



DISTRICT OF COLUMBIA

**NON-POINT SOURCE MANAGEMENT PLAN
FOR THE DISTRICT OF COLUMBIA, 2019**

December, 2019



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1 Introduction

The District of Columbia was established at the confluence of the Potomac and Eastern Branch (now Anacostia) rivers. The Potomac and Anacostia rivers have been vital sources of food, commerce, and recreation from pre-colonial times to today. Land use in the District has morphed from being largely forested to agricultural and now to being largely urbanized. Each land use change has brought new stressors and challenges to protecting our waterways but over the last two decades the District has made significant strides in protecting and restoring our waterways.

In 1990, the Government of the District of Columbia established its Nonpoint Source (NPS) Management Program to address the control and prevention of nonpoint source pollution to the District of Columbia's surface and groundwaters and to expedite the restoration of degraded water bodies. The NPS Management Program is part of a comprehensive District watershed management program that strives to meet the national environmental goal of clean waters that support healthy communities of fish, plants, and other aquatic life, and benefit uses such as fishing and swimming. Financial support for the program primarily comes from the Federal Government through the *Clean Water Act* (CWA) §319(h) and 117(b), and the District Government. The NPS Management Program has continually evolved and expanded, thus making significant headway in restoring and protecting our watersheds and waterways.

Because the District of Columbia is entirely urban, the NPS Management Program mainly targets the NPS of urban runoff as identified in the District's approved *NPS Management Program Plan (1989, 2000, & 2014)*. Other NPS program plans that the U.S. Environmental Protection Agency (EPA) has approved are the District's Watershed Implementation Plans (WIPs) for the Anacostia River, Rock Creek, and Oxon Run. NPS pollutants addressed include nutrients, sediment, toxicants, pathogens, and hydrocarbons. The District Government has shown that urban runoff is one of the more important contributors to surface water impairment in the District and is working to protect and restore waterways accordingly.

All of the significant water bodies within the boundaries of the District of Columbia are monitored on a regular basis. Based on the monitoring activities, the water bodies are characterized for impairments and threats. The District Government prepares Section 305(b) reports as required by the federal CWA. The 2018 Section 305(b) Report described the District's water bodies as not fully supporting their swimmable (primary contact recreation) and fishable (fish consumption) uses. The District Government's standard for evaluating the primary contact use is the concentration of *E. coli* bacteria. Additionally, most District water bodies also fail to meet standards for secondary contact. The sources of pathogens to the water bodies are urban runoff, storm sewers, and combined sewer overflows (CSO). The fish consumption use is not supported because of the elevated levels of *polychlorinated biphenyls* (PCBs) in fish tissue. The likely conveyance systems of PCBs and other contaminants found in fish are storm sewers and urban runoff. Depending on the location, groundwater and surface water interaction in the District occurs in both directions or in the direction of groundwater to surface only. Therefore, groundwater sources of contamination such as pesticide application, waste piles, and urban runoff must also be controlled by NPS pollution management activities.

An almost ubiquitous source of pollutants to the District's water bodies is urban runoff/storm sewers. In addition, the District has developed Total Maximum Daily Loads (TMDLs) for water bodies not meeting

their swimmable and fishable designations. The common action needed on the listed water bodies is to control nonpoint source pollution.

The few water bodies that partially or fully support a designated use are also identified through the District's monitoring activities and the Section 305(b) process. These water bodies are threatened because of the 65% imperviousness of the city, the aging infrastructure, their location, or construction in their watersheds. It should be noted that land uses within the District are fixed and the foreseeable threats and impairments already exist because the District is highly developed and land uses are not subject to future dramatic changes.

In 1995, the NPS Management Program developed a process to rank watersheds for NPS implementation in the District and determined that the Anacostia River and its tributaries should receive the highest priority. Since then, the District Government has dedicated considerable resources toward restoring the Anacostia River with the aim of making it swimmable and fishable by 2032. For more than 20 years, the District Government has used the watershed approach to raise awareness and pull together public and private sector resources to tackle the water quality problems of the Anacostia River. The District Government has taken significant steps forward toward protecting and restoring our waterways but more progress is needed.

The identification of impaired waters is an ongoing process. As new information becomes available from monitoring studies and other aquatic resource studies within the District, the new data will be used to reassess its waters and watershed, to refine and enhance its implementation plans and, if necessary, develop new strategies within the NPS Management Program. As the Section 305(b) process requires a biannual report and the District Government requires five-year strategic plans, the NPS Management Program will use these documents as opportunities to assess the success of its implementation work plans.

The District's NPS Management Program Plan is the guiding document that will move the District toward making its waterways fishable and swimmable. The plan gives a framework under which plans decisions are made, responsibilities are assigned, and implementation is prioritized. The District's plan is a comprehensive strategy for how NPS pollution will be addressed and mitigated in the coming years. This plan will be updated a minimum of every five years to ensure it reflects progress toward restoring local waterbodies and improving water quality in waterways in the District.

1.1 Water Quality in the District

The District of Columbia Water Quality Assessment 2018 Integrated Report provides information about the state of the District of Columbia's waters and the Department of Energy and Environment's (DOEE) efforts to protect and improve water quality. The Integrated Report combines the comprehensive biennial reporting requirements of the CWA's Section 305(b) and Section 303(d) listings of waters for which TMDLs may be required. To meet the District's CWA goals, DOEE monitored 36 waterbody segments during the period of January 2013–June 2017 (2018 reporting period), evaluated the data, and assigned each waterbody designated uses based on the numeric and narrative criteria outlined in the District's water quality standards (WQS). The evaluation found that none of the District's monitored waters are fully supporting their designated uses, and they generally do not support uses by humans and aquatic life. A waterbody that does not support its designated uses is considered impaired. The results of the evaluation indicate that while the District's waterbodies show signs that water quality is improving, they continue to be impaired. This report focuses on surface water assessment, but the District also evaluates groundwater via compliance monitoring and ongoing studies. The appendices of this report contain details regarding the conditions of both surface water and groundwater.

Typical causes of impairment to the District's waterbodies are elevated concentrations of bacteria, high pH (acidity), low concentrations of dissolved oxygen (DO), and high turbidity. DOEE does not monitor PCBs during its ambient water quality monitoring due to high costs. Below is a summary of findings from 2018 monitoring work:

- Bacteria: In 2018, the District monitored for E. coli and observed an increase of exceedances of our water quality standard for bacteria most likely due to failing sewer pipes, illicit discharges, and upstream subwatershed issues.
- pH: In 2018, the monitoring work showed that there were few measured exceedances of this parameter, thus not a cause for concern.
- DO: The District saw the majority of tributaries meet the DO water quality standards in 2018, with a few cases where it was not met.
- Turbidity: Upstream segments of the Anacostia and Potomac rivers showed the highest number of turbidity WQS exceedances, which are largely due to CSOs, urban stormwater runoff causing stream bank erosion, and pollutants from upstream jurisdictions.

In previous years the District saw improvements to aquatic resources, such as submerged aquatic vegetation, wetlands, and fish populations, which have been sustained. The concentrations of chemicals in several fish species caught in District waters have decreased, which indicates progress toward achieving the fishable goal. DOEE and its partners continue to invest a variety of resources in the shared pursuit of improving District and regional water quality and are optimistic about the incremental improvements current and planned activities will deliver. The NPS Management Plan will lay out key programs, projects, policies, and agencies that each play a role in continuing to improve water quality in the District.

2 Regulatory Mechanisms

The District implements numerous programs, discussed later in this Plan, to protect and restore our waterways, as well as a robust set of rules and regulations to protect our waterways. The laws and regulations within the District ensure that both public and private sector players are ensuring that their projects do no harm to our local waterways. Below are the key laws and regulations that are used in the District to protect our waterways:

1. [Federal Clean Water Act §404](#): Issuance of permits to control the discharge of dredged or fill materials into waters of the U.S. Activities related to wetlands are also covered by this section.
2. [Title 21, Chapter 5 – Water Quality and Pollution](#): The provisions of this chapter shall be applicable to all sources of pollution affecting the Potomac River and its tributaries within the District of Columbia, including, but not limited to: pollution carried by stormwater runoff, sources of sediment wastes from vessels or other floating construction, and domestic and industrial waste.
 - a. The purposes of this chapter shall be as follows:
 - i. To prevent and control the pollution of the Potomac River and its tributaries;
 - ii. To regulate land disturbing activities;
 - iii. To prevent accelerated soil erosion and sedimentation;
 - iv. To prevent sediment deposit in the Potomac River and its tributaries, including the District sewer system; and
 - v. To control health hazards due to pollution of the Potomac River and its tributaries.
3. [Title 21, Chapter 22 – Water Pollution Enforcement](#): The purpose of the rules in this chapter is to provide enforcement procedures for the water pollution control Act of 1984. These rules are developed pursuant to §§17, 18 and 19 of D.C. Law 5-188, the Water Pollution Control Act of 1984, and apply to the Act and the rules promulgated pursuant to the Act.
4. [Title 20, Chapter 31 – Flood Hazard Rules](#): The purpose of this chapter is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by:
 - a. Regulating uses, activities, and development which, acting alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies;
 - b. Restricting or prohibiting certain uses, activities, and development from locating within areas subject to flooding;
 - c. Requiring all those uses, activities, and developments that do occur in flood-prone areas to be protected in order to prevent flood damage; and
 - d. Protecting individuals from buying lands and structures which are unsuited for intended purposes because of flood hazards.

