD received TN and TP local area planning goals for all installations located in the District. Because the DoD planning, programming, budgeting, and execution (PPBE) process can be long and cumbersome, early indications of future requirements can help secure future funding. Identification of local planning goals that are applied equitably across all entities in the watershed assists DoD, other federal agencies, local governments, and businesses in planning for actual, future requirements. Having local planning goals identified is a good first step in the PPBE cycle since DoD requires actual requirements to assure funding to meet our obligations. Using the local area planning goals process and DoD's stormwater fee payment meets DoD's portion of load reductions and therefore supports the District in meeting their Phase III WIP Planning Target. It is important to understand that in terms of regulatory compliance, DoD must ultimately be treated in the same manner (i.e. load calculations and pollutant target reductions) and to the same extent (i.e.

[1] Chesapeake Bay Program, 2015, Protocol for Setting Targets, Planning BMPs and Reporting Progress for Federal Facilities and Lands

implementation schedule) as any other entity. Therefore, DoD continues to follow a strategic approach that emphasizes compliance with CWA and other permit requirements along with reduction of nutrient and sediment from non-permitted sources as funds are made available.

2009 Executive Order (EO) 13508 / 2010 EO 13508 Strategy: In accordance with EO 13508, the federal government should lead the effort to restore and protect the Chesapeake Bay. DoD continues to demonstrate our commitment to this effort in accordance with the EO and accompanying strategy. Since their release, the DoD has conducted installation-wide BMP inventories or conducted surveys or BMP Opportunity Assessments to determine potential locations for additional stormwater retrofits on developed land that have little to no stormwater management. These assessments identify ways to strengthen and manage stormwater including structural and non-structural BMPs, erosion control, and infrastructure maintenance and repair opportunities.

Unified Facilities Criteria (UFC) 3-210-10: The UFC provides technical criteria, technical requirements, and references for the planning, design and construction, renovation, repair, maintenance and operation, and equipment installation in new and existing facilities in support of DoD policy goals, including compliance with stormwater requirements under Section 438 of the Energy Independence and Security Act (EISA) enacted in December 2007 and the Deputy Under Secretary of Defense DoD policy on implementation of stormwater requirements under EISA Section 438.

Section 438 of the Energy Independence and Security Act (EISA) of 2007: EISA Section 438 addresses stormwater runoff requirements for federal development projects. EISA Section 438 requires that the sponsor of any development or redevelopment project involving a federal facility with a footprint that exceeds 5,000 square feet shall use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow. The Deputy Under Secretary of Defense (Installations and Environment) Memorandum of 19 January 2010 directs DoD components to implement EISA 438 using Low Impact Development (LID) techniques. Individual Services may have more stringent implementation and applicability requirements relating to LID.

Implementation of the Navy's Low Impact Development Policy: Navy installations continue to implement the LID Policy for Stormwater Management. Low Impact Development (LID) minimizes the impact of development by mimicking pre-development runoff hydrology. It uses site planning and

Integrated Management Practices (IMPs) to store, infiltrate, evaporate, and detain runoff to restore pre-development infiltration rates. Practicing LID helps DoD installations by recharging groundwater supply, reducing runoff volume and the potential for flooding, improving water quality by reducing pollutant loads, and reducing the impacts from pollution on aquatic habitat and wildlife. The DoD Unified Facilities Criteria (UFC 3-210-10) provides for planning, design, construction, sustainment, restoration, and modernization criteria consistent with LID.

EO 13834 Efficient Federal Operations: Under Executive Order 13834, federal agencies are directed to prioritize actions that reduce waste, cut costs, enhance the resilience of federal infrastructure and operations, and enable more effective accomplishment of its mission. In implementing policy, federal agencies must meet several goals, which are based on statutory requirements, in a cost-effective manner including reduce potable and non-potable water consumption and comply with stormwater management requirements. As federal agencies work toward meeting the full range of sustainability goals, the Chesapeake Bay watershed will benefit. DoD continues to develop an annual Sustainability Report and Implementation Plan, which includes implementation status, operational issues, and strategies to advance its mission through resilient infrastructure and business practices that improve performance and affordability.

