



# *GEORGE WASHINGTON MEMORIAL PARKWAY*

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## **CONSOLIDATED TMDL ACTION PLAN**

Prepared in compliance with General Permit No. VAR040100  
April 11, 2017



*Photo credit: National Park Service*

Prepared by National Park Service staff with assistance from

 **Hitachi Consulting**

**LimnoTech** 



## CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Simone Monteleone

Name

Chief of Resource Management

Title

4/19/17

Date



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## Acronyms

BMP	Best Management Practice
EPA	Environmental Protection Agency
DEQ	Department of Environmental Quality
GWMP	George Washington Memorial Parkway
IDDE	Illicit Discharge Detection and Elimination
MCM	Minimum Control Measure
MS4	Municipal Separate Storm Sewer System
NPS	National Park Service
PCB	Polychlorinated Biphenyl
TMDL	Total Maximum Daily Loads
VPDES	Virginia Pollutant Discharge Elimination System
WLA	Wasteload Allocation



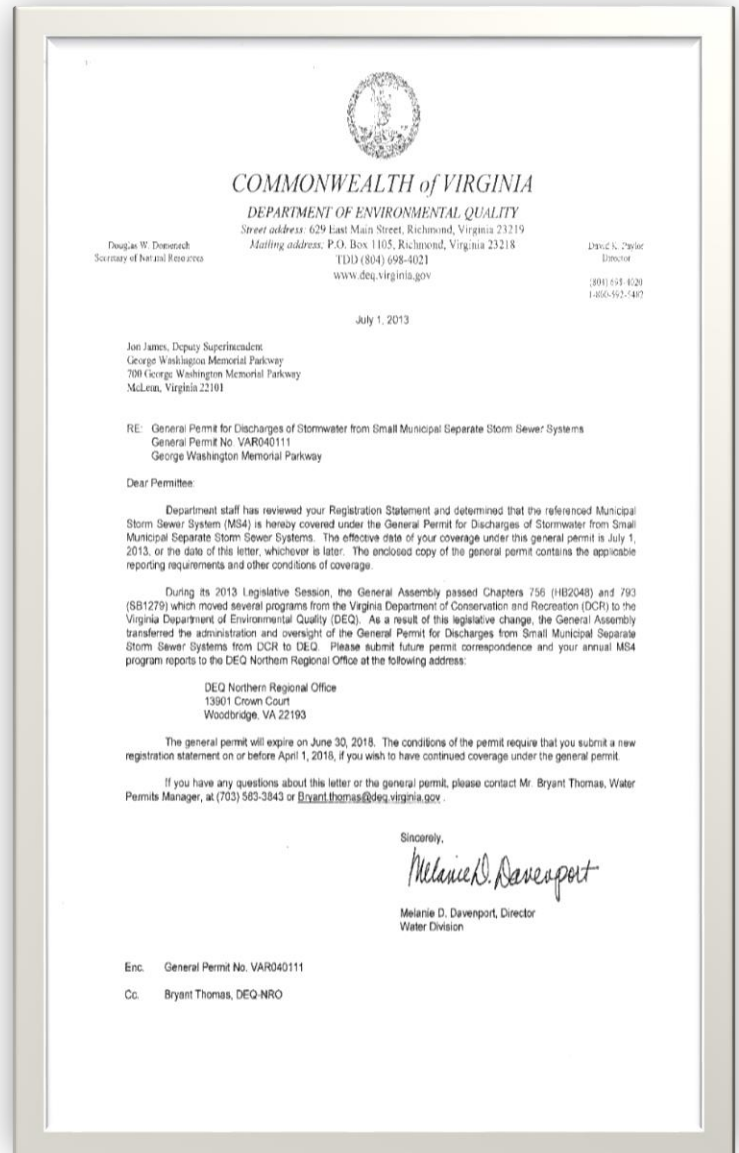
## 1 Introduction and Background

This Consolidated Total Maximum Daily Load (TMDL) Action Plan documents how the National Park Service (NPS) intends to meet the “Special Conditions for Approved Total Maximum Daily Loads (TMDL) Other Than The Chesapeake Bay TMDL” in Section I, Part B of the George Washington Memorial Parkway’s (GWMP’s) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s). The GWMP’s most recent permit (VAR040100) was issued by the Virginia Department of Environmental Quality (DEQ) effective July 1, 2013 and will expire June 30, 2018.

The GWMP’s MS4 permit requires the development and implementation of action plans for impaired streams where a TMDL has been established. The GWMP has been assigned a waste load allocation (WLA) as part of the TMDL that has been approved by the State Water Control Board. A TMDL establishes the maximum amount of a pollutant that can enter a waterbody without violating water quality standards.

TMDLs assign a wasteload allocation to the watersheds within a MS4s boundaries. . The TMDLs applicable to the GWMP are those where the GWMP MS4 area overlaps with the watershed of a specific waterbody with a TMDL regardless of whether those boundaries cross municipal jurisdictional lines. TMDLs applicable to the GWMP include:

- Sediment TMDL in Difficult Run.
- E. coli TMDL in Difficult Run.
- E. coli TMDL in Hunting Creek.
- E. coli TMDL in Tidal Four Mile Run.
- E. coli TMDL in Mine Run.<sup>1</sup>





- E. coli TMDL in Pimmit Run.<sup>1</sup>
- Polychlorinated biphenyl (PCB) TMDL for the Potomac River.
- The Chesapeake Bay TMDL, which addresses total nitrogen, total phosphorus, and sediments. (The Chesapeake Bay TMDL is addressed in a separate GWMP Chesapeake Bay TMDL Action Plan).

This Consolidated TMDL Action Plan is a refinement of the GWMP's efforts to document and focus on reducing pollutants as required in the current MS4 Permit. The Consolidated TMDL Action Plan contains updated analyses that focus on potential strategies that may be implemented during the permit cycle. For all TMDLs, the expectation for the GWMP to achieve these reductions is through iterative implementation of programmatic BMPs. GWMP's programmatic BMPs applicable to the pollutants of concern are described in the following sections.