5. [Title 21, Chapter 10 – Retail Establishment Carry Out Bags](#): The purpose of this chapter is to implement the provisions of the Anacostia River Clean Up and Protection Act of 2009, effective September 23, 2009 (D.C. Law 18-55; D.C. Official Code § 2-1226.51 *et seq.*). Except as provided in Section 1006, a retail establishment shall charge each customer making a purchase from the establishment a fee of five cents (\$0.05) for each disposable carryout bag provided to the customer with the purchase. [Final Rulemaking published at 57 DCR 7208, 7209 (August 13, 2010).]
6. The Sustainable DC Omnibus Amendment Act of 2014 (L20-0142): Prohibits the sale, use, or provision of expanded polystyrene containers for food service, and to require disposable food service ware provided by food service businesses to be compostable or recyclable.
7. [Limitations on Products Containing Polycyclic Aromatic Hydrocarbons Amendment Act of 2018](#): This act expands the District’s ban on coal tar pavement sealants to include products containing ethylene cracker residue and products with high concentrations of polycyclic aromatic hydrocarbons.
8. [Title 21 Chapter 6 – Riparian Rights and Water Privileges](#): No structure shall be constructed, reconstructed, or repaired in any waters shoreward of the pierhead line unless the Mayor, pursuant to this chapter, issues a permit for the construction, reconstruction, or repair of the structure.
9. [Water Pollution Control Act of 1984 \(DC Law 5-188\)](#) The *D.C. Water Pollution Control Act of 1984*, D.C. Law 5-188, was enacted to regulate the restoration of the cleanliness and purity of District of Columbia waters and to protect the fish and aquatic life and their habitats. This allows the District to regulate any activities that may impact the waters of D.C. Stormwater management activities are regulated under § § 509-518 of this law.

Other changes to District law that greatly improve the NPS pollution abatement efforts of the District of Columbia are listed below:

- a. Ground Water Standards, 21 DCMR Chapter 11, published at 40 DCR 4203, July 2, 1993. This chapter establishes narrative and numerical criteria for groundwater quality.
- b. Water Quality Standards, 21 DCMR Chapter 11, published at 41 DCR 1075, March 4, 1994. This amendment allows for classification of District surface waters based on their current uses and future uses to which they will be restored.
- c. Water Quality Monitoring Regulations, 21 DCMR Chapter 19, February 2, 1995. These rules were adopted to provide for accurate, consistent and reproducible water quality monitoring data for decision making purposes.

Delegation of Authority under the *D.C. Water Pollution Control Act*, Mayor’s Order 98-50 dated April 15, 1998, superseded Mayor’s Order 87-278, 12/11/87. This order transferred regulatory authority to the Department of Health when Ground Water Quality Division was assigned to that administration.

10. [Water Quality Standards for Surface Waters \(21 DCMR Ch. 11, Effective February 1, 2010\)](#): The following standards apply to surface waters in the District: This chapter establishes the Water Quality Standards (WQS) for the waters of the District of Columbia, as authorized by section 5 of the Water Pollution Control Act of 1984, effective March 16, 1985 (D.C. Law 5-188; D.C. Official Code § 8-103.04).

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For the purposes of the water quality standards, the surface waters of the District shall be classified on the basis of their (i) current uses, and (ii) future uses to which the waters will be restored. Water quality standards are divided into three types of criteria for their designated uses: 1) Fully supporting – for any pollutant, standard exceeded in <10% of measurements meaning pollutants were not found at levels of concern; 2) Not supporting – for any one pollutant, standard exceeded in > 10% of measurements meaning pollutants were found at levels of concern; and 3) Not assessed – meaning the water body was not assessed in a manner which could determine if it met its designated use. The categories of beneficial uses for the surface waters of the District shall be as follows:

Categories of Uses that Determine Water Quality Standards	Classes of Water
Primary contact: recreation	A
Secondary contacts: recreation and aesthetic enjoyment	B
Protection and propagation of fish, shellfish, and wildlife	C
Protection of human health related to consumption of fish and shellfish	D
Navigation	E

The surface waters of the District are designated for beneficial use classes according to the categories delineated in subsection as follows:

CLASSIFICATION OF THE DISTRICT'S WATERS

Surface Waters of the District	USE CLASSES	
	Current Use	Designated Use

CLASSIFICATION OF THE DISTRICT'S WATERS

Surface Waters of the District	USE CLASSES	
	Current Use	Designated Use
Potomac River	B, C, D, E	A, B, C, D, E
Potomac River tributaries (except as listed below)	B, C, D	A, B, C, D
Battery Kemble Creek	B, C, D	A, B, C, D
C&O Canal	B, C, D, E	A, B, C, D, E
Rock Creek	B, C, D, E	A, B, C, D, E
Rock Creek tributaries	B, C, D, E	A, B, C, D, E
Tidal Basin	B, C, D, E	A, B, C, D, E
Washington Ship Channel	B, C, D, E	A, B, C, D, E
Oxon Run	B, C, D	A, B, C, D
Anacostia River	B, C, D, E	A, B, C, D, E
Anacostia River tributaries	B, C, D	A, B, C, D

CLASSIFICATION OF THE DISTRICT'S WATERS

Surface Waters of the District	USE CLASSES	
	Current Use	Designated Use
(except as listed below)		
Hickey Run	B, C, D	A, B, C, D
Watts Branch	B, C, D	A, B, C, D
Wetlands	C, D	C, D

11. [Ground Water Quality Standards \(21 DCMR §§ 1150-1158\)](#): Sections 1150 through 1158 shall describe the following categories:
 - a. Classes of groundwaters within the District;
 - b. Establish criteria to protect the designated uses;
 - c. Establish the concepts of Enforcement Standards and Early Warning Values; and
 - d. Provide groundwater monitoring requirements.
12. [Water Quality Research Grant Regulations \(21 DCMR Ch. 13\)](#): This chapter shall establish the procedures for issuing grants to universities and institutions pursuant to §13 of D.C. Law 5-188, the "Water Pollution Control Act of 1984."
13. [Submerged Aquatic Vegetation \(SAV\) Regulations \(21 DCMR Ch. 14\)](#): The purpose of this chapter is to provide for the management of submerged aquatic vegetation. This chapter is promulgated under §4 of D.C. Law 5-188, the Water Pollution Control Act of 1984, D.C. Code §6-923 (1995 Repl. Vol.).
14. [Water Quality Monitoring Regulations \(21 DCMR Ch. 19\)](#): The purpose of this chapter is to provide for accurate, consistent and reproducible water quality monitoring data for decision making purposes. This chapter shall apply to ambient surface and groundwater quality monitoring, special monitoring studies, compliance monitoring, monitoring required as a part of a permit, or to modify a permit, and self-monitoring of discharges
15. [2013 Stormwater Management and Soil Erosion and Sediment Control](#): The District’s newly adopted Stormwater Rule (July 2013) sets the stage for maximizing stormwater capture, retention, and reuse for all future development on disturbed areas of greater than 5,000

square feet. The new stormwater regulations will not only regulate new developments but create incentives for property owners throughout the District to retrofit existing properties in order to improve the environment and have cash incentives to do so.

- a. **Summary of Stormwater Regulations:** These amendments will provide greater protection for the Anacostia and Potomac Rivers, Rock Creek and their tributaries. They will improve equity in the allocation of the burden of stormwater management, and they will promote sustainable development within the District.

The amendments are significantly improving protection for District water bodies by effectuating a fundamental shift in the management of stormwater runoff within the District. Unlike the previous approach in which the fundamental goal of stormwater management is simply to manage the timing and quality of stormwater conveyed into the public sewer infrastructure, these amendments require the retention of stormwater volume on site with a menu of stormwater management practices through which stormwater is absorbed by the soil, infiltrated into the ground, evapotranspired by plants, or stored (“harvested”) for use on site. This more closely approximates the “sponginess” of the natural environment, where rainwater is captured by foliage, absorbed into the soil, and infiltrated into groundwater reserves.

These amendments improve the equity of how the impacts of stormwater runoff and the burden of stormwater management are distributed in the District. Over the years, inadequate stormwater management has become a leading cause of the severe degradation of District water bodies such as the Anacostia and Potomac rivers and Rock Creek. This degradation diminishes the value of these public resources for residents, visitors, and businesses in the District of Columbia, and it necessitates the use of public resources to pay the costs of managing stormwater and remedying its impacts.

These amendments more equitably allocate the costs of stormwater management by requiring properties undergoing major development or redevelopment to do more to reduce the stormwater runoff from their property. The idea that these costs should be reflected in the costs of developing properties is in keeping with the established principle of environmental policy and economics that external environmental costs should be internalized into the costs of a transaction. By making the shift to the retention-based approach in these amendments, regulated development will become a major driver behind the long-term effort to retrofit impervious surfaces in the District and, ultimately, to restore health to the District’s water bodies.

Enhancing sustainability in the District is another important objective, and Mayor Muriel Bowser has released an updated sustainability plan (Sustainable D.C. 2.0) that will help the District achieve this vision. These amendments are designed to support that vision not only by improving protection for District water bodies, but also by providing that protection while maximizing flexibility and cost-savings for regulated sites. Notably, these amendments allow regulated sites the option of achieving a portion of their stormwater retention requirement off site, but still within the District, without having to first prove that on-site retention is infeasible. Sites that opt to use off-site retention have two (2) off-site options: use of Stormwater Retention Credits (SRCs), which can be purchased from the private market, or payment of an in-lieu fee to DOEE.

In addition to the flexibility and cost-savings that these off-site provisions allow, they also enhance sustainability’s triple bottom line of social, economic, and environmental impacts via the installation of more retention BMPs in more parts of the District than would otherwise be achieved

under a strict on-site retention approach. The preamble to the proposed rule provided an overview of the benefits to District water bodies that may result from the increase in retention BMPs (available via www.DOOE.dc.gov/swregs). To summarize, this increase has the potential to significantly reduce the volume of stormwater runoff into District water bodies and to capture a greater share of the dirtiest “first flush” volume carrying pollutants to our water bodies. By shifting the installation of retention BMPs from areas draining into the tidal Anacostia and Potomac rivers to areas draining into the District’s relatively vulnerable tributary water bodies, these off-site retention provisions are also likely to result in more protection for the District’s most vulnerable water bodies. Socioeconomically, an increase in retention BMPs should increase the number of green jobs in the District, including low-skill and moderately skilled installation, operation, and maintenance jobs, as well as relatively high-skilled design and engineering jobs.