Army Policy for Sustainable Design and Development (SSD): The Army Sustainable Design and Development Policy builds on the Army's long-standing energy efficiency and sustainability practices with the goal of increasing the resiliency of its facilities and installations, enhance mission effectiveness, reduce the Army's environmental footprint, and achieve levels of energy independence that enhance continuity of mission-essential operations. The policy applies to all infrastructure planning, design, sustainment, restoration, modernization, and construction on Army installations. Accordingly, the Army will plan, design, build, maintain and operate facilities to achieve the highest-performing sustainable design that is life-cycle cost-effective. Construction activities will be planned programmed, budgeted, designed, built, maintained, and operated to comply with Energy Policy Act of 2005, EISA 2007, and EO 13834 and conform to the Guiding Principles for Federal Sustainable Buildings as detailed in the Policy. The following Policy requirements address water quality issues in the WIP:

- Siting and Site Development: Compact development, in-fill, minimal building footprints and spacing, and greater residential densities will be applied to achieve optimal densities. These practices will also help

minimize or reduce impervious surface area and the potential for resulting polluting runoff.

- Stormwater Management: Site development for all projects of 5,000 square feet or greater shall retain the pre-development site hydrology in accordance with EISA 2007 Section 438 and UFC 3-210-10. These projects must be planned, designed, and constructed to manage any increase in storm water runoff (i.e., the difference between pre- and post-project runoff) within the limit of disturbance. Projects will maximize the use of existing site topography including soils, flora, slope, and hydrology to minimize site disturbance including clearing and soil grubbing activities. Documentation of the project's compliance with EISA 438 will be maintained in the project file and will be reported via the chain of command for annual SSPP reporting.
- Water Use: The overall goal is to identify and implement water reuse strategies to use water efficiently including the use of alternative water sources (e.g. rainwater, reclaimed water, greywater, etc.). All projects will use water-efficient landscape strategies that achieve a minimum of 50% water reduction. To further reduce outdoor water use, native plant species and dry-scape architectural alternatives will also be considered. Irrigation will not be used except where specifically required by Army policy or during the initial plant establishment phase. Projects that require irrigation will use alternative water in place of potable water.
- Planning, Design and Construction: All new construction vertical projects and comprehensive building renovations meeting the thresholds in UFC 1-200-02 Table 1-1 will be certified at the Leadership in Energy and Environmental Design (LEED) for Building Design and construction Silver level at a minimum.

Leadership in Energy and Environmental Design (LEED): LEED is an internationally recognized green building certification system developed by the U.S. Green Building Council. It promotes a whole building sustainability approach through energy savings, water efficiency, materials management, and air emissions. With regard to stormwater management, LEED addresses stormwater quality and quantity and increased water efficiency. For DoD, new construction vertical projects and comprehensive building renovations that meet specific thresholds must be certified at the LEED for Building Design and Construction (LEED-BD+C) Silver level at a minimum.

Sikes Act: DoD installations with significant natural resources are required by the Sikes Act to develop and implement Integrated Natural Resource Management Plans (INRMPs). They integrate military mission requirements, environmental and master planning documents, cultural resources, and outdoor recreation to ensure both military operations and natural resources conservation are included and consistent with stewardship and legal requirements. INRMPs require installations to look holistically at natural resources on a landscape or ecosystem basis. They are living documents that provide direction for daily natural resources management activities and they provide a foundation for sustaining military readiness. They describe how to manage natural resources, allow for multipurpose uses of those resources, and define public access—all while ensuring no net loss in the capability of an installation to support its military testing and training mission. Although variations exist among the different Military Services, a basic INRMP includes:

- A description of the installation, its history, and its current mission.
- Management goals and associated timeframes.
- Projects to be implemented and estimated costs.
- A discussion of how the military mission and training requirements are supported while protecting the environment.
- Natural resources' biological needs and legal requirements.
- The role of the installation's natural resources in the context of the surrounding ecosystem.
- Input from the U.S. Fish & Wildlife Service (USFWS), state fish and wildlife agency, and the general public.