### **1.1 Current Program and Legal Authority**

The NPS will participate in the early and candid evaluation of proposals by other governmental or private entities to avoid adverse environmental impacts to NPS park units or other park or recreation resources subject to the provisions of Federal law. This is an essential element of effective NPS stewardship. When participating in the environmental impact analysis processes of other entities, the Associate Director for Natural Resource Stewardship and Science will ensure that the NPS's responsibilities for commenting are clearly defined and that the Service and its personnel work with federal, tribal, state, and local governments in identifying and evaluating potential impacts to resources under NPS jurisdiction or within areas of NPS expertise. Examples include, but are not limited to:

- Consultation under provisions of Section 4(f) of the Department of Transportation Act;
- Evaluation of noise, visual, or other impacts to national park system resources resulting from external activities;
- Hydropower re-licensing projects through Federal Energy Regulatory Commission procedures;
- Impacts of proposed projects on non-NPS areas that have benefited from NPS-administered partnership programs (e.g., Land and Water Conservation Fund, Rivers and Trails, National Natural Landmarks, National Register Properties, etc.);
- Analysis of cumulative ecosystem or other impacts upon the integrity of NPS administered resources; and

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<sup>1</sup> Action Plans are only required for TMDLs that were approved before June 2013. Therefore, an Action Plan is not currently required for the Bacteria TMDL for Sugarland Run, Mine Run, and Pimmit Run. ("Bacteria" and "E. Coli" are used throughout this document interchangeably.) However, this Consolidated TMDL Action Plan will address these areas in the GWMP.



- The impacts of any federal activity on other park resources.

It is important to note that currently GWMP currently does not have agreements or policies in place with surrounding counties, nor does it have the authority to enforce local ordinances.

In addition to abiding by pertinent stormwater regulatory requirements, the [NPS 2006 Management Policies](#), specifically Sections 4.6.3 – 4.6.6, provide NPS policies related to the protection of water quality, floodplains, wetlands, and watershed and stream processes. In summary these management polices direct NPS to:

- Protect, maintain and/or restore the quality of surface and groundwaters within the parks, consistent with federal, state, and local laws and regulations;
- Protect, preserve, and restore the natural resources and functions of floodplains;
- Avoid adverse wetland impacts to the extent practicable; and
- Protect watershed and stream features by avoiding impacts on watershed and riparian vegetation and by allowing natural fluvial processes to take place.

Section 4.8.2.4 of the 2006 Management Policies discusses the management of soil resources aimed to prevent unnatural erosion, contamination, and to “prevent or at least minimize adverse, potentially irreversible impacts on soils.”

Additionally, the National Park Service is subject to the National Environmental Policy Act of 1969 (NEPA). NEPA is landmark environmental legislation establishing as a goal for Federal decision-making a balance between use and preservation of natural and cultural resources. NEPA requires all Federal agencies to (1) prepare in-depth studies of the impacts of and alternatives to proposed "major Federal actions" prior to making decisions; (2) use the information contained in such studies in deciding whether to proceed with the actions; and (3) diligently attempt to involve the interested and affected public before any decision affecting the environment is made.

## **1.2 Cultural and Historic Landscapes**

A cultural landscape is defined as "a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values." There are four general types of cultural landscapes, not mutually exclusive: historic sites, historic designed landscapes, historic vernacular landscapes, and ethnographic landscapes.

Historic landscapes include residential gardens and community parks, scenic parkways like George Washington Memorial Parkway, rural communities, institutional grounds, cemeteries, battlefields and zoological gardens. They are composed of a number of character-defining features which, individually or collectively contribute to the landscape's physical appearance as they have evolved over time. In addition to vegetation and topography, cultural landscapes





may include water features, such as ponds, streams, and fountains; circulation features, such as roads, paths, steps, and walls; buildings; and furnishings, including fences, benches, lights and sculptural objects.

Prior to undertaking work on a landscape, a treatment plan or similar document is developed. The four primary treatments identified in The Secretary of the Interior's Standards for the Treatment of Historic Properties, are:

- Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.
- Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical or cultural values.
- Restoration is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.
- Reconstruction is defined as the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

Stormwater BMPs are implemented to control stormwater runoff and reduce pollutant loads. Many MS4 permit holders implement stormwater BMPs to address pollutant load reduction expectations stemming from TMDLs. These BMPs can include both structural BMPs, which are built structures that are specifically designed to capture and treat stormwater; as well as non-structural BMPs, which typically consist of activities, practices and programs (as opposed to built structures) that help to control stormwater. Examples of structural BMPs include regional stormwater control ponds and small scale environmental site design practices like bioretention cells or bioswales. Non-structural BMPs include educating the public about stormwater pollution so as to change their behavior and reduce pollution; or pollution prevention programs that help reduce the probability that pollutants will enter the stormwater system



The GWMP is a historic district listed in the National Register of Historic Places and features many cultural landscapes, including: Arlington House; Arlington Ridge Park; Clara Barton Parkway; Fort Hunt Park; Fort Marcy; GWMP-North; Glen Echo Park/Clara Barton House; Great Falls Park; Lady Bird Johnson Park; Lyndon B. Johnson Memorial Grove; Memorial Avenue Corridor; Mount Vernon Memorial Highway; Patowmack Canal/Matildaville; Spout Run Parkway; Theodore Roosevelt Island; and US Marine Corps War Memorial. In addition to cultural landscapes, the GWMP also features historic properties (those cultural resources listed in the National Register of Historic Places), historic structures, memorials, and archeological sites. Integrity is the authenticity of a property's historic identity or the extent to which a property evokes its appearance during a particular historic period. The National Register identifies seven aspects of integrity: location, design, setting, materials, workmanship, feeling and association. Retention of these qualities is essential for a property to convey its significance. In order to meet requirements under the TMDL Action Plan in the future, the GWMP may require improvements to these areas in the form of structural BMPs. It is important for the Virginia Department of Environmental Quality to understand that improvements in the form of structural BMPs to these areas are very difficult because of the historical and cultural aspects of these facilities. Before further modifications are made to the landscape, changes will have to be carefully evaluated for their impact on the character-defining features and for their adherence to the historical and cultural aspects.