The increase in retention BMPs also provides aesthetic, health, and ancillary environmental benefits to the District. Finally, it is worth pointing out that DOEE sees the off-site provisions in these amendments as having the potential to result in a relatively large amount of retention BMPs being installed in less affluent parts of the District, meaning that these amendments also have the potential to improve environmental justice outcomes in the District.

These amendments also contain other provisions to provide flexibility to regulated sites and promote sustainable development in the District. To facilitate retention on site, the amendments allow a regulated site to exceed the retention requirement in one area (“over-control”) in order to compensate for retention that falls short in another area on the site. Additionally, on-site retention can also be achieved via direct drainage to a Shared Best Management Practice (S-BMP) that may serve multiple sites. Finally, although a site draining into the Combined Sewer System (CSS) must retain a minimum volume of stormwater from the entire site, it has the flexibility to over-control without having to meet minimum requirements for retention or treatment in individual drainage areas on the site.

3 Restructuring of the Watershed Protection Division

In 2018, the Watershed Protection Division underwent a restructuring as part of a larger restructuring of the Natural Resources Administration of DOEE. The Watershed Protection Division previously included the Restoration Branch, which implements watershed restoration projects, the Plan Review Branch, which reviewed and permitted all land disturbing activities in the District, and the Inspection and Enforcement Branch, which inspected all construction activities in the District to ensure compliance with both erosion and sediment control and stormwater management regulations.

3.1 Restoration Branch

The Restoration Branch sponsors activities that protect and restore urban river, stream, and wetland habitats. This branch also implements DOEE’s RiverSmart programs that provide targeted incentives to homeowners and schools to reduce stormwater runoff. The Restoration Branch manages

large scale LID, stream, and wetland restoration projects. The Restoration Branch also manages our signature RiverSmart Homes and Communities programs while also managing several incentive programs for watershed protection activities.

3.2 Partnering and Environmental Conservation Branch

The Partnering and Environmental Conservation Branch brings together District and federal agencies, local non-government organizations, and local communities to restore and preserve the District’s waterways. This branch develops agreements and issues grants to help restore watersheds, conduct outreach, and reduce litter to waterbodies.

4 Goals, Objectives, and Milestones

With the restructuring of the Watershed Protection Division and following a strategic planning process WPD developed new goals and objectives for our NPS Management activities. Listed below are new goals and objectives as well as outcomes from 2018 achievements which bode well for the entire life of the District’s new NPS Plan (2019 and 2023).

GOAL ONE: Support activities that reduce pollutant loads from urban runoff, litter prevention, and trash removal.

Goal One	Objective	Milestones	2019	2020	2021	2022	2023	Total
Support activities that reduce pollutant loads from urban runoff, litter prevention, and trash removal.	To complete at least 2,750 inspections of businesses regulated by the Anacostia Clean Up and Protection Act (Bag Law) between 2019 and 2023.	550 inspections per year of businesses regulated by the Anacostia Clean Up and Protection Act						
	To complete at least 1,500 inspections of entities regulated by the Sustainable DC Omnibus Amendment Act 2014, which includes both the foam, or Styrofoam™, food service ware ban, plastic straw ban and other recyclable and compostable food service ware requirements between 2019 and 2023.	300 inspections per year of entities regulated by the Sustainable DC Omnibus Amendment Act of 2014						

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<p>To educate 1,000 businesses regulated by the Bag Law and Food Service Ware Regulations and the public about any changes in requirements in an effective and efficient manner between 2019 and 2023.</p>	<p>Educate 200 businesses per year on the Bag Law and Food Service Ware Regulations</p>						
<p>To complete at least 300 inspections of regulated properties to ensure compliance with the Coal Tar Pavement Sealant Ban (Comprehensive Stormwater Management Enhancement Amendment Act of 2008) between 2019 and 2023.</p>	<p>60 inspections per year for compliance with the Coal Tar Pavement Sealant Ban</p>						
<p>To remove 600,000 pounds of trash through a combination of street, stream, and shoreline clean-up efforts; maintenance of trash traps, skimmer boat operations; street sweeping; and implementation of litter reduction policies (e.g. the Bag Law) between 2019 and 2023.</p>	<p>120,000 pounds of trash removed annually</p>						

Goal Two: Support and implement activities that restore and maintain healthy habitat, species diversity, and water flows to all tributaries to the Anacostia River, Rock Creek, and Potomac River.

Goal Two	Objective	Milestones	2019	2020	2021	2022	2023	Total
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To support and implement activities that restore and maintain healthy habitat, species diversity, and water flows to all tributaries to the Anacostia River,	To restore four miles of stream by 2023 or 12 percent of the District's total stream/river length.	0.8 miles of stream restored annually						
	To restore and maintain 10 acres of wetlands by 2023.	Two acres of wetlands restored and maintained annually						
	To repair 50 outfalls by 2023, or substitute a portion of outfall repairs with stream restoration with a demonstration that they in-stream water quality benefits of restoration exceed derived from outfall repairs.	To restored 10 outfalls annually or substituted a portion of outfalls repairs with stream restoration work.						

Goal Three: Install low impact development (LID) practices on public and private properties throughout the District to maximize reductions in stormwater runoff.

Goal Three	Objective	Milestones	2019	2020	2021	2022	2023	Total
Install Low Impact Development (LID) practices on public and private properties throughout the District to	To retrofit 30 District facilities with LID projects between 2019 and 2023.	To install 6 LID retrofit projects on District facilities annually.						
	To retrofit 15 private facilities with LID projects through our RiverSmart Communities Program between 2019 and 2023.	To install 3 LID retrofit projects on private facilities annually.						

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maximize reductions in stormwater runoff.	To install 1,250,000 square feet of green roof between 2019 and 2023.	To install 250,000 square feet of green roof annually.						
	To audit 5,000 residential homes between 2019 and 2023.	To audit 1,000 residential homes annually for the RiverSmart Homes Program.						
	To plant 50,000 trees between 2019 and 2023.	To plant 10,000 trees annually in the District.						
	To install 3,000 rain barrels between 2019 and 2023.	To install 600 rain barrels annually.						
	To install 500 rain gardens between 2019 and 2023.	To install 100 rain gardens annually.						

Goal Four: Coordinate NPS Management Program efforts with other District, federal, and private sector programs and adjoining Jurisdictions.

Goal Four	Objective	Milestones	2019	2020	2021	2022	2023	Total
To coordinate NPS Management Program efforts with other District, Federal, and private sector programs and adjoining jurisdictions.	To meet with DC Water, the National Park Service, or other local and regional partners at least 30 times on NPS management issues between 2019 and 2023.	To have at least three coordination meetings with the National Park Service and three meetings with DC Water on NPS management issues per year.						
	To participate in five Chesapeake Bay Program Executive Council meeting between 2019 and 2023.	To participate in one Chesapeake Bay Program Executive Council meeting per year.						

Non-Point Source Management Plan for the District of Columbia, 2019

To participate in 60 CBP Management Board Meetings between 2019 and 2023.	To participate in twelve (12) CBP Management Board Meetings per year.						
To participate in at least 40 Region 3 and Chesapeake Bay Program Goal Implementation Team, Working Group, Advisory Committee or similar meetings between 2019 and 2023.	To participate in at least eight (8) Region 3 and Chesapeake Bay Program Goal Implementation Team, Working Group, Advisory Committee or similar meetings per year.						
To participate in at least 30 Metropolitan Washington Council of Governments meetings (including Anacostia Watershed Restoration Partnership, Chesapeake Bay Policy Committee, and Water Resources Technical Committee) meetings between 2019 and 2023.	To participate in at least six (6) Metropolitan Washington Council of Governments meetings (including Anacostia Watershed Restoration Partnership, Chesapeake Bay Policy Committee, and Water Resources Technical Committee) meetings per year.						
To issue 50 grants to entities to further NPS work in the District between 2019 and 2023.	To issue at least 10 grants to entities to further NPS work in the District per year.						

Goal Five: Support programs that Aim to prevent NPS pollution from individual actions by carrying out effective information and education campaigns.

Non-Point Source Management Plan for the District of Columbia, 2019

Goal Five	Objective	Milestones	2019	2020	2021	2022	2023	Total
<p>To support programs that aim to prevent NPS pollution from individual actions by carrying out effective information and education campaigns.</p>	To provide 12,500 school students annually with an overnight meaningful watershed experience between 2019 and 2023.	To provide 2,500 school students annually with an overnight meaningful watershed experience.						
	To train 100 teachers through training that integrates hands-on watershed education with system-wide standards of learning between 2019 and 2023.	To train 20 teachers annually through training that integrates hands-on watershed education with system-wide standards of learning.						
	To implement the Anacostia River Explorers program to provide free boat tours to at least 5,000 residents on the importance of restoring the Anacostia River between 2019 and 2023.	To implement the Anacostia River Explorers program to provide free boat tours to at least 1,000 residents annually on the importance of restoring the Anacostia River.						
	To engage and train at least 75 volunteers in the Adopt-A-Stream Program between 2019 and 2023.	To engage and train at least 15 volunteers per year in the Adopt-A-Stream Program.						
	To install 2000 storm drain markers in the District between 2019 and 2023.	To install 400 storm drain markers annually in DC.						