To address installation requirements and regional issues, INRMPs involve appropriate stakeholders, thereby providing for more efficient and effective management of natural resources on a landscape-scale basis, all while ensuring that military readiness is sustained.

INRMPs propose projects to address natural resources, but many of those projects also provide a water quality co-benefit (wetland restoration, tree planting, riparian buffer enhancement, etc.). Projects with water quality co-benefits will be considered for meeting additional TN, TP and TSS reductions and tracked and reported to the jurisdictions for BMP credit in the Bay Model.

Planned Pollutant Reductions from Point and Non-Point Sources Associated with Federal Lands and Facilities that meet the Federal Facility's Share of a Local Planning Goal (as agreed to with the jurisdiction) and Address any Anticipated Growth

In 2019, the DoD funded a follow on analysis that included input from installations and what they estimated for planned implementation through 2025. The following information is provided to demonstrate the TN and TP loads expected through 2025 and a comparison to the DoD Federal Agency Planning Goals issued by the District in Tables F-2.7 and F-2.8. The reductions also incorporate recent verification measures that ensure inspections and maintenance are being performed. Some BMPs within the 2018 DoD Progress scenario did not pass verification protocols and were not included in the scenarios to calculate reductions through 2025.

TABLE F-2.7: DOD TN LOAD REDUCTIONS (IN LBS/YEAR EOT) BETWEEN 2018 AND 2025

Jurisdiction	DoD Federal Planning Goal	2025 Planned Implementation Scenario	Remaining Reductions
Washington, D.C.	11,538	12,118	580

TABLE F-2.8: DOD TP LOAD REDUCTIONS (IN LBS/YEAR EOT) BETWEEN 2018 AND 2025

Jurisdiction	DoD Federal Planning Goal	2025 Planned Implementation Scenario	Remaining Reductions
Washington, D.C.	941	1,105	164

DoD estimates of anticipated growth through year 2025 were reported by installations during the FY18 CBP data call and are represented in Table F-2.6. The United States Naval Observatory and Naval Research Laboratory (HQ) reported anticipated construction. Based on DoD policies, programs, and strategies identified in Section 4, redevelopment will not result in any additional runoff or pollutant loading to the Chesapeake Bay.

BMP Implementation Scenarios to Reduce Nitrogen, Phosphorus and Sediment to Reach the New Facility-Specific Targets, Consistent with the [Clean Water Act] CWA

As mentioned above, the 2025 Planning Implementation is a result of data collected by DoD from the installations on estimated BMPs to be installed. Scenarios have been developed in CAST and will be shared on or about June 14, 2019. These scenarios will include the estimated implementation plus implementation that would be necessary to fill the gaps between future progress and the DoD Federal Agency Planning Goal. The fill gap scenario is a best guess, hypothetical scenario based on best professional judgement.

As mentioned in prior sections, the DoD local area planning goal is a good first step in the budget process. DoD will make every effort to request and obtain the funding necessary for implementing projects, but changes in mission or budget constraints would mean a project or series of projects may not be executed as planned. The DoD may not be held responsible for failing to implement BMPs that are not required by law. It should be noted that because the MS4 permit and WLA are issued by EPA to the District, DoD BMP implementation is not required.

Planned Actions, Programs, Policies, and Resources Necessary Through 2025 to Reduce Nitrogen, Phosphorus, and Sediment Pollutant Loads Associated with Federal Lands and Facilities with Specific Target Dates

Achieving 2025 load targets will require the DoD to account for historical effort (progress through 2018), currently planned effort (2019 planned BMPs), and some remaining effort. Based on DoD data provided by installations in 2018 that requested implementation through 2025, the DoD Chesapeake Bay Program developed a scenario that included those planned BMPs. In addition, the DoD will be developing a "fill gap scenario" of BMPs that may be feasibly implemented on DoD installations based on the level of effort to reduce the remaining TN and TP loads. The scenarios will be developed based on input from installations, but are non-binding and are intended for planning purposes only.