## **2 MS4 Service Area Delineation**

The MS4 permit requires the GWMP to define the size and extent of the existing impervious and pervious area within the MS4 service area. Areas of the GWMP that sheet flow directly to waters of the state, or otherwise drain to waters of the state through means other than a regulated outfall, are not considered part of the MS4 service area. Properties within the jurisdictional boundary that are regulated under a separate Virginia Pollutant Discharge Elimination System (VPDES) stormwater permit, forested areas, wetlands, and open waters are also not considered part of the MS4 service area.

The first step in the analysis involved distinguishing between regulated and unregulated land areas to define the MS4 service area. To perform this analysis, the GWMP utilized local ArcGIS data and tools, a review of other state stormwater permits under the VPDES program, and discussions with NPS staff and regulating agencies.

Based on the above analysis, the estimated land areas draining to the GWMP MS4 service area are presented in Tables 1 and 2. Figures 1 through 4 show the size and extent of the delineated pervious and impervious land uses for the MS4 service area.





National Park Service  
Consolidated TMDL Action Plan

**Table 1. GWMP Watersheds TMDL Impervious and Pervious Surface Summary<sup>2</sup>**

Watershed	Watershed Area (Ac)	MS4 Watershed Area (Ac)	Total MS4 Pervious (Ac)	Total MS4 Impervious (Ac)	Impervious Area (Ac)				Impervious Area (% of MS4 Watershed Area)			
					Buildings	Driveway and Parking Lot	Paved Median	Roads	Buildings	Driveway and Parking Lot	Paved Median	Roads
Hunting Creek, Cameron Run, and Holmes Run	29,283.1	11.8	8.7	3.2	0	0.02	0	3.16	0%	0.2%	0%	26.7%
Difficult Run	37,297.6	198.2	197.0	1.3	0	1.27	0	0	0%	0.6%	0%	0%
Mine Run	1,633.4	109.6	108.1	1.6	0	1.56	0	0.01	0%	1.4%	0%	0%
Pimmit Run	8,080.3	216.7	188.1	28.7	0.02	2.89	0.07	25.69	0%	1.3%	0%	11.9%
Four Mile Run (Tidal)	1,563.8	16.8	11.2	5.6	0.31	1.75	0.01	3.55	1.8%	10.4%	0.1%	21.1%
Grand Total	77,858.2	553.3	513.0	40.32	0.33	7.50	0.08	32.41	0.1%	1.4%	0%	5.9%

**Table 2. GWMP Chesapeake Bay TMDL Impervious and Pervious Surface Summary<sup>3</sup>**

Watershed	Watershed Area (Ac)	MS4 Watershed Area (Ac)	Total MS4 Pervious (Ac)	Total MS4 Impervious (Ac)	Impervious Area (Ac)						Impervious Area (% of MS4 Watershed Area)					
					Buildings	Driveway and Parking Lot	Other	Paved Median	Roads	Sidewalks	Buildings	Driveway and Parking Lot	Other	Paved Median	Roads	Sidewalks
Chesapeake Bay	N/A	3,681.5	3,379.3	302.2	4.90	68.79	0.10	2.65	220.90	4.82	0.1%	2%	0%	0%	6%	0.1%

<sup>2</sup> The values in the columns are rounded and result in some of the totals not being the exact value shown.

<sup>3</sup> The entire GWMP MS4 service area is covered by the Chesapeake Bay TMDL, but only parts of the GWMP service area are covered by local TMDLs, therefore the total areas covered in the two tables are different.