	To train a minimum of 75 District residents on issues addressing watershed restoration and water quality through the Watershed Steward Academy between 2019 and 2023.	To train a minimum of 15 District residents annually in issues addressing watershed restoration and water quality through the Watershed Steward Academy.						
	To educate 750 youth enrolled in job training programs on the importance of watershed protection activities between 2019 and 2023.	To educate 150 youth per year enrolled in job training programs on the importance of watershed protection activities.						

Goal 6 - Pollution prevention: Coordinate a pollution prevention program that reduces stormwater pollution from industrial and commercial facilities in the District by providing compliance assistance and encouraging the adoption of practices that will improve water quality in District waterways.

Goal Six	Objective	Milestones	2019	2020	2021	2022	2023	Total
Pollution Prevention: Coordinate a pollution prevention program that reduces stormwater pollution from industrial and	To provide feedback on 100 Stormwater Pollution Prevention Plans (SWPPPs) for District facilities to ensure they are accurate and complete between 2019 and 2023.	To provide feedback on 20 Stormwater Pollution Prevention Plans (SWPPPs) for District facilities each year to ensure they are accurate and complete.						

Non-Point Source Management Plan for the District of Columbia, 2019

<p>commercial facilities in the District by providing compliance assistance and encouraging the adoption of practices that will improve water quality in District waterways.</p>	<p>To provide trainings to 1,000 municipal snow and ice removal staff on good housekeeping, spill response, and techniques that reduce salt use between 2019 and 2023.</p>	<p>To provide annual trainings to 200 municipal snow and ice removal staff on good housekeeping, spill response, and techniques that reduce salt use.</p>						
	<p>To conduct 10 workshops between 2019 and 2023, for the automotive repair industry and commercial buildings, to provide compliance assistance and stormwater pollution prevention strategies.</p>	<p>To conduct two workshops each year, one for the automotive repair industry and one for commercial buildings, to provide compliance assistance and stormwater pollution prevention strategies.</p>						

5 Key Watershed Protection Division Programs and Projects

5.1 Environmental Education and Outreach

The DOEE Watershed Protection Division sponsors and conducts environmental education and outreach activities targeted to teachers, environmental educators, and students throughout the District. These programs and resources include the following efforts.

5.1.1 Conservation Education (Project Learning Tree, Project WET, and Project WILD)

These internationally recognized programs are used to train educators in innovative techniques for exploring a wide range of environmental concepts with students and teaching critical thinking skills that lead to environmental stewardship (grades K-12).

5.1.2 Teacher Training Workshops

Teacher-training workshops in environmental education can provide teachers with continuing education credits through accredited environmental curriculums that support the DCPS teaching and learning standards and provide students with meaningful environmental education experiences via outdoor activities and events.

5.1.3 DC Environmental Literacy Plan

On July 2, 2012, Mayor Vincent C. Gray submitted the state Environmental Literacy Plan to the Council of the District of Columbia. Like other states across the country, the development of the District's state Environmental Literacy Plan (ELP) was mandated by legislation, in the District's case the DC Healthy Schools Act of 2010. Passed by the DC Council, the Healthy Schools Act and its 2011 amendments seek to improve the health and wellness of all District students. The legislation addresses nutrition, health education, physical education and physical activity, Farm-to-School programs, and school gardens. Additionally, the law acknowledges that creating and sustaining an environmentally-friendly school environment and integrating environmental education into the schools' curriculum are essential to the health and wellness of students, as well as the health of the local environment and community.

The Act directed DOEE to draft an Environmental Literacy Plan in conjunction with other District education agencies and stakeholders. WPD staffed this two-year effort to create a road map *that will lay the foundation for* District-wide implementation and integration of environmental education into the K-12 curriculum. The plan includes:

- Relevant teaching and learning standards adopted by the State Board of Education;
- Professional development opportunities for teachers;
- How to measure environmental literacy;
- Governmental and nongovernmental entities that can assist schools; and
- Implementation of the plan.

DOEE continues to collaborate with DC Public Schools, DC Office of the State Superintendent of Education, DC Public Charter School Board, DC State Board of Education, DC Department of Parks and

Recreation, the University of the District of Columbia, the DC Environmental Education Consortium, and other community stakeholders to implement this plan.

5.1.4 RiverSmart Schools

RiverSmart schools works with applicant schools to install Low Impact Development (LID) practices to control stormwater. These practices are specially designed to be functional as well as educational in order to fit with the school environment. Additionally, schools that take part in the RiverSmart Schools program receive teacher training on how to use the sites to teach to curriculum standards and how to properly maintain the sites.

5.1.5 District of Columbia Environmental Education Consortium (DCEEC)

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

5.1.6 The Anacostia Environmental Youth Summit

This annual outdoor event offers District school children a variety of educational experiences designed to promote in them a conservation and stewardship ethic toward their watersheds, the Anacostia and Potomac Rivers, and the Chesapeake Bay. The fair also provides additional resources to District teachers interested in enriching their curriculum through environmental studies. The District plans to host the summit in years to come as it's a valuable hands-on program that link students to the Anacostia River in a very personal and effective way.

5.1.7 Meaningful Watershed Educational Experiences (MWEEs)

As part of DOEE's sub-grant program, several initiatives were funded for nonprofit partners to create meaningful watershed educational experiences for hundreds of District young people on an annual basis.

The District plans to continue to implement the MWEE program and increase its reach. In the coming years DOEE plans to expand the program so that all 5th graders in Wards 7 and 8 have an overnight watershed experience. This new goal will ensure that 2,270 students in the District have access to a MWEE to better make the connection between the natural environment and their classroom learning.

5.2 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 eight Wards of the District. 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.

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.

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

5.2.1 GZEP Watershed Protection Grants

Each summer, the Green Zone Environmental Program (GZEP) provides paid training and work experiences to up to 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.

Funding for this program is provided by the Stormwater Enterprise Fund and the Anacostia River Clean Up and Protection Fund. DOEE posts a Request for Applications (RFA) once a year in the winter and awards projects the following spring for implementation in summer.

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

5.2.2 Watershed Stewards Academy

The Watershed Stewards Academy is an eight-week certification course taught by DOEE and AWS staff for District residents who want to address local pollution problems in their local watersheds. The program is funded by a DOEE grant to AWS and is part of the National Capital Region Watershed Stewards Academy, which is a coalition of watershed protection groups in the Potomac, Rock Creek, Anacostia, and East Patuxent watersheds. Once they've completed the course, these residents are considered to be Master Watershed Stewards in their local watershed. These alumni serve as resource people and community leaders in the effort to clean up local waterways, to coordinate efforts to infiltrate and reduce stormwater runoff.

5.2.3 Storm Drain Marking Program

DOEE will continue to work with volunteer groups to ensure the installation of 400 stormdrain markers annually throughout the District so that residents and visitors know which waterbodies stormwater, trash, and debris that enters storm drains ends up.

5.3 Job Training Programs

5.3.1 Green Zone Environmental Programs

Every summer, GZEP partners with the Marion Barry Summer Youth Employment Program to provide youth and young adults, ages 14-24, with an opportunity to learn about energy and environmental issues, complete community-based environmental projects, and prepare for careers.

5.3.2 River Corps

In 2017, DOEE commenced a green infrastructure and job training program, the River Corps, run by the Latin American Youth Center. Each year two cohorts comprised of ten youth each will participate in a five-month long green infrastructure job training program where young people learn how to maintain LID sites, inspect RiverSmart Homes installations, perform trash cleanups, remove invasive plant species, and photo-monitor upcoming and existing stream restoration projects.

5.4 Equity

DOEE realizes that in order to reach all District residents especially those in underserved communities our work must be intentional to reach and include all communities in our work. To that end the Watershed Protection Division includes equity analysis into program and project design to ensure equitable delivery of our programs.

5.5 Community Programs

5.5.1 RiverSmart Homes

The District has recognized the importance of targeting homeowners for pollution reduction measures because residential property is among the largest single land uses in the city and, because of the relatively small lot sizes, is the least likely to be required to install SWM practices. In 2008, DOEE developed RiverSmart Homes, an LID retrofit program aimed at District single-family homes. The program started with eight demonstration sites, one in each of the District's wards. It then expanded to a pilot program in the Pope Branch watershed and has been open to all District residents since the summer of 2009.

Through this program, DOEE performs audits of homeowners' properties and provides feedback to the homeowners on what LID technologies can be safely installed on the property. DOEE also offers homeowners subsidized installations of any LID recommended at the audit, which can include rain barrels, shade trees, rain gardens, native landscaping to replace grass, and permeable pavement.

5.5.2 RiverSmart Communities

RiverSmart Communities focuses on installing stormwater retrofit practices on nonprofit and religious institutional properties. Typical practices include permeable paving systems, bioretention, rain gardens, BayScaping, cisterns, and tree planting. The program provided the full funding needed to design and build stormwater retrofit practices for each selected candidate. Each candidate is selected annually via a competitive application process. In exchange for full funding, the nonprofit and/or religious institutional partner performs outreach and education to the audience they serve, both inside their organization and within the adjacent neighborhood, regarding relevant District environmental programs. In addition, each selected candidate performs all required maintenance for each stormwater retrofit practice installed.

5.5.3 RiverSmart Rooftops

Historically, the District has offered a rebate for installation of a green roof on a new building or the retrofit of an existing roof. Programs offered through DOEE provided varying rebate amounts with varying constraints. In 2012, DOEE restructured this rebate program to offer a single application process with a set rebate of \$5 per square foot regardless of the roof size. In early 2013, the rebate program continued to offer a single application process with a rebate of \$5 per square foot. Participation in the program was less than predicted, so DOEE has increased the rebate amount to \$7 per square foot.

The current program offers a \$10 per-square-foot rebate for green roofs voluntarily installed in the CSS service area and \$15 per-square-foot for the municipal separate storm sewer system service area.