In addition to the programs already mentioned, while DoD is on track to meet 2025 goals, the following conclusions were gleaned from an initial effort conducted by DoD that generated a hypothetical 2025 scenario to meet 2025 targets that were established by EPA in 2015:

- Continuously improve DoD's historical and current BMP implementation record: ensuring all criteria are populated, providing verification information, filling general data gaps, and reporting annual BMPs such as urban nutrient management.
- Track crediting and communicate errors so that the Partnership's scenarios can be used by DoD without having to generate a separate scenario.
- Get BMPs that were removed from credit as a result of verification back in as soon as feasible.
- Have installations focus on BMPs that reduce TN where a greater effort is needed since TN is the limiting pollutant in meeting reduction goals.
- Implement run-off reduction practices. Many installations are already considering these through development and redevelopment projects.
- Consider older BMPs and identify possibilities for enhancements for added TN, TP and TSS reduction benefits.
- Consider projects listed in INRMPs that have water quality co-benefits for TN, TP and TSS load reductions such as stream/shoreline restoration or wetland creation.
- Through stewardship activities increase the number of trees planted or other land use change BMPs.
- Engage post Phase III WIP development to ensure there is an understanding of changes to the level of effort as a result of climate change inputs and updates to the Bay Model.
- Local TMDLs: Several installations within the District are also covered by permits that include local TMDLs that address local water quality impairments. DoD will consider nutrients and sediment when implementing stormwater pollution control devices to meet these local TMDLs that may not directly correlate with TN, TP and TSS reduction requirements.

Description of Plans to Address Any Gaps in Achieving the Pollutant Reduction Goals

The gap to address nonregulated loads is a challenge, but many of the planned strategies help to fill those gaps. Installations have performed BMP opportunity

assessments to identify new opportunities for BMPs and are looking to enhance those assessments to identify more innovative practices available for retrofit. The DoD performed an internal Midpoint Assessment and it will be used to accurately quantify the gap in Washington D.C. In addition to projects in the hypothetical 2025 DoD Implementation Plan with high TN removal efficiencies, the DoD will look at proposed INRMP natural resource projects with water quality co-benefits and how other DoD programs can contribute to water quality goals/requirements. Additional load reductions to address climate impacts will be incorporated when estimates of their effects are known.

Procedure for Tracking, Verifying and Annually Reporting BMPS to the Jurisdiction (Copy to EPA) in a Manner that is Consistent with the Jurisdiction's Procedures

DoD continues to lead by example through their continued methods that track, verify and report BMPs implemented on their installations. DoD's process integrates procedures established by the Jurisdictions, including the development of templates for all federal agencies to use. Each year, the DoD issues a support contract to facilitate the development of templates for reporting BMP implementation. The templates are developed in coordination with each of the jurisdictions and EPA to ensure the latest information for each BMP is collected and compatible with Phase 6 model data needs. Templates are then issued to the installations to provide responses. DoD reviews and then submits a consolidated DoD BMP progress dataset in the format requested by the jurisdiction by 1 October each year. Installations also provide project data that support other aspects of the Chesapeake Bay restoration and protection effort. Over several years, the DoD has evaluated those projects to see if there was a potential to receive additional nutrient and sediment reductions. If projects are identified to have those water quality co-benefits the DoD consolidates and provides a supplemental dataset to the appropriate jurisdiction by 1 November.

DoD installations follow the inspection and maintenance requirements established by the District. As part of the verification procedures, the DoD integrated process controls in their reporting template to highlight specific BMPs that needed inspection, status, and maintenance information for the installation to populate in order for that BMP to continue to receive nutrient and sediment reduction credit. If the verification information was not populated for that BMP, it was removed from the submittal to the Jurisdiction and did not receive credit.