Figure 1. GWMP TMDL Watersheds and MS4 Area

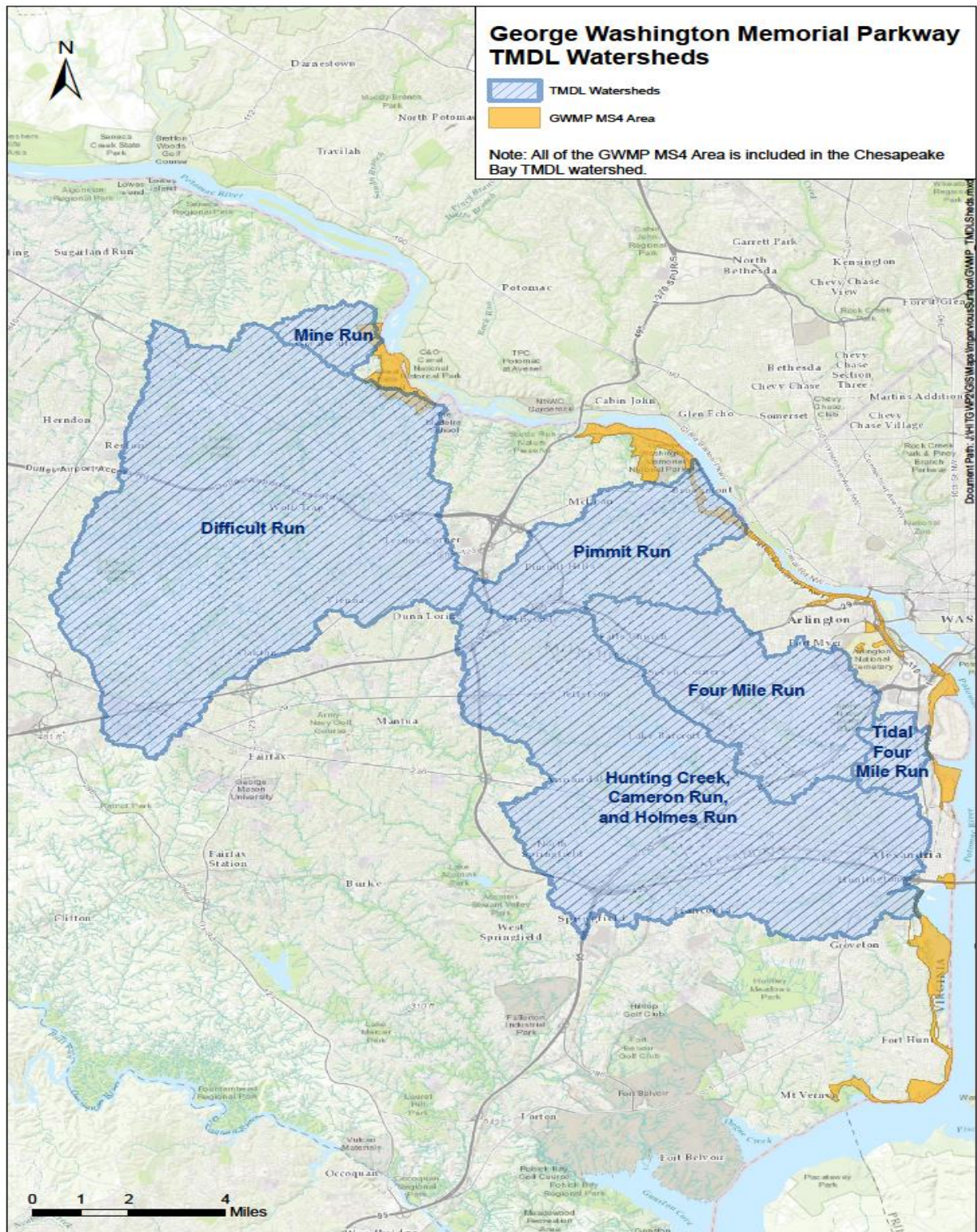






Figure 2. GWMP TMDL Watersheds and MS4 Area – Parkway North