5.5.4 Permeable Surface Rebate Program

Through the Permeable Surface 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 per square foot of impervious surface removed and replaced with permeable pavers and \$5 per square foot of impervious surface removed and replaced with vegetation. On average, the cost of installing permeable pavers is \$30 per square foot and re-vegetating an area is approximately \$6-\$13 per square

foot, respectively. The maximum rebate amount for any project falling within the CSS area of the city is \$3,000. Currently, there is no maximum rebate amount for projects located in the MS4 area of the city, but all rebates are subject to available funds. The reduction in the funding available to projects in the CSS area was implemented with the goal of increasing the number of projects installed in the MS4 area.

All owners of private property including residential buildings, commercial buildings, community spaces, and houses of worship in the District are eligible for this rebate funding. This also includes those who have already received RiverSmart Homes, RiverSmart Communities, or RiverSmart Schools funding. Rebate funding cannot be used to fulfill a DOEE-required Stormwater Management Plan or other regulated requirements.

The Permeable Surface Rebate Program has an 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.

5.5.5 District Department of Parks and Recreation (DPR) Projects

DPR provides quality urban recreation and leisure services for residents of and visitors to the District. DPR supervises and maintains area parks, community facilities, swimming pools and spray parks, and neighborhood recreation centers. DOEE aims to install three large scale LID projects on DPR sites annually.

5.5.6 Tree Planting

The District has been called "The City of Trees." It has a tree canopy cover of 38 percent, which is high for a dense urban environment, but lower than what the canopy cover has been historically, even when the city had a higher population density. In an effort to improve air and water quality, reduce the urban heat island effect, and offset greenhouse gas emissions, the District has adopted a 40-percent tree canopy goal. Mayor Bowser has adopted a Sustainability Plan that calls for achieving the canopy goal by 2032. To achieve that goal the District will need to plant an average of 10,800 trees annually.

5.5.7 Community Stormwater Solutions

DOEE's Community Stormwater Solutions Grant program provides startup funding for community-oriented projects that raise awareness about urban watershed issues, in particular those associated with stormwater runoff. All projects must fall into one or more of the following project areas:

- Install green infrastructure;
- Maintain existing green infrastructure;
- 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 waterbodies; and
- Engage communities, raise awareness, and bring about behavior change on issues impacting water quality, including stormwater management, trash, pollution prevention, and watershed restoration.

5.5.8 Adopt-A-Stream Adopt-Your-District Program

Adopt-Your-District is a program that allows volunteers to adopt parks, blocks, or segments of streams throughout the District. This program is a collaboration effort between DOEE, District Department of Parks and Recreation, National Parks Service, and Office of the Clean City.

5.5.9 RiverSmart Communities

The RiverSmart Communities program aims to reduce stormwater pollution via partnerships with selected 501(c)(3) non-profit organizations and houses of worship. 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 CSOs. 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.

The program provides the full funding needed to design and build stormwater retrofit practices for each selected candidate. Each candidate is selected annually via a competitive application process. 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 (BMP) 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 seventh 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 CSS area.

5.6 Stream and Wetland 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. DOEE has and is planning to use a variety of funding sources to fund these restoration projects, including EPA's 319 NPS 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 projects 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 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.

5.6.1 Wetland Restoration and Living Shorelines

DOEE will work to restore wetlands around the District as well as create living shorelines to provide vibrant habitat spaces along our waterways. Wetlands provide excellent ecosystem services by having the ability to filter water that passes through them while also providing unique habitat spaces along District waterways.

5.6.2 Trash Removal

In 2010, the District and the State of Maryland established a TMDL for trash for the Anacostia River. These loads were calculated based on stream and shoreline transect sampling performed by AWS through a grant from DOEE. NPS loads were attributed to illegal dumping. For the District's portion of watershed, an annual load allocation totaling 20,048 pounds of trash was assigned.

Some of the tools that the District is applying to meet the goals of the trash TMDL include education and outreach, stream and shoreline cleanups, new regulations, and enhanced enforcement. DOEE has supported the Annual AFF Potomac Watershed Clean-up and the Anacostia Watershed Society Earth Day Clean-up since their inception. AFF has developed an online GIS database to track cleanups that occur throughout the Potomac River watershed on an annual basis.

DOEE will continue to implement the DumpBusters program with the DC Metropolitan Police Department (MPD), the DC Department of Public Works, and the National Park Service (Park Service). The program initially addressed illegal dumping at ten hotspots in the Anacostia River watershed and installing enforcement signage and cameras.

5.6.3 Pollution Prevention Stormwater Pollution Prevention Plans

In an effort to make all of District government compliant with reducing NPS, DOEE's stormwater pollution prevention team helps other District agencies in developing and implementing Stormwater Pollution Prevention Plans (SWPPPs). SWPPPs are facility-specific plans that aim to reduce or eliminate the creation of pollutants or wastes at the source through aggressive and practical pollution prevention methods. These SWPPPs are meant to address three primary objectives: 1) Assure facility compliance with the DC Municipal Separate Storm Sewer System (MS4) permit; 2) Identify potential sources of pollution associated with the activities at a facility that may affect the quality of stormwater discharges; and 3) Provide detailed commitments for daily practices and good housekeeping at each facility to ensure that pollution prevention goals are reached.

5.6.4 Snow and Ice Removal

DOEE works with the District snow team to address vehicle washing, snow disposal operations, and salt storage. These efforts include developing the first District plan to identify and prepare site maps for snow disposal sites and conducting salt dome and vehicle wash facility walk-throughs. In FY 2017 DOEE developed its first DOEE Snow Plan to clearly articulate DOEE's role in snow and ice removal operations and emergency response management during winter weather events. DOEE also helped a District salt dome devise a temporary vehicle wash station to divert wash water away from a sand filter into the sanitary sewer. In total, DOEE conducted five onsite visits to provide compliance assistance to snow operations (three salt domes and two vehicle washing operations).

DOEE develops and leads snow trainings for District employees, contractors, and downtown Business Improvement Districts. These presentations teach District light- and heavy-plow operators and manual street and bridge teams about stormwater permitting, how to minimize stormwater pollution from snow and ice removal operations, good housekeeping practices, and how to respond to spills, leaks, and drips.

5.6.5 Pollution Prevention Workshops

DOEE's pollution prevention team also targets the automotive repair industry and commercial buildings by conducting workshops throughout the year to educate business owners and provide compliance assistance and stormwater pollution prevention strategies.

5.7 Inspection and Enforcement

5.7.1 Anacostia Clean Up and Protection Act (Bag Law)

The District continues to implement the Anacostia Clean Up and Protection Act of 2009 (Bag Law), which requires any business that is selling food or beverages to charge 5 cents for every disposable bag distributed, with limited exemptions. The Bag Law is working to keep trash out of District waterbodies by incentivizing residents to use reusable bags and reduce consumption of disposable bags. Also, funds from the disposable bag fee are funding important projects, including maintenance of trash traps, stream restoration, reusable bag distribution, and environmental education.

5.7.2 Sustainable DC Omnibus Amendment Act (Foam Ban)

In 2008, The Anacostia Watershed Society (AWS) determined through their monitoring that expanded polystyrene (more commonly referred to as Styrofoam™) is one of the top-four-most common types of trash found in the Anacostia River. As part of the Sustainable DC Omnibus Act of 2014, the District passed a ban on disposable food service ware made of expanded polystyrene and other products that cannot be recycled or composted. The ban on foam became effective January 1, 2016 while the additional

compostable/recyclable requirements became effective January 1, 2017. These bans affect all businesses and organizations in the District that serve food. The ban does not apply to prepackaged Styrofoam.

5.7.3 Comprehensive Stormwater Management Enhancement Amendment Act (Coal Tar Ban)

The Comprehensive Stormwater Management Enhancement Amendment Act of 2008, effective July 1, 2009, prohibits the sale, use, and permitting of coal tar based pavement products in the District (Coal Tar Ban). The Coal Tar Ban helps to protect human health and the environment by reducing the amount of toxic polycyclic aromatic hydrocarbons (PAHs) in our communities and environment. Rainwater washes PAH-containing sealant particles and dust down storm drains and into local streams and rivers, threatening aquatic life in the Anacostia and Potomac Rivers and the Chesapeake Bay.

6 Other DOEE Groups Working to Support NPS Activities

6.1 Water Quality Division

The Water Quality Division evaluates the health of the District's waters and aquatic resources, establishes and enforces water quality standards, sets targets for pollution reduction, develops implementation strategies to meet standards, tracks and reports on restoration progress, and manages local and federal funds to achieve these goals. WQD has three branches:

- The Monitoring and Assessment Branch implements programs to evaluate the condition of the District's waters.
- The Standards and TMDL Branch establishes water quality standards and TMDLs, certifies federal permits and evaluates condition and impacts to groundwater.
- The Planning and Reporting Branch manages the Municipal Separate Storm Sewer System (MS4) program, models pollution reduction progress, manages water quality data, and manages the Federal Clean Water Construction Grant Program.

6.2 Inspection and Enforcement Division

The Inspection and Enforcement Division (IED) protects the District's water resources through enforcement of water pollution control laws and regulations. IED has two branches:

- The Construction and Maintenance Branch inspects construction sites for compliance with District requirements for soil erosion and sediment control, stormwater best management practices (BMPs), and post-construction BMP maintenance. BMP inspections also include compliance for the RiverSmart Rewards and Stormwater Retention Credit Trading Programs.
- The Illicit Discharge and NPDES Branch conducts facility inspections, compliance monitoring, and enforcement for illicit discharges under the District's Municipal Separate Storm Sewer System Permit; inspects well construction and abandonment; enforces water quality standards; conducts potable water certification for meat processing plants; and coordinates drinking water complaints and source water protection.