A description for how the Federal Facilities are going to Verify BMPs that is consistent with the CBP Partnership's Basinwide BMP Verification Framework and the Partnership Approved and Published BMP Verification Protocols

Installations are responsible for ensuring stormwater best management practices are inspected and maintained according to design standards and permit requirements. In the District, installations inspect BMPs at least every three years. Maintenance requirements differ based on the type of BMP, but is performed based on available funding or when inspections note BMP failure. In-ground practices are maintained annually via contract. It is important to note that the DCMR (2013 Stormwater Rule) cites maintenance requirements for BMPs. The guidebook associated with the rule states that a BMP's preventative maintenance will be ensured through inspection of all BMPs by DOEE.

Process for Assessing Implementation Progress and Adapting Management Actions to Continually Improve the Implementation of Practices to Reduce Nitrogen, Phosphorus, and Sediment Loads

In 2017, DoD conducted, the first of its kind among Federal departments, an evaluation of progress at the 2017 Midpoint via Phase 6 CAST using data collected annually from installations. The initiative included reviewing and developing scenarios that captured:

- What installations had already installed in the ground (i.e. historical implementation).
- Planned 2018 and 2019 implementation as part of DoD's numeric two-year water quality milestones.
- Estimates of 2025 implementation that would be needed to fill gaps towards meeting federal facility goals that were based on the 2015 *Protocol for Setting Targets, Planning BMPs and Reporting Progress for Federal Facilities and Lands*.

This project established baseline scenarios and an overall framework and methodology in order for DoD to utilize lessons learned and support Phase III WIP development and implementation.

In 2018, DoD continued to fund this effort and requested information from installations on implementation planned through 2025. This information was used to build on the scenarios that have already been developed for DoD via CAST including the new DoD 2018 Progress Scenario, DoD 2020-2025 Planned Implementation Scenario, and 2020-2025 DoD Fill Gap Scenario that would meet new federal agency planning goals.

DoD has acknowledged and recognized the value of this effort and will prioritize to ensure funding remains in place to evaluate our progress, track two year

periods and develop an appropriate level of implementation as we move towards 2025.

Placeholder for tables and graphs once a fill gap scenario is finalized that will provide an estimate of TN and TP loads at the EOT in lbs/yr that demonstrate implementation meets DoD's Federal Agency Planning Goal:

- DoD 2018 Progress Loads
- 2018/2019 DoD Water Quality Milestones Scenario
- DoD 2025 Implementation Plan: includes all historical BMPs and those planned through 2025; BMPs that did not pass the verification requirements were removed from the 2025 plan
- DoD 2025 Fill Gap Scenario
- DoD Federal Agency Planning Goal

Challenges

DoD installations report that funding for projects needed to reduce loading is contingent upon authorization and appropriation of funds in accordance with appropriate statutes. The DoD will be competing for funding against all other federal entities and there is no guarantee that funding will be available. The DoD will make every effort to obtain necessary funding, but changes in priorities or budget constraints would mean a project or projects may not be executed as planned.

As some installations are highly developed, space for new on-the-ground BMPs can be extremely limited. The DoD will look to programmatic BMPs to achieve pollutant reductions in these cases. Securing long term sustainable BMP maintenance funding to safeguard our investments is a challenge that DoD working through.

APPENDIX F-3: General Services Administration Submission

GSA-NCR WIP III NARRATIVE
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INTRODUCTION - In FY16, NCR realized that the issue of stormwater had grown beyond its ability to manage part time. So NCR hired a Regional Stormwater Program Manager (RSWPM) early in the FY17 fiscal year. The initial priority for NCR's stormwater efforts were and remain centered around documenting and achieving credit for previously constructed BMPs and staying ahead of new projects triggering stormwater-related requirements. The text below will outline progress made over the last few fiscal years and the additional steps planned for beyond FY19.