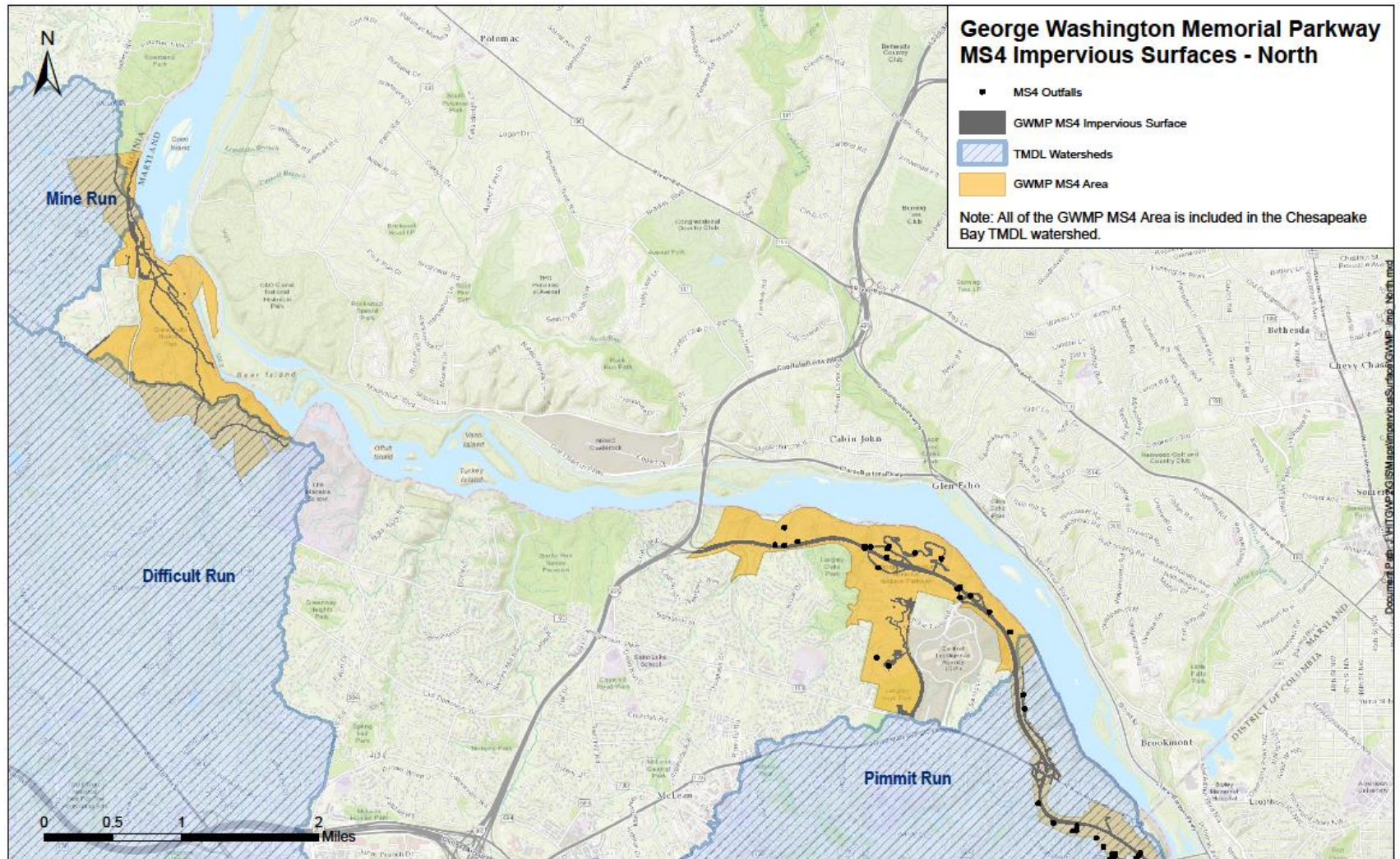






Figure 3. GWMP TMDL Watersheds and MS4 Area – Parkway Middle

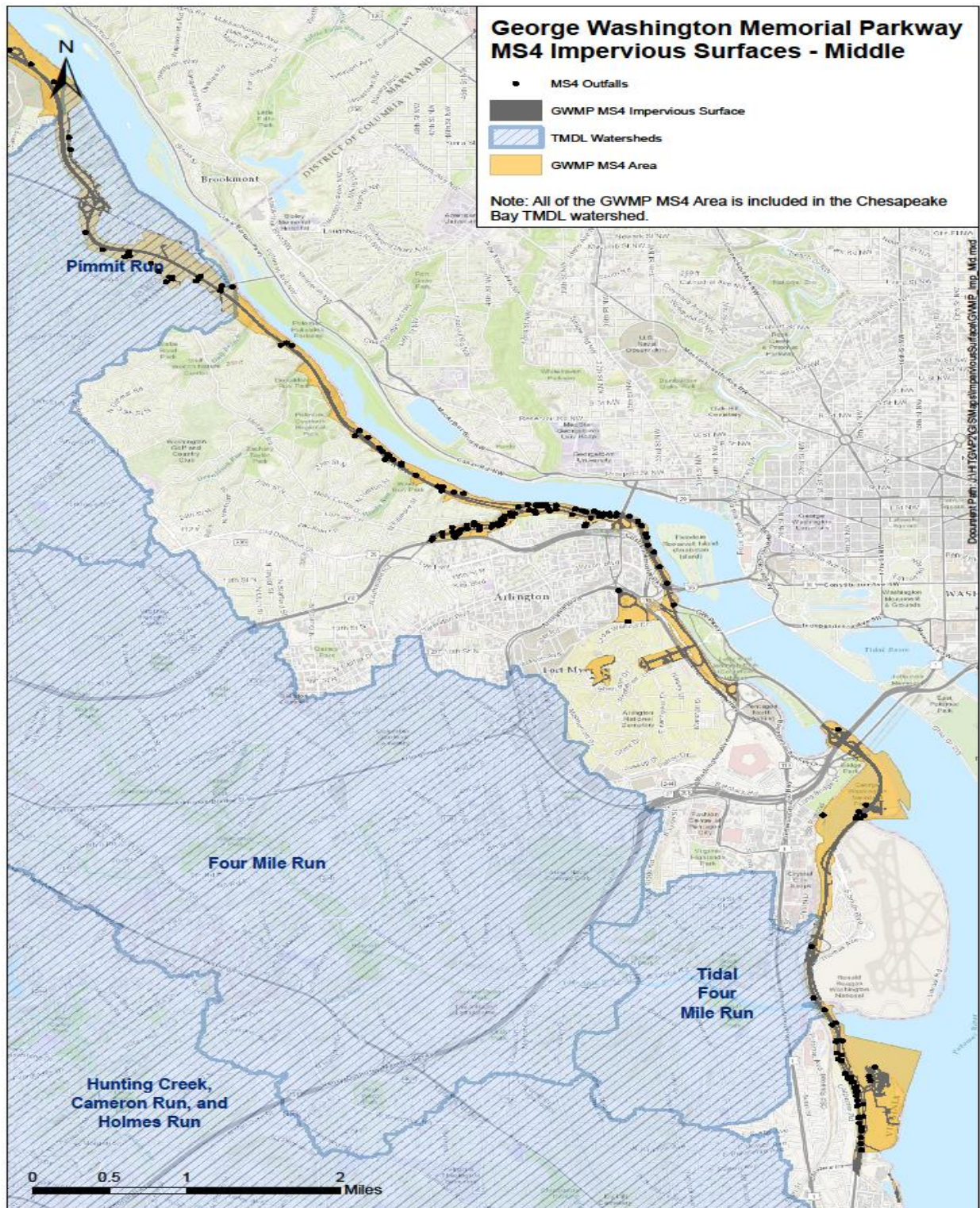
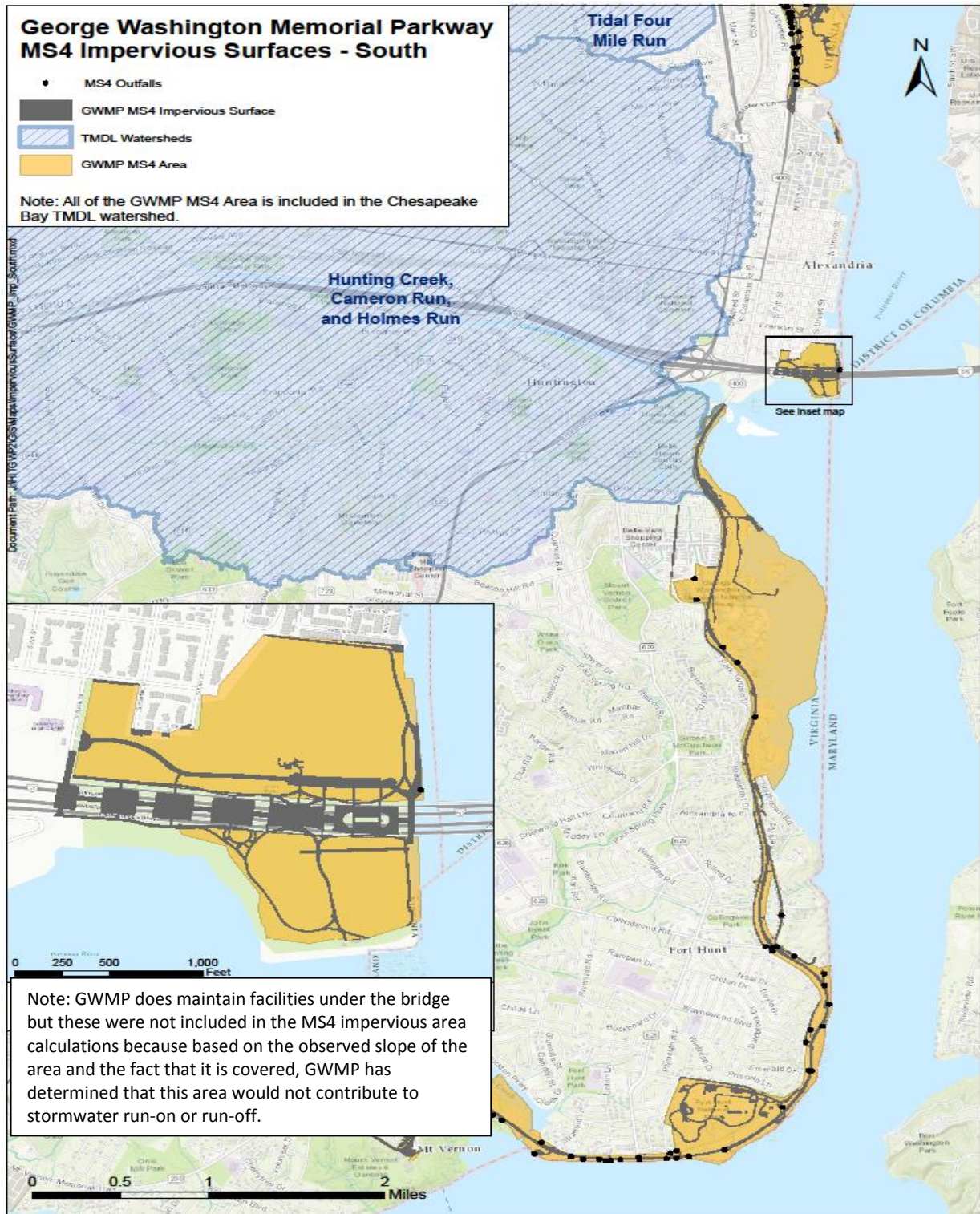