6.3 Fisheries and Wildlife Division

The Fisheries and Wildlife Division (FWD) develops, supports, and implements programs for urban fish and wildlife conservation, protection, recreation, and sustainability. FWD achieves its objectives by employing innovative and traditional scientific methods to obtain the best natural resource data available

and by elevating environmental awareness and stewardship through education, outreach and community involvement. FWD has two branches:

- The Fisheries Research Branch conducts annual surveys and studies of migratory and resident fish in the District waterways.
- The Wildlife Management Branch conserves wildlife resources for the health and enjoyment of District residents.

6.4 Regulatory Review Division

The Regulatory Review Division (RRD) reviews proposed construction projects in the District to ensure they comply with applicable laws and regulations to protect and restore health to District waterbodies. RRD also manages related programs, including the District's flood risk management initiatives and mitigation programs such as the Stormwater Retention Credit Trading Program and In Lieu Fee Program. RRD has two branches:

- The Water Resources Protection and Mitigation Branch: This branch manages the District's Stormwater Retention Credit Program which allows properties owners to voluntarily build green infrastructure in order to sell Stormwater Retention Credits (SRC) to other entities seeking to meet their stormwater management requirements. This branch also manages the District's floodplain management program.
- Building Permit Plan Review Branch: This branch reviews for approval all stormwater management and sediment and erosion control permit applications in the District.

6.5 Toxics Substance Division

The Toxic Substance Division (TSD) works with hazardous wastes, pesticides, underground storage of petroleum, and other hazardous contamination. These and other responsibilities are broken down between three branches:

- The Hazardous Materials/Pesticides Branch oversees the use and disposal of toxic chemicals and registers and provides oversight on pesticides in the District.
- The Land Remediation and Development Branch oversees the voluntary redevelopment of contaminated properties, required remediation of sites with known hazardous pollution releases, and the remediation of formerly used defense sites.
- The Underground Storage Tank (UST)/Leaking Underground Storage Tank (LUST) Branch ensures proper installation, operation and removal of USTs, and the cleanup of LUSTs, and surrounding areas.

7 Key Best Management Practices

The District is entirely an urban environment, and thus our use of best management practices (BMPs) is limited to those that work well in urban settings. Below are the key BMPs that DOEE and our partners use to manage NPS pollution in the District:

7.1 Rain Barrels

Rain Barrels capture and store the rainwater running off a rooftop. The harvested rainwater can be stored for later use, released slowly over time, or used immediately for watering lawns and landscaped areas, or washing cars. Rain barrels come in a variety of sizes and shapes to suit a homeowner's water needs.

7.2 Rain Gardens

A rain garden is a landscaped area strategically placed and connected to a downspout to collect and absorb stormwater from your rooftop. Connecting the downspout to the rain garden directs stormwater away your home's foundation and holds it there until it can naturally infiltrate into the ground. The rain garden dips slightly into the ground and has soil engineered to increase infiltration. In addition to improving drainage, rain gardens also help keep polluted runoff out of local streams.

7.3 Shade Trees

Shade trees are large trees with widespread, dense canopies. A shade tree is taller than 25 feet at maturity. Commonly planted shade trees in the District include oaks, maples, ashes and elms. Shade trees are an investment in the environment, your home's future, and future generations.

Trees are an important method for controlling stormwater runoff. The leaves of trees are like cups and can hold up to one-tenth of an inch of stormwater. This captured rain water is critical as a rainfall of only a half an inch can cause sewer overflows. In addition to stormwater control, trees provide many additional benefits.

7.4 Bioretention

Bioretention areas are similar to rain gardens as they are strategically placed landscaped areas to catch, capture, and filter stormwater runoff. Bioretentions are different because they have an underdrain that can help drain the system so that excess water does not pond in the facility too long after a rain event. Bioretentions are for treated larger areas of impervious areas of impervious surface such as roof tops and streets.

7.5 Permeable Pavers

Permeable pavers are a self-draining system that allows rainwater to seep around individual pavers, soaking naturally into the ground underneath. Re-vegetation entails replacing compacted, impervious surfaces with vegetation, increasing the green space on a property and allowing for rainwater to soak into the ground naturally.

7.6 Green Roofs

Green roofs are stormwater management practices that capture and store rainfall in an engineered growing media that is designed to support plant growth. A portion of the captured rainfall evaporates or is taken up by plants, which helps reduce runoff volumes, peak runoff rates, and pollutant loads on development sites. Green roofs typically contain a layered system of roofing that is designed to support plant growth and retain water for plant uptake while preventing ponding on the roof surface. The roofs are designed so that water drains vertically through the media and then horizontally along a waterproofing layer towards the outlet. Extensive green roofs are designed to have minimal maintenance requirements. Plant species

are selected so that the roof does not need supplemental irrigation and requires minimal, infrequent fertilization after vegetation is initially established.

7.7 Stream and Wetland 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. Wetland Restoration is the act of restoring areas with the right soils, hydrology, and plant community to have healthy and sustainable wetlands that act as water filtering areas and habitat spaces along waterways.

7.8 Outfall Restoration

Many stormwater outfalls around the District have been a source of pollution as not only are they conveying stormwater into streams or gullies but they are causing high rates of erosion downstream of them during storm events. DOEE works to install systems downstream of outfall to slow and filter the stormwater coming from the pipes in a controlled and stable manner.

8 Partnerships

8.1 DC Agencies

8.1.1 Department of Transportation (DDOT)

Infrastructure Project Management Administration (IPMD): IPMD manages the large DDOT roadway construction projects and plays a key role in planning and permitting LID work in the public space throughout the District. Most significantly, DDOT, along with DC Water, has partnered with DOEE to plan a large scale residential neighborhood LID retrofitting project on both private space and public property. DOEE and DDOT will continue to partner and prioritize large scale LID projects in targeted watersheds in conjunction with other watershed restoration efforts such as stream restoration and RiverSmart programming.

Urban Forestry Division (UFD): UFD is the District's lead agency in protecting and enhancing the District tree canopy with a specific focus on street trees. UFD has a variety of programs aimed at planting, nurturing, and protecting street trees in all eight Wards with the goal of creating a healthy tree canopy throughout the District. UFD has a variety of programs focused on the District's trees:

- **Street Tree Planting:** Every year the Urban Forestry Division plants at least 7,000 trees in the public right of way. A significant amount of work goes into getting these trees in the ground. This work includes identifying open tree boxes, removing dead trees from tree boxes, creating new tree box locations, determining appropriate species for the tree boxes, and prepping the tree boxes for tree installation. UFD also reviews site plans for new development as part of public space permit reviews to maximize tree planting by the private sector.
- **Street Tree Preservation:** In addition to the work that the UFD does in managing street tree planting, it also works hard to maintain the District's existing tree canopy in the right of way and protection and preservation of trees over specific sizes on private land. This work, although often unnoticed, requires a great deal of effort. UFD's tree maintenance work includes the following activities:
 - Pruning trees to keep them healthy and remove dangerous limbs;

- Injecting American Elms to keep Dutch Elm Disease at bay;
 - Expanding tree boxes for trees that have outgrown their location;
 - Managing tree/power line interactions to keep trees healthy and power service secure;
 - Watering newly planted trees to ensure their survival;
 - Removing dead, dying, or hazardous street trees; and citywide storm and emergency response.
- **Canopy Keeper Program:** It is difficult to maintain the number of new trees the District is planting in the right-of-way. Newly planted trees are especially vulnerable to drought and summer heat in their first two years. To help these trees survive and to protect the District's investment, UFD has started an adopt-a-tree program called Canopy Keepers. Through this program, UFD provides residents who sign an agreement to mulch and water a street tree with free watering bags and instructions on how to properly maintain their tree.

8.1.2 Department of General Services

Established in October 2011, DGS manages all District facilities and land areas with the responsibility of construction, maintenance, and general upkeep. DGS also manages contracting services for work to be performed on most District owned properties and facilities. In order to properly integrate NPS Management Program Plan goals and programs into the large portfolio that DGS handles, DOEE regularly meets with DGS staff to plan projects, prioritize implementation, and to assess and evaluate completed projects. With the adoption of the Sustainable DC Plan and the adoption of the new Stormwater Regulations, DGS will bear a large responsibility to ensure the goals and regulations come to fruition on District owned and managed properties.

8.1.3 DC Water

DC Water is responsible for the operation and maintenance of the District's drinking water distribution lines and both the combined and separate stormwater sewer systems. There are many sanitary sewer lines in streambed throughout the District, and DOEE and DC Water meet on a bimonthly basis to discuss on-going and upcoming projects.

DC Water is also implementing a Long Term Control Plan to hold millions of gallons of polluted runoff in tunnels underneath the District to prevent over 95% of CSO events from happening. In addition to the large tunnels that will store stormwater runoff and sewage during storm events, DC Water is also retrofitting several subwatersheds with LID practices to catch, capture, and filter stormwater before it gets to the CSS.

8.1.4 Office of Planning (OP)

OP performs planning for neighborhoods, corridors, districts, historic preservation, public facilities, parks and open spaces, and individual sites. In addition, OP engages in urban design, land use, and historic preservation review. OP also conducts historic resources research and community visioning, and manages, analyzes, maps, and disseminates spatial and U.S. Census data.

DOEE and OP work together in numerous ways to help ensure that large scale neighborhood initiatives integrate watershed protection features into large scale plans. Having OP include watershed protection initiatives in large scale master plans helps to ensure that LID work will be integrated into the constructed projects. DOEE has also recently worked with OP to develop the Green Area Ratio that will help govern development in the District to ensure that a percent of area is kept green.

8.1.5 Department of Parks and Recreation (DPR)

DOEE and DPR will continue to partner to implement large scale LID projects on their sites and to execute stream restoration projects on their lands. DPR owns large and small park spaces around the District many of which were built on before stormwater regulations and/or still have a need for better stormwater management.