PROJECT SCOPE DEVELOPMENT - As of FY19, all new project contract templates have been updated to include all relevant stormwater requirements (E&SC, SWM and SWPPP) so the issue is on the radar of the project managers developing their scopes. Updating these templates will be ongoing in FY20 and beyond.

PROJECT SCOPE REVIEWS - As of FY19, all scopes developed are reviewed to confirm that applicable environmental requirements have been properly included. And those that appear to have a stormwater component are funneled to the Regional Stormwater Program Manager (RSWPM) for review and comment. Reviewing scopes will be ongoing in FY20 and beyond.

PROJECT DESIGN REVIEWS - As of FY19, relevant project designs are referred to the RSWPM for review and comment. Assistance from the RSWPM during the permitting process is also regularly requested of the RSWPM. This work will be ongoing in FY 20 and beyond.

PROJECT CONSTRUCTION - The RSWPM is increasingly starting to visit active projects with erosion and sediment control and stormwater management plans

to make sure requirements are being followed and BMPs are being built correctly. This work will increase in FY2020 and beyond.

POST-CONSTRUCTION BMP COMMISSIONING - As of FY19, the RSWPM is making sure that the commissioning of and training on stormwater BMPs are actually occurring. This includes making sure all relevant O&M staff are present as well as participation in these events. Follow-up by the RSWPM afterwards is often required. This work will be ongoing in FY20 and beyond.

BMP OPERATION AND MAINTENANCE - The inspection and maintenance of BMPs at NCR must happen through a combination of two different contracts for each applicable facility; the applicable landscape contractor and the applicable O&M contractor.

- In FY17 and into FY18, BMP inspection and maintenance requirements were mined from guidance from all three area jurisdictions and all identified tasks were programmed into GSA's National Computerized Maintenance Management System. This system previously had no content related to stormwater BMPs.
- These requirements cannot be made live in the field until: 1) each applicable O&M contract is updated to account for the additional scope, and 2) dollars are added to all applicable contracts to cover the additional costs of these tasks. This work is ongoing in FY19 and beyond.

BMP DATA AND REPORTING - Prior to FY19, stormwater assessments were performed at all of NCR's owned facilities to determine the number and type of stormwater BMPs in place.

- With that information about where all of NCR's BMPs reside, a more complete data reconciliation exercise was possible. Significant reconciliation progress was made between NCR and DOEE in March 2019 and the steps required to complete the process have been outlined and will fall on GSA to finish. But at least now the data in CAST is much more current and complete.
- For all previously unreported BMPs that require historical reconciliation reporting, a data gap analysis will need to be performed to determine how much additional information needs to be mined from original design reports and documentation to complete the fields needed to report data to the jurisdictions and maintain credit for each BMP.

NEW BMPS - New BMPs are coming online this fiscal year and more are planned in coming fiscal years, particularly at our St. Es facility as development continues there. But due to unpredictable budgets and other factors, it isn't possible to lay out a schedule of when new BMPs will be coming online.

CONCLUSION - NCR's RSWPM will continue to catch up with historically neglected aspects of the region's stormwater program and work to make sure all of the right things happen at each stage of applicable new project lifecycles. Additional opportunities to voluntarily install new BMPs will not be a high priority effort while all of the work to catch up and stay current with new projects is pursued. But tree planting/reforestation opportunities in particular are already being explored in partnership with the District's Urban Forestry Advisory Committee with an eye toward helping the District achieve its 2032 40% tree canopy goal (40x32!). This effort will not take too much time on the part of the RSWPM making this a viable strategy to pursue in the next few fiscal years. Revisiting the idea of adding other types of voluntary BMPs can be revisited around 2021 after some of the catch-up efforts have leveled off.