Figure 4. GWMP TMDL Watersheds and MS4 Area – Parkway South





### 3 Maximum Extent Practicable Reduction Strategy

To achieve the required water quality goals, the permit requires the GWMP to control the discharge of pollutants to the maximum extent practicable (MEP) by addressing the following six minimum control measures (MCMs). The six minimum control measures will be used to create stormwater management best management practices (BMPs).

<b>1.</b> Public Education and Outreach on	<b>4.</b> Construction Site Stormwater Runoff Control
<b>2.</b> Public Involvement / Participation	<b>5.</b> Post-Construction Stormwater Management
<b>3.</b> Illicit Discharge Detection and Elimination	<b>6.</b> Pollution Prevention/Good Housekeeping for Municipal Operations

The NPS understands the need for environmental stewardship and the regulatory requirements to address TMDLs stemming from its MS4 permit. Indeed, the NPS is a pre-eminent federal advocate for the preservation of natural places in the United States. But the NPS is also charged with preserving historic cultural landscapes, and, in the case of the GWMP, with operating and maintaining a highly-trafficked roadway, with all of the safety and land-use restrictions that come with that responsibility.

In short, the NPS must balance multiple requirements that sometimes are difficult to achieve. Therefore, the NPS has developed a Consolidated TMDL Action Plan that makes use of activities, practices, and programs that are already underway in the GWMP. Many of these are non-structural BMPs that focus on public education and involvement in reducing stormwater loads from GWMP property. Simultaneously, the NPS will look for opportunities to add structural stormwater treatment BMPs while also meeting cultural landscape requirements. Implementation of additional stormwater management – particularly capital projects - will be subject to the NPS budgeting process.

#### 3.1 Employee Training

GWMP understands that education and outreach to its own GWMP employees is just as important as public outreach and education. To this effect, GWMP has trained its maintenance employees in stormwater pollution prevention, Best Management Practices, stream pollution recognition, prevention, reporting, and cleanup of spills in accordance with the park’s maintenance complex stormwater pollution prevention plan. The park commits to providing annual awareness and education to its maintenance employees on ways in which they can eliminate and reduce discharges of pollutants of concern, namely sediment, bacteria, and PCBs. Further, in accordance with park Spill Prevention, Control, and Countermeasure (SPCC) plans, employees have mapped the park’s internal drainage system in the maintenance yards and





other areas where spills are most likely to occur and oil-handling employees (mainly maintenance staff) are provided with an annual briefing on spill prevention, control and response actions including but not limited to sources of spills, spill kit locations and contents, and activating the park's emergency chain of command response and reporting protocols. In order to provide employee awareness training on PCBs, beginning in 2017, GWMP will provide information (e.g., via a factsheet) to maintenance employees as well as to the park Environmental Committee. The Environmental Committee members include representatives from each park Division. The information will address the following key areas:

- What is a PCB?
- Why are PCBs dangerous to the environment?
- What types of facilities/operations use (or were likely to use) PCBs?
- What are the steps an employee must take if he/she identifies a discharge that may contain PCBs?

#### **4 Bacteria Best Management Practices**

Stormwater controls for bacteria must be addressed in GWMP MS4 areas located in watersheds of waterbodies with a bacteria TMDL. These areas are listed in Section 1.

##### **4.1 Bacteria Source Assessment and Overview**

Currently there are no known specific location(s) at GWMP where there are significant sources of bacteria. However, in many locations throughout the park pet waste is a potential source of bacteria in stormwater runoff. Pet waste can enter the MS4 when it is left on a surface that drains to a storm sewer. One strategy to help meet bacteria TMDLs will be to post signage encouraging pet waste cleanup in areas where dog walking regularly takes place within the GWMP. Information about the importance of cleaning up after pets and its relevance to stormwater management can be developed into educational materials. Posters can be posted at various existing bulletin board locations near potential dog walking sites, and brochures can be made available in GWMP visitor centers. Information on pet waste cleanup can also be included in ranger programs and other interactions with the public. Finally, GWMP provides stations located throughout the park, with free plastic bags that owners can use to collect pet waste. For example, there are three (3) stations located at Great Falls.

Management of nuisance wildlife is another measure that could reduce bacteria loads. Discouraging or removing wildlife from GWMP lands can reduce the amount of wildlife waste and associated bacteria loads that enter the GWMP's MS4 system. Currently, goose harassment is being conducted at Ronald Reagan Washington National Airport, which could reduce bacteria loading from geese in the Gravelly Point area.

GWMP is not aware of any other significant source(s) of bacteria located on park property.



### **BMP Bacteria #1 - Bacteria TMDL Action Plan Revision and Reporting**

- **Measurable Goal:** In permit year 4, post approved Consolidated TMDL Action Plan on GWMP website and report on implementation of Consolidated TMDL Action Plan in the MS4 Annual Report. In permit year 5, the Consolidated TMDL Action Plan shall be reviewed and revised, as needed, for the MS4 reapplication package due to VADEQ at least 90 days before the expiration date of the existing permit.
- **Reporting and Recordkeeping:** In the annual report, provide a narrative on the progress of implementation.

