



GEORGE WASHINGTON MEMORIAL PARKWAY

CONSOLIDATED TMDL ACTION PLAN – MS4 PROGRAM PLAN

**Prepared in compliance with General Permit No. VAR040111
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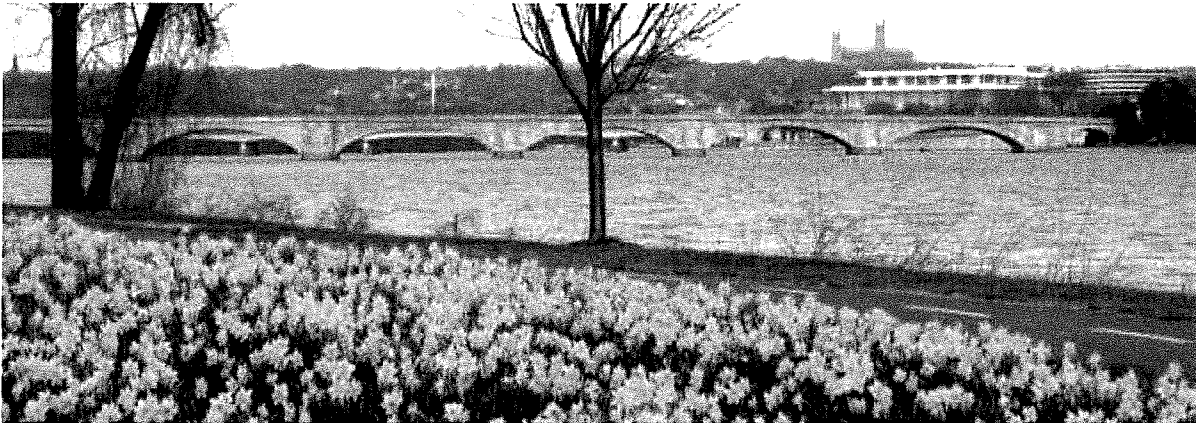


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CERTIFICATION

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10-10-2019

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 requirements set forth in 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 (**VAR040111**) was issued by the Virginia Department of Environmental Quality (DEQ) effective November 1, 2018 and will expire October 31, 2023.

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.¹
- E. coli TMDL in Pimmit Run.¹
- 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 GWMP Chesapeake Bay TMDL Action Plan is a compendium plan to this Consolidated Plan. The Chesapeake Bay TMDL Action Plan defines additional requirements specific to the MS4 permit as specified in Part II, "TMDL Special Conditions." The Consolidated TMDL Action Plan focus on potential strategies that will 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, as

¹ 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.



described in this plan.

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
- 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 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. Other areas that can be excluded from the regulated urban impervious and regulated urban pervious cover calculations include:

- Properties within the jurisdictional boundary that are regulated under a separate Virginia Pollutant Discharge Elimination System (VPDES) stormwater permit,
- Forested areas (undeveloped, and a minimum of 30m x 30m),
- Agricultural lands,
- Wetlands, and
- Open waters.

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.



Table 1. GWMP Watersheds TMDL Impervious and Pervious Surface Summary²

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	Sidewalk	Buildings	Driveway and Parking Lot	Paved Median	Roads
Cameron Run	29283.1	8.8	5.6	3.2	0.0	0.0	0.0	3.2	0.0	0%	0.3%	36%	0.0%
Difficult Run	37297.6	1.6	0.3	1.3	0.0	1.3	0.0	0.0	0.0	0%	81.8%	0%	0%
Mine Run	1633.4	2.5	1.0	1.6	0.0	1.6	0.0	0.0	0.0	0%	61.5%	0%	0%
Pimmit Run	8080.3	51.3	24.1	27.2	0.0	2.9	0.1	24.2	0.0	0%	5.6%	47%	0.0%
Tidal Four Mile Run	1563.8	8.7	5.1	3.6	0.0	0.0	0.0	3.5	0.1	0.0%	0.2%	39.9%	1.6%
Grand Total	77858.2	72.8	36.0	36.87	0.0	5.8	0.1	30.9	0.2	0.0%	7.9%	42%	0.2%

Table 2. GWMP Chesapeake Bay TMDL Impervious and Pervious Surface Summary³

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	Sidewalk	Buildings	Driveway and Parking Lot	Other	Paved Median	Roads	Sidewalk
Chesapeake Bay	N/A	755.5	447.5	308.0	4.6	62.2	0.1	2.6	218.7	19.8	0.6%	8%	0%	0%	29%	2.6%

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

³ 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

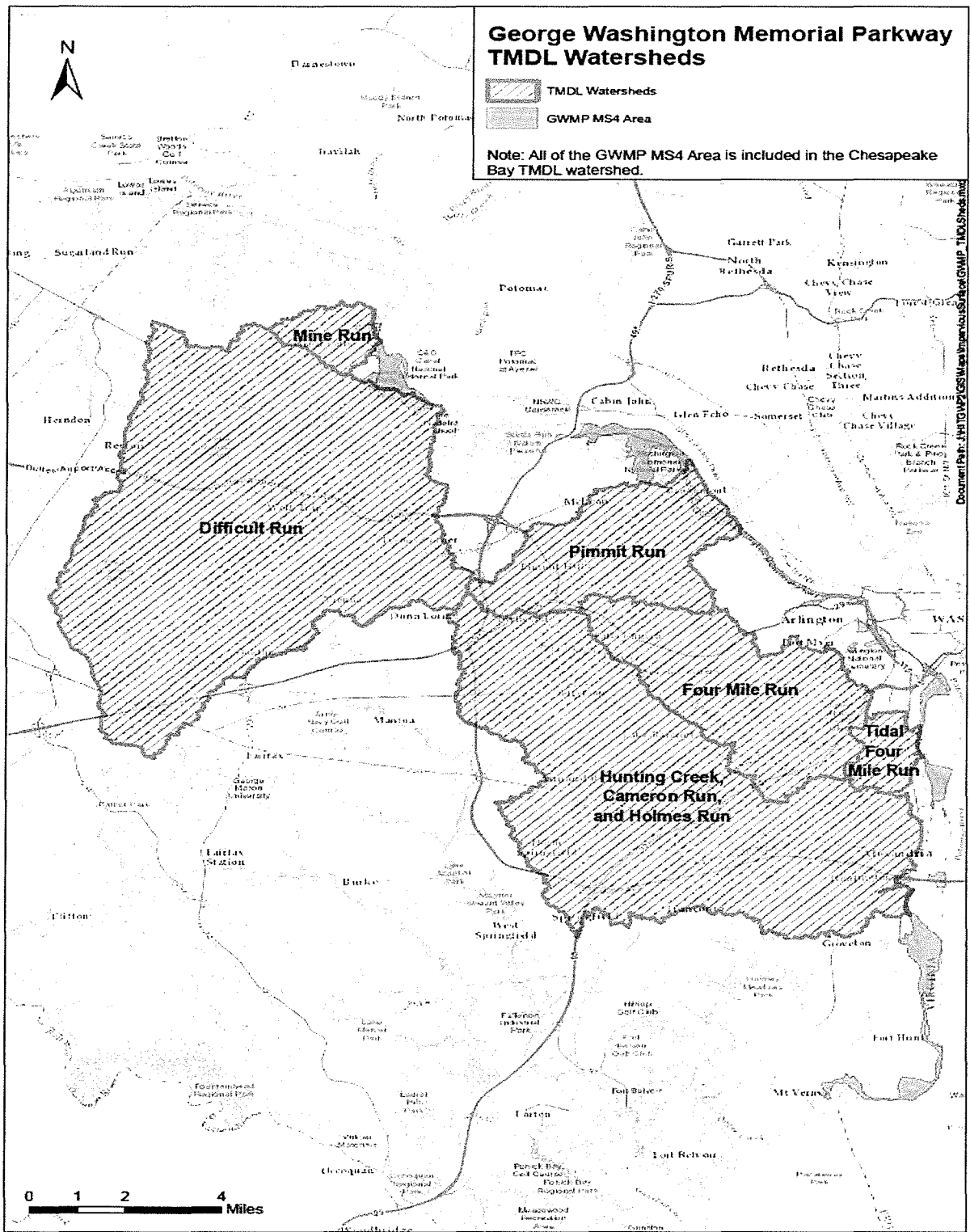




Figure 2. GWMP TMDL Watersheds and MS4 Area – Parkway North

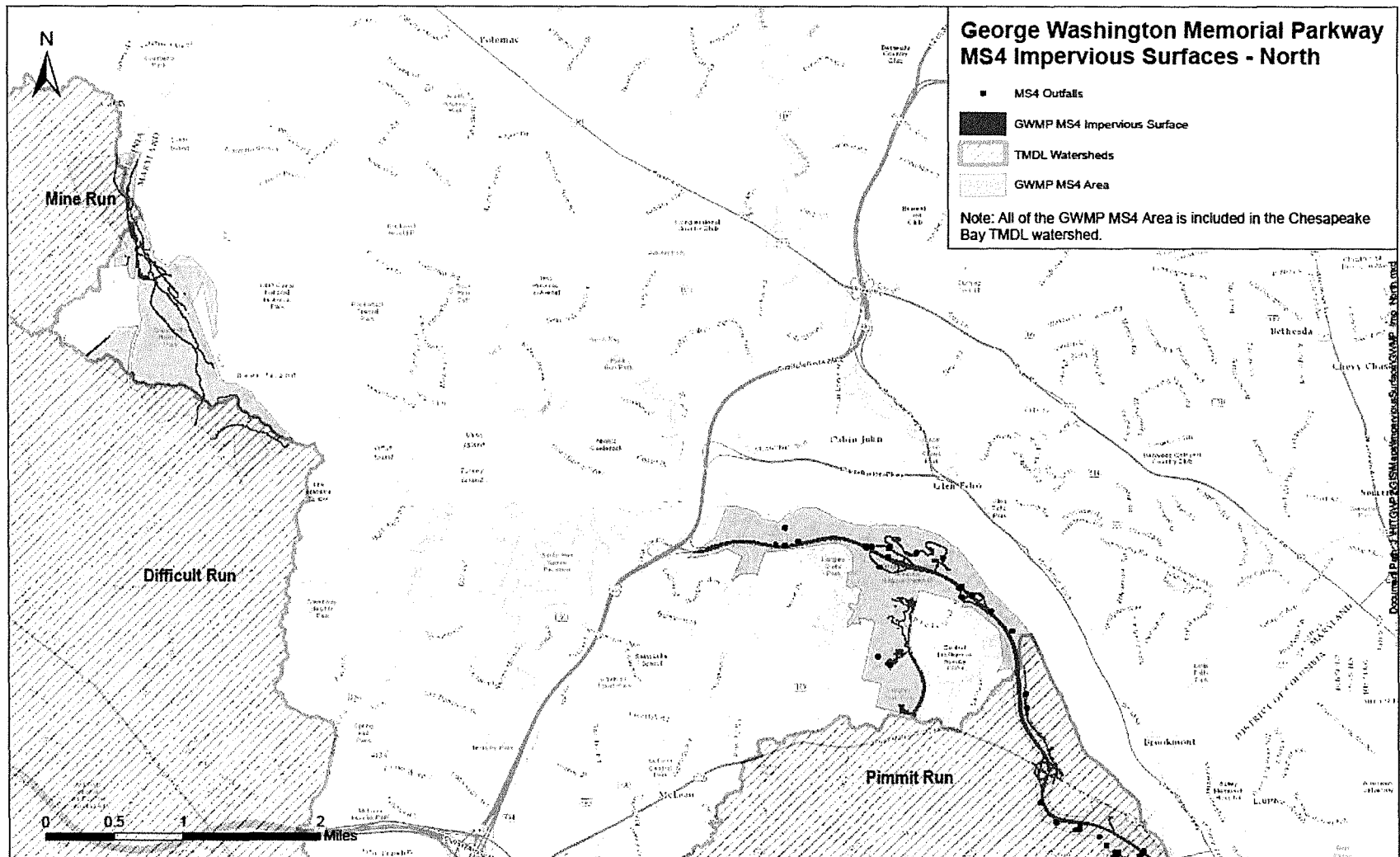




Figure 3. GWMP TMDL Watersheds and MS4 Area – Parkway Middle