APPENDIX F-4: National Park Service Submission

Location/description of federal agency land and facilities

National Capital Region (NCR) of the National Park Service (NPS) owns and manages numerous parks and park units within the Chesapeake Bay watershed, including the following park units in the District of Columbia: Rock Creek Park, National Capital Parks – East, National Mall and Memorial Parks, Chesapeake and Ohio Canal National Historical Park, White House/President's Park, and portions of the George Washington Memorial Parkway. Together these NPS lands consist of more than 6,600 acres spanning the three drainage areas: CSO, MS4, and direct drainage. These parks encompass a variety of uses such as memorials, historical sites, recreational facilities, and national parkways.

Table F-4.1 summarizes the name and approximate acreage of each park unit in the District of Columbia. The group names are administrative units within the National Capital Region and within each group are units including memorials, park land, parkways and historic sites. For example, the George Washington Memorial Parkway group contains the Parkway itself and the Lyndon Baines Johnson Memorial Grove and Theodore Roosevelt Island National Memorial. These acreages were obtained from an NPS -NCR GIS database dated February 2019.

Table F-4.1: NPS Land and Acreage in DC

Group Name	Unit Name	Acreage
Chesapeake and Ohio Canal NHP	Chesapeake and Ohio Canal NHP	315
George Washington Memorial Parkway	George Washington Memorial Parkway	118
George Washington Memorial Parkway	Lyndon Baines Johnson Memorial Grove	18
George Washington Memorial Parkway	Theodore Roosevelt Island National Memorial	100
National Capital Parks - East	Anacostia Park	756
National Capital Parks - East	Carter G. Woodson NHS	0.2
National Capital Parks - East	Fort Dupont Park	343
National Capital Parks - East	Frederick Douglass NHS	8.4
National Capital Parks - East	Mary McLeod Bethune Council House National Historic Site	0.1
National Capital Parks - East	National Capital Parks - East	1,031
National Mall and Memorial	Ford's Theater NHS	0.3

Parks		
National Mall and Memorial Parks	National Mall and Memorial Parks	803
National Mall and Memorial Parks	National Mall	143
National Mall and Memorial Parks	Washington Monument National Memorial	104
National Mall and Memorial Parks	Pennsylvania Avenue NHS	20
National Mall and Memorial Parks	Belmont-Paul Women's Equality National Monument	0.4
Rock Creek Park	Rock Creek Park	2,820
President's Park (White House)	President's Park (White House)	77
Total NPS Lands in DC		**6,657**

Description and estimate of anticipated pollutant load and estimated anticipated growth

NPS does not anticipate significant development on its properties through 2025. NPS used the Chesapeake Assessment Scenario Tool (CAST) to evaluate pollutant loads from its lands. NPS plans to review the land area assigned to NPS in CAST and to submit corrections, as needed. Table F-4.2 summarizes estimates of anticipated nitrogen, phosphorus and sediment loads from CAST with existing BMPs included.

Table F-4.2: NPS Pollutant Load Summary

Source	Nitrogen (lb/year)	Phosphorus (lb/year)	Sediment (lb/year)
Developed: MS4	10,580	970	1,060,173
Developed: Non-Regulated	10,945	1,067	845,159
Natural	14,161	3,009	8,400,012
Total	35,686	5,046	10,305,344

*** 2025 Edge of Tide CAST scenario with existing BMPs**

Verified records of existing BMPs

NPS is in the process of verifying its existing BMPs and plans to update its existing BMP information as soon as possible. Currently, NPS has identified four BMPs that are in the DC stormwater database and in the MS4 drainage. These BMPs have been included in the CAST pollutant evaluation. These BMPs are summarized in Table F-4.3

Table F-4.3: – NPS Existing BMPs

BMP ID	BMP Type	Address
1108-0-1	Bioretention	1900 Anacostia Drive SE
1108-0-2	Bioretention	1900 Anacostia Drive SE
3007-0-1	Dry swale	17th St NW
377-0-1	Proprietary Practice	FP Presidential Park, NW

Inventory of NPDES permits

NPS facilities currently have two NPDES permits in the District of Columbia as summarized in Table F-4.4. These facilities are further discussed in Chapters 3 and 6.