### **BMP Bacteria #2 - Public Education and Outreach**

- **Measurable Goal:** In permit year 4, work to improve signage about pet cleanup in areas where dog walking is most likely to occur in the GWMP. As a part of improving signage, material will be developed in the form of brochures and/or signs that will be available at GWMP visitor centers or other locations frequented by the public. Since GWMP is a [Trash Free Park](#), this messaging may be combined with other Trash Free Park public education tools and messaging. Also GWMP will work to increase messaging about pet cleanup on GWMP public websites.
- **Reporting and Recordkeeping:** In the annual report, provide a narrative on the progress of implementation including but not limited to the number and extent of communication media pieces (e.g., locations of posted signage, locations with available brochures) and estimated visitorship numbers (where available). Additionally GWMP will develop a webpage where pertinent stormwater information will be available to the public and will utilize a site tracker to track the number of visits to the webpage.

### **BMP Bacteria #3 – Wildlife Management**

- **Measurable Goal:** Continue to work in conjunction with the Ronald Reagan Washington National Airport to document the effectiveness of the goose harassment program.
- **Reporting and Recordkeeping:** In the annual report, provide a narrative on the progress of implementation such as documenting the ongoing activities.

## **5 Sediment Best Management Practices**

Stormwater controls for sediment must be addressed in GWMP MS4 areas located in watersheds of waterbodies with a sediment TMDL. These areas are listed in Section 1.

### **5.1 Sediment Source Assessment and Overview**

Sediment can come from soil erosion or from the decomposition of plants and animals within



the GWMP. Wind, water and ice help carry these particles to into the watersheds of the GWMP. The Environmental Protection Agency lists sediment as the most common pollutant in rivers, streams, lakes and reservoirs.

The streams within the GWMP boundary offer opportunities for restoration and monitoring projects that could reduce pollutant loads. GWMP has discussed joint efforts with Fairfax County, Arlington County, and the City of Alexandria to pursue restoration projects, and continuing to leverage these relationships for stream restoration and stormwater outfall restoration projects will help reduce sediment loads.

Another step to reduce sediment loads would be to identify eroding streambanks and stabilize these areas with native plantings. These areas can be identified during volunteer stream walks and tracked using handheld GPS units. Several of the measures already being taken by NPS to protect the streams also help to reduce loads and meet TMDL implementation requirements, including the illicit discharge detection and elimination (IDDE) programs and the preservation of a buffer strip along the Potomac River. IDDE activities carried out by NPS include water quality monitoring in tributaries of the Potomac River, public education about the hazards of illegal discharges and proper waste disposal, monitoring at the GWMP's maintenance complex to prevent contaminants from entering the stormwater system, and ensuring that there are no cross connections with sanitary sewers. A buffer strip along the Potomac River serves the purpose of filtering overland flow to reduce pollutant levels entering the river.

Currently, GWMP has identified outfall areas along the north parkway from Spout Run to the capital beltway where sediment run-off is an issue. These potential significant sources of sediment are being evaluated via an Environmental Assessment to determine their impact on the environment. Site-specific remedies may include but are not limited to engineering controls and planting of natural vegetation. It is anticipated that the remedies will be deployed in a phased approach depending on funding availability beginning in 2018. Additionally, GWMP is evaluating erosion issues from Lock #2 of the historic Patowmack Canal at Great Falls. A plan is in place to rehabilitate the walls of the canal as well as remove vegetation from the bottom of the canal to stabilize the historic structure and reduce sedimentation. Proposed construction at the site is expected to be complete around June 2018. Finally, NPS will continue its current activities that prevent, reduce, or mitigate pollutant loads from roadways and parking lots, including catch basin cleaning, storm sewer inspection and cleaning, and street sweeping. The policy of no noticeable accumulation of debris in the GWMP will be maintained.

New developments on GWMP land have erosion and sediment control requirements during construction and water quality requirements post-construction. New developments adjacent to the GWMP are also monitored for erosion and sediment control activities during construction. As part of the TMDL Action Plan, stormwater management BMPs will be required for any new development within the GWMP.



## 5.2 Recommended BMPs for Sediment TMDL Compliance

### **BMP Sediment #1 – Sediment TMDL Action Plan Revision and Reporting**

- **Measurable Goal:** In permit year 4, post approved Consolidated TMDL Action Plan on GWMP website and report on implementation of Consolidated TMDL Action Plan in the MS4 Annual Report. In permit year 5, the Consolidated TMDL Action Plan shall be reviewed and revised, as needed, for the MS4 reapplication package due to VADEQ at least 90 days before the expiration date of the existing permit.
- **Reporting and Recordkeeping:** In the annual report, provide a narrative on the progress of implementation.

### **BMP Sediment #2 – Restoration Projects**

- **Measurable Goal:** In permit years 4 and 5, discuss and determine the feasibility of a joint effort with Fairfax County, Arlington County, and the City of Alexandria to pursue restoration projects for stream restoration and stormwater outfall restoration projects.
- **Reporting and Recordkeeping:** In the annual report, provide a narrative on the progress of implementation of efforts for stream and stormwater outfall restoration projects.

### **BMP Sediment #3 – Identification of Eroding Streambanks**

- **Measurable Goal:** In permit year 5, identify eroding streambanks and make an action plan for the next permit cycle to address the eroding streambanks with native plantings.
- **Reporting and Recordkeeping:** In the annual report, provide a narrative on the progress of implementation of efforts for restoration of eroding streambanks.

### **BMP Sediment #4 – Public Outreach and Education**

- **Measurable Goal:** In permit years 4 and 5, incorporate watershed issues, such as why sedimentation is a problem; what human activities contribute to sediment run-off and what can be done to prevent sediment run-off, into ranger-led programs and junior ranger programs at GWMP. Additionally, continue to report on the ongoing watershed education efforts that include wayside exhibits on human impacts on watersheds (e.g., human activities such as car washing, grass cutting, pet waste), a partnership with Virginia Master Naturalists for educational and citizen science programs on watershed health and water quality, and the “Bridging the Watershed” (BTW) middle school and high school curriculum program, in partnership with the Alice Ferguson Foundation Biodiversity Discovery Program. In particular, the BTW curriculum includes specific education on: assessing water quality, identifying and addressing problems with runoff and sediment in waterways, and identifying and addressing problems with



bacteria pollutant sources and trash/debris entering waterways. The BTW curriculum even provides a learning module specific to the GWMP, and nearby Chesapeake and Ohio (C&O) Canal, titled “Potomac Gorge.” This specific module includes a trip to the C&O Canal or GWMP where students identify and create an index of human impact on park resources with a field study site and later create a proposed trail map for the area that minimizes impact on the ecosystem while offering park visitors access to the park’s natural resources. .