8.1.6 District of Columbia Public Schools (DCPS)

DCPS provides PK-12 educational programming for 45,000 students. DOEE works with DCPS and the DC Office of the State Superintendent of Education (OSSE) to ensure that environmental education is integrated into classroom programming. Each year DOEE helps to train a select group of District teachers to help them better integrate watershed education lesson plans into their daily curriculum.

8.2 Federal Agencies

With large tracts of land throughout the District of Columbia, in particular waterway corridors, owned by the federal government, the District's relationship with its federal partner agencies is vitally important to ensure that NPS pollution is mitigated to the maximum extent practicable. The federal presence in the District is dominated by large federal buildings in the central core of the District with large tracts of park space throughout the rest of the District.

8.2.1 Department of the Interior

- **National Park Service (NPS):** DOEE actively works and partners with several branches of the National Park Service in the National Capital Region to plan and implement restoration project, in particular, stream restoration projects as many of the District's stream miles lie on NPS owned and managed land. DOEE expects to design and build stream restoration projects at Pinehurst Branch, Stickfoot Branch, Park Drive, and Fort Dupont Park over the next 5-10 years. DOEE is additionally exploring other projects focused on outfall repairs and large scale restoration at Oxon Run, all of which require partnering with NPS.
- **U.S. Fish and Wildlife Service (USFWS):** DOEE will work with USFWS to monitor and perform maintenance as needed on stream restoration projects, wetland projects, and mussel restoration efforts and explore other opportunities to partner.

8.2.2 U.S. Department of Agriculture (USDA)

- **U.S. National Arboretum (the Arboretum):** DOEE previously partnered with the Arboretum to implement and LID and stream restoration project on the Arboretum's grounds. The LID project captures and filters stormwater from the parking areas near the Visitor's Center and the stream restoration project restored Springhouse Run, a tributary of the Hickey Run. DOEE and the Arboretum will continue to monitor and maintain Springhouse Run and will collaborate on future activities on Arboretum grounds.
- **National Resource Conservation Service (NRCS):** DOEE and NRCS previously partnered to utilize NRCS' contracting services for such projects as the Watts Branch Stream Restoration Project, the Brent Elementary LID Project, and the MacFarland Middle School LID Project.

8.2.3 U.S. Army Corps of Engineers

DOEE has partnered with and will continue to partner with the US Army Corps of Engineers (USACE) on projects related to floodplain management in the District. In particular, USACE executed a detailed flood study for Oxon Run, which explored the floodplain impacts of a large scale watershed restoration

project, and is presently working with DOEE on a flood study and mitigation project for the Watts Branch corridor.

8.2.4 U.S. Environmental Protection Agency (EPA)

DOEE and the EPA have partnered for many years to ensure that the District of Columbia meets federal law and guidelines related to NPS management. DOEE and several branches of the EPA partner to ensure that the District is meeting all of its local and federal obligations as well as working in a manner that is in concert with regional and national efforts.

- **EPA Region 3 - 319 Program:** DOEE receives annual funds to implement our NPS management projects and DOEE participates in annual conferences and meetings to stay up-to-date with the latest in NPS work around the Region.
- **EPA Region 3 - MS4 Program:** In 2018, DOEE received a new Municipal Separate Storm Sewer System (MS4) Permit from EPA that allows the District to still operate its Separate Storm Sewer System provided it meets specific targets to mitigate the amount of stormwater and associated pollutants that flow into the District's piped network.
- **EPA Region 3 - Chesapeake Bay Program (the Bay Program) Watershed Implementation Plans (CB WIP) and broader CBP Goal Implementation:** DOEE receives funds from the Bay Program and also participates on numerous technical committees established by the Bay Program. The District is fully committed to implementing and meeting milestones of Phase I and II WIPs as well as for its WIP III for the Chesapeake Bay which is currently under review. Technical committees are venues for regional partners to make collaborative decisions and create a unified direction for how to proceed in areas such as properly attributing load reductions to stream projects, evaluating the latest in scientific data on LID load reductions, and deciding best practices to improve and expand urban tree canopy cover. DOEE has an active and engaged presence on all Bay Program committees which adds value to such committees since the District is the only all-urban jurisdiction within the Bay Program's boundaries.

8.2.5 U.S. Geological Survey (USGS)

USGS presently operates several water monitoring stations around the District, with financial support from DOEE, that measure water height, flow, and various water quality parameters including but not limited to temperature, dissolved oxygen, and turbidity.

8.2.6 Federal Emergency Management Administration (FEMA)

FEMA is the lead agency tasked with the responsibility for coordinating government-wide relief efforts to disasters. DOEE and FEMA coordinate efforts related to the Floodplain Rules and Regulations in the District and coordinate activities related to emergency responses, both natural and man-made.

- **D.C. Silver Jackets:** The D.C. Silver Jackets is an interagency team made up of members from federal, District of Columbia, and regional agencies, as well as academia. This team leverages resources to identify and implement comprehensive, resilient, and sustainable solutions to reduce flood risk around the District and to assist local communities.

9 Watershed Prioritization

The District city/state-wide has three main watersheds with approved Section 319 WIPs (Anacostia, Oxon Run, and Rock Creek) and one drainage area (direct Potomac drainage) that does not have a currently approved WIP. DOEE has requested that the 319 Program review and accept the District's Consolidated TMDL Implantation Plan which covers the entire District of Columbia. This plan supersedes DOEE's previous watershed plans and would create consistent goals, timelines, and tracking for the District MS4 program, Chesapeake Bay Program, and non-point source pollution program. While awaiting that decision, the Watershed Protection Division focuses its energy, effort, and resources primarily on the three watersheds with approved WIPs when developing restoration projects. Given that all water bodies suffer from some form of impairment, the District is not at a point where it can protect 'healthy' watersheds; however, the District does allocate considerable focus and resources in our NPS program to prevent further degradation. First and foremost, DOEE focuses on the water bodies with impairments and approved TMDLs as a starting point for prioritizing watershed efforts. This prioritization is important for restoring District water bodies and improving water quality in the Chesapeake Bay.

The specific factors that influence our watershed prioritization are listed below.

9.1 CWA Section 319 Watershed Implementation Plans (WIPs)

The first step the District undertakes in prioritizing which watershed to work is to focus on the areas where the District has approved WIPs thus our first level priority areas are the Anacostia watershed, the Rock Creek watershed, and Oxon Run. These WIPs cover over 75% of the land area in the District, ensuring that Section 319 funding is spent only in areas with approved watershed plans. In an effort to more greatly focus resources so that water quality improvements can be realized, DOEE targets certain subwatersheds for more intensive work. These subwatersheds are typically areas where numerous factors line up that allow DOEE to implement several restoration projects and stormwater retrofits. By concentrating its resources, DOEE hopes to see the delisting of streams for several impairments.

The WIPs are also great guides and teaching tools to help other agencies and nonprofit partners know why the District focuses in certain areas and what type of work needs to be implemented. WIPs allow DOEE and partner agencies to see specific projects within geographic areas so that when they are planning future projects they have a guide for implementation practices to meet TMDL goals. The WIPs are useful watershed restoration guide manuals or 'menus' for restoration for the District that take a proactive approach to delisting water bodies.

9.2 Key Impairments

Addressing the key impairments in local watersheds is a driving factor in our watershed prioritization and implementation practice selection. DOEE works with the Section 319 program to target specific impairments in watersheds with approved WIPs. Using the recommended practices laid out in the WIPs, DOEE seeks to implement those practices in a manner which will lead to water body's delisting. Given that all District water bodies are listed for one or multiple types of impairments, some of the consideration factors below help to assist in making sound decisions for moving forward with project work in District watersheds. DOEE's combined in-stream and upland work targeting impairments helps us concentrate efforts and resources in the targeted watersheds.

9.3 Human Health

The second consideration is to focus on areas where human health considerations are pressing. In particular, DOEE and DC Water have worked together for many years to look at streams that have active sewer lines in them to make sure that the lines are safe and that stream conditions don't present a threat to the sewer lines. In addition to E. coli, other pollutants listed on the District's TMDL list can come from sewer lines and thus sewer line leaks. Given the immediate threat that a sewer line leaks pose to human health its areas where lines are in degraded states that DOEE and DC Water seek to prioritize work. DOEE and DC Water will continue to partner to ensure that stream projects where sewer lines are in need of repair are prioritized to ensure a meaningful and lasting improvement to human health conditions along the streams.

9.4 Ecosystem Integrity

The third consideration in prioritizing our watershed work is to determine the ecosystem integrity of a watershed and to predict the ecosystem potential post-restoration. Many District streams, while suffering from impairments, do provide vital habitat corridors to aquatic and terrestrial species. Concentrated restoration efforts can both reduce impairments to the streams and rivers and also enhance the habitat benefits both in-stream and within the streams riparian corridor. Similarly, bioretention cells and tree plantings in upland areas can serve a dual purpose of preventing pollutants from reaching the water bodies while also providing upland habitat areas for native animal species. Additionally, trees, rain gardens, and other LID practices used to reduce upland runoff also serve functions such as groundwater recharge, increased shade to cool water temperatures, and reduce the volume and velocity of stormwater entering the streams. By focusing on ecosystem restoration in-stream and upland the District not only makes headway toward delisting streams but ancillary benefits arise to the entire watershed.

9.5 Human Connectivity

DOEE weighs making a connection to the communities that live near and affect the given waterway. Human connection to waterways can take place in many ways such as recreation, fishing, aesthetics, trails, opportunities for outdoor education, or other factors. DOEE looks to prioritize projects within watersheds where links can be made between the people who live in a watershed and the specific projects needed to restore the watershed. DOEE's suite of RiverSmart programs makes links between homeowners, renters, teachers, students, and nonprofits with the protection and restoration of nearby water bodies. These programs, through education, outreach, and small scale implementation projects, help District citizens see what they can do in their yard or schoolyard can help their watershed. This process of connecting people to their watershed also helps build a network of stewards for the protection of water bodies over the long-term.

By implementing LID projects on school grounds DOEE is then able to train teachers on watershed education hands-on activities, work with students to see how their classroom learning relates to projects on the school ground, and provides a year round example of good watershed practices. DOEE seeks to not just implement good projects but sees great value in making a connection between citizens and their environment thus helping to adjust attitudes and behaviors.

9.6 Opportunism

Because DOEE does not own land its partnerships with landowning agencies play a key role on whether DOEE can focus work in a particular watershed, especially for large scale restoration projects. Often

access to property and/or projects other agencies prioritize require that DOEE also concentrate efforts in a particular watershed. DOEE needs to work collaboratively with other agencies on all projects thus, should DDOT or DCWATER or NPS want to embark on a project in or near a stream, DOEE must consider whether or not to focus resources toward that project to enhance any projected environmental enhancement.

9.7 Threats

DOEE explores various threats to watersheds and waterways as part of our project prioritization. In an urban environment there is a wide array of threats to watersheds and in some cases there are areas where stream conditions create threats to adjacent areas. Be it sewer leaks, stream bank erosion that threatens property, or some other type of threat to the watershed, DOEE does consider the severity of threats in prioritizing work to undertake. While no entity wants to operate reacting to immediate threats to water quality, the reality is that threats exist and DOEE to the best of its abilities stays ahead of threats to ensure that water quality is not compromised or degraded.

DOEE seeks to restore the District's watersheds in a systematic and strategic manner but might not follow the same path for each watershed project undertaken. DOEE weighs various factors to prioritize not only which watersheds to prioritize but to also prioritize projects within watersheds. The prioritization process DOEE follows involves an assessment of the threat, opportunities, ecosystem integrity, impairments, human connectivity, and health considerations across watersheds. Once DOEE explores all relevant factors, programs and projects are implemented with a focus on making all the District's waterways swimmable and fishable.

10 Funding Sources

Funding for NPS pollution management comes from the following programmatic areas: DOEE regulatory programs, federal programs, District of Columbia capital funds, and District of Columbia agencies outside of the authority of the DOEE such as DDOT or DC Water. DOEE bears most legal and financial responsibilities for the management and implementation of the District's NPS Program and shall continue to do so for the foreseeable future.

10.1 General Revenue

DOEE uses general revenue funds for both project implementation and to provide local match for federal grants to implement projects and/or as match to cover salaries.

10.2 Regulatory Programs within DOEE

1. **Fees for Plan Review of Stormwater Management and Sediment Control Plans:** Regulatory programs are those required collectively by the District of Columbia and federal laws and regulations. A number of local regulations that deal with NPS management. Soil erosion control regulations address the control of pollution resulting from construction. Stormwater management regulations deal with contaminants during and after completion of construction. The District reviews construction plans for compliance with these regulations and applicants are assessed a fee for plan review. This fee structure was outdated and did not reflect the actual cost of the review. In 2013, with the adoption of the District's new stormwater regulations, the Watershed Protection

Division updated its fee structure to reflect actual costs to reflect comparable fee structures of neighboring jurisdictions. The collected fees are kept in a separate account and are dedicated to stormwater management and soil erosion control programs (Section 319 funds do not go to support the fee generated portion of DOEE's NPS work).

2. **Municipal Separate Storm Sewer System:** The management of the Municipal Separate Storm Sewer System (MS4) permit under NPDES is a major regulatory program. EPA issued the most recent permit in 2018 to the city. Requirements of the permit are broad and demand considerable funding to implement. Different components of the permit will be implemented by different agencies necessitating negotiation and careful planning. DOEE will work with and reach agreements with DDOT, DGS, DC Housing Authority, DC Public Libraries, and DC Water who are members of the workgroup that will determine the responsibility of each agency under the permit. A large component of responsibilities will lie with both DDOT and DGS, who are major landholding District agencies. The funding that comes from the impervious surface fee on District water bills will be allocated proportionately to the responsible agencies to implement permit requirements.
3. **Floodplain Management:** In 2010, with the adoption of new floodplain maps DOEE began collecting fees associated with the review of projects that are in a FEMA designated floodplain area. This fee helps cover review costs but is not a source of revenue for floodplain management programs or implementation.
4. **Bag Law:** In 2010, the District adopted a bag tax for plastic bags used at grocery stores and other stores. This fee or tax per bag is 5 cents with 1 or 2 cents going to the business owner and 3 or 4 cents going to the District. Funds generated from the bag tax are used for trash reduction strategies around the District and for overall watershed protection projects.

10.3 Federal Grant Programs

1. **Section 319 – NPS Pollution Grants (319):** The non-regulatory programs dealing with NPS pollution management are diverse. A majority of these programs are cost share efforts with federal grant programs. The two grants that are the primary source of funding for NPS control in the District are §319(h), NPS implementation, and Chesapeake Bay Program implementation grant under §117(b) of the federal *Clean Water Act*.
2. **Clean Water State Revolving Fund (CWSRF):** DOEE receives and issues CWSRF grants to agencies and groups in the District, including NPS programs, to fund water quality protection projects for wastewater treatment, NPS pollution control, and watershed and estuary management. DOEE has utilized this fund to invest in NPS projects over the years and it is a valuable resource to assist with funding larger scale restoration projects.
3. **Chesapeake Bay Program (CBP):** CBP gives multi-year grants to DOEE to assist with programs that will focus on the restoration of the Chesapeake Bay and strive toward meeting Chesapeake Bay TMDL goals.

10.4 Capital Funds

District Capital Funds: DOEE often requests capital funds for specific projects as a part of the District's annual budgeting process. When approved, these funds become an important source of restoration monies and matching funds for Section 319 grants.

10.5 National Fish and Wildlife Foundation Grants

The National Fish and Wildlife Foundation is the United States' largest private non-profit conservation grant maker. They combine federal and private funds and issue requests for applications in numerous conservation areas. DOEE has actively applied for and been the recipient of several NFWF grants and will continue to pursue future NFWF funding opportunities. The two most common funds DOEE seeks funding from are:

1. **NFWF's Chesapeake Bay Stewardship Fund:** NFWF annually, through federal and private funds, offers grants throughout the Chesapeake Bay watershed to fund large scale projects focused on overall Chesapeake Bay restoration efforts. This fund is largely funded by the Environmental Protection Agency along with some private dollars.
2. **NFWF's Coastal Resiliency Fund:** NFWF's issues request for applications for funding focused on climate change and resiliency efforts. Due to the District having two tidal rivers running through it, and having to deal with the real effects of climate change, DOEE applies for funding for large scale stream and wetland restoration projects through the Coastal Resiliency Fund. This fund is largely supported by the National Oceanic and Atmospheric Administration (NOAA) with some private funding.

10.6 FEMA

FEMA has a Flood Mitigation Assistance Grant Program that the District can apply to for assistance with planning and implementation of projects to help reduce risk or remove private properties from flood prone areas.

10.7 NOAA

NOAA has several grant programs related to habitat restoration and fish passage that the District could apply for to fund our larger scale stream or wetland restoration projects.

10.8 U.S. Army Corps of Engineers Section 510 Grant

DOEE has the ability to apply for funding through the Army Corps of Engineers Chesapeake Bay Environmental Restoration and Protections Program (Section 510). This funding source provides funding for an array of ecosystem protection and restoration activities in the Chesapeake Bay Watershed, with the federal contribution being 75% and the local contribution being 25%.

11 Funding Strategy

Resources managed by the Watershed Protection Division are limited, given the immense task of protecting and restoring the District's waterways. However, DOEE has managed to strategically and successfully manage pollution control programs and implement small and large-scale restoration projects. Available resources do require that DOEE installs several LID projects every year and restores one to two streams per year. DOEE funds both construction projects that are primarily demonstration in nature, such as schoolyard rain gardens, and those that are larger scale stream or wetland restoration projects or retrofitting a DPR facility. When a large-scale project comes up for funding, Watershed Protection Division funds are used to leverage other available resources.

Limitations on local and federal funding create challenges for the NPS Management Program. Because the DOEE has limited local funds for NPS management, its ability to secure federal funds that require a non-federal match is curtailed as well. To deal with this issue the NPS Management Program pursues a two-fold approach: 1) secures funds from nonfederal stakeholders, and 2) collects fees for services provided. In recent years, the District's Bag Law has been a valuable source that serves as a local match to federal grants that the District obtains to fund our restoration activities.

As shown in this plan there are programs and projects that are outside of the NPS Management Program's jurisdiction but contribute indirectly to the control and prevention of NPS pollution. Examples include the sewer line repair work and the tree maintenance program. The budgets for these activities are not within the scope of this plan. However, it should be said that if a comprehensive cost benefit analysis were to be undertaken, the actual amount of funds going into NPS pollution prevention and control would be much greater.

12 Conclusion

The District has made significant progress toward protecting and restoring our waterways. Over the next five years DOEE has laid out an ambitious set of goals and objective that when met will further improve the conditions of both the Anacostia and Potomac rivers. DOEE uses an array of education and outreach activities combined with BMP installation to ensure that the public understands the work that we are doing and can see tangible results in the neighborhoods where they live. Additionally, DOEE knows that robust rules and regulations in tandem with inspections and enforcement is starting at the top of watersheds and working our way down into receiving waterbodies, installing BMPs along the way. DOEE has set ambitious environmental goals and will work on our own projects, with contractors and grantees, and with other partner agencies to ensure the successful achievement of these goals so that the District's Rivers and streams are protected from NPS pollution.