Table F-4.4: NPS NPDES Permits

Permit Number	Permit Type	Facility
DC0000370	Individual	Lincoln Memorial Reflecting Pool
DC0000345	Individual	National World War II Memorial

Federal Facility Planning Goals

Already included in draft WIP provided by DC.

Strategies to Meet and Maintain Planning Targets and Local Planning Goals

Planned pollutant reductions

As provided by CAST, the pollutant reduction goals for NPS for nitrogen and phosphorus are 35,178 pounds/year and 9,128 pounds/year, respectively. Table F-4.5 provides a comparison of CAST estimated pollutant loads and planning targets for the NPS. It also demonstrates that NPS has met its phosphorus goals according to CAST.

Table F-4.5: NPS Planned Pollutant Reductions (Edge of Tide)

Pollutant	Pollutant Load with Existing BMPs (lb/year)	Planning Goal (lb/year)	Planned Reduction (lb/year)
Nitrogen	35,686	35,178	508
Phosphorus	5,046	9,128	Goal met

BMP implementation Scenarios

To reduce nitrogen to the planning goal, NPS is proposing to implement additional stormwater projects through 2025. NPS is currently evaluating specific

stormwater project opportunities and hopes to partner with the District of Columbia on project opportunities. NPS has partnered with the District of Columbia on previous projects such as stream restoration projects in Rock Creek Park and NPS plans to explore partnering and credit sharing opportunities with the District on additional stormwater project opportunities. For planning purposes, NPS is proposing to implement a variety of stormwater projects on park properties draining to the MS4 or direct drainage areas. Table F-4.6 provides a summary of potential BMPs and associated treatment area to meet the nitrogen planning goal. Based on a CAST analysis, the potential BMPs in Table F-4.6 reduce nitrogen to the planning goal level of 35,178 pounds/year.

Table F-4.6 – Potential BMP Types and Treatment Areas

BMP Type	Load Source	Amount	Unit
Bioretention/rain garden	MS4 Developed	17	Acres Treated
Bioswale	MS4 Developed	7	Acres Treated
Filtering Practices	MS4 Developed	2	Acres Treated
Permeable Pavement	MS4 Developed	1	Acres Treated
Stormwater Treatment	MS4 Developed	3.3	Acres Treated
Wet Pond/Wetlands	MS4 Developed	25	Acres Treated
Urban Shoreline Management	Shoreline	2,700	Feet
Stream Restoration	Stream Bed and Bank	3,550	Feet
Forest Buffer	Turfgrass in Developed	3	Acres Treated
Tree Planting - Canopy	Turfgrass in Developed	4.25	Acres Treated
Nutrient Management Plan	MS4 and Nonregulated Pervious Developed	175	Acres Treated

Existing programs and planned actions

In May 2013, federal agencies including the NPS and the EPA signed a Memorandum of Understanding (MOU) "Regarding Federal Agency Stormwater Management in the District of Columbia" providing the foundation for collaboration on technical and procurement details of development and retrofit projects, in addition to "identifying opportunities for cooperation and partnership" both within the federal agency framework and externally with DC agencies and private entities. NPS is currently evaluating and prioritizing opportunities for stormwater projects and program modifications to meet the nitrogen reduction goal.

NPS will continue to participate in the Chesapeake Bay Federal Agency workgroup and District stormwater initiatives. Because of the amount of turf managed by the NPS in the District, good turf management practices are important to managing NPS nitrogen discharges. NPS will continue to pursue development of turf or nutrient management plans for its properties. Furthermore, NPS will continue to implement best management stormwater practices as an instrumental component of park facility or site rehabilitation or new construction projects.

APPENDIX F-5: Smithsonian Institution Submission

No narrative was provided by Smithsonian Institution before the draft deadline. The final WIP submission will include information from Smithsonian Institution on their WIP requirements.