- **Reporting and Recordkeeping:** In the annual report, provide a narrative on the progress of implementation of each public outreach and education effort. Discuss progress to date such as the estimated number of students completing the “Bridging the Watershed” curriculum as well as the estimated number of visitors receiving information about watershed issues through ranger led and junior ranger programs.

#### **BMP Sediment #5 – New Development Construction Requirements**

- **Measurable Goal:** In permit years 4 and 5, identify any new development construction projects, and make sure erosion and sediment control requirements are in place during construction and post-construction.
- **Reporting and Recordkeeping:** In the annual report, report the number of new development construction projects and provide a listing of the stormwater management BMPs that were implemented.

#### **BMP Sediment #6 – Street Sweeping and Sewer Inspection and Cleaning**

- **Measurable Goal:** In permit years 4 and 5, continue to conduct routine street sweeping and sewer inspection and cleaning.
- **Reporting and Recordkeeping:** In the annual report, provide a narrative on the street sweeping and sewer inspection and cleaning progress.

## **6 PCB Best Management Practices**

This section applies to the areas covered under the PCB TMDL that drains to the GWMP’s regulated MS4 that was identified above.

### **6.1 PCB Source Assessment and Overview**

PCBs are a legacy pollutant and were used as a coolant and as an insulator, particularly in transformers, hydraulic equipment, and electrical equipment. The manufacture of PCBs was banned in 1979. However, PCBs are persistent in the environment and do not readily decompose under normal conditions. They also tend to settle into the sediment of waterways or adsorb to terrestrial soils. PCBs may still be released by illegal or improper dumping of PCB-containing wastes or leaks from legacy electrical transformers containing PCBs.

None of the GWMP MS4 areas subject to this action plan fall under one of DEQ’s high risk



categories for PCBs. High risk category sites for potential sources of residual PCBs include the following Standard Industrial Classifications (SICs): 26 & 27 (Printing, Publishing, and Allied Industries), 30 (Rubber and Miscellaneous Plastics Products), 33 (Primary Metal Industries), 34 (Fabricated Metal Products except Machinery and Transportation Equipment), 37 (Transportation Equipment), 49 (Electrical, Gas, and Sanitary Services), 5093 (Scrap and Waste Materials), and 1221 & 1222 (Bituminous Coal).

As part of GWMP's IDDE program, maintenance employees are provided with awareness training on how to identify a potential spill of PCBs, and what to do if a source of a PCB is discovered. Please see [Section 3.1 Employee Training](#) for more details.

Finally the NPS has, and will continue to coordinate as needed with other entities when there is a potential for PCBs to impact NPS property. For example, NPS has been coordinating with the City of Alexandria regarding a Potomac Yards metro station project. Specifically, NPS requested the City of Alexandria to conduct contaminant sampling of land that may be transferred to the NPS, as well as border NPS property. One specific contaminant NPS requires the City of Alexandria to test for is PCBs.

## 6.2 Recommended BMPs for PCB TMDL Compliance

### **BMP PCB #1 – Verification of No PCB Sources and Historic Uses**

- **Measurable Goal:** Though it is not expected that PCBs are present on GWMP property, to ensure verification of no known sources, in permit year 5, GWMP will conduct research to determine if GWMP properties were previously PCB-registered sites, indicating the presence and location of PCB-containing transformers that may be located on GWMP properties currently unknown to GWMP employees.
- **Reporting and Recordkeeping:** In the annual report, provide a narrative on the progress of research on PCB-containing transformers. If a site is discovered to have the presence of PCBs, GWMP will call for support by an external contractor with experience in PCB identification and as needed, follow all Virginia regulatory requirements. If a spill reaches a waterway, park employees are trained to contact the United States National Response Center (NRC).

## 7 Assessment of Effectiveness

The GWMP will assess the effectiveness of its efforts by reviewing the measures in Section 4, 5 and 6 as part of the annual report submitted to DEQ. Additionally, the GWMP will begin to consider future projects to meet required future reductions in the next permitting cycle.

A key obligation contained in the permit is the requirement to submit an Annual Report by October 1st of each year. This Consolidated TMDL Action Plan identifies the steps that are necessary for the GWMP to maintain compliance with its MS4 General Permit, while the Annual Report documents the status of the TMDL implementation provisions of the Consolidated





TMDL Action Plan for each permit year. In effect, the Consolidated TMDL Action Plan comprises a road map that must be followed, which requires continuous management efforts and substantial resource commitments on the part of the GWMP. Public Comment on Consolidated TMDL Action Plan

## **8 Public Comment on Consolidated TMDL Action Plan**

Planning, Environment, and Public Comment (PEPC) is a web-based system was created for and adopted by the NPS that is used nationwide. This system allows people to gain access to current plans and related documents that are available for review and open for comment. Public comments can be submitted through the PEPC system. The public are also able to access schedules for particular projects as well as specific information about public meetings.

While the PEPC system is the primary vehicle to submit and review comments on planning efforts and projects, the park will continue to accept comments from the public as it always has, by mail, fax, and e-mail.

The GWMP will post a copy of the Consolidated TMDL Action Plan after the draft has been approved by the Virginia DEQ on the NPS PEPC system for 30 days to allow adequate time for the public to comment on the plan. The NPS will then provide a list of all comments received and any modifications made to the draft Consolidated TMDL Action Plan as a result of the public comments. Once approved, any future modifications must be made in accordance with the Program Plan Modification Section of the MS4 General Permit (Section II.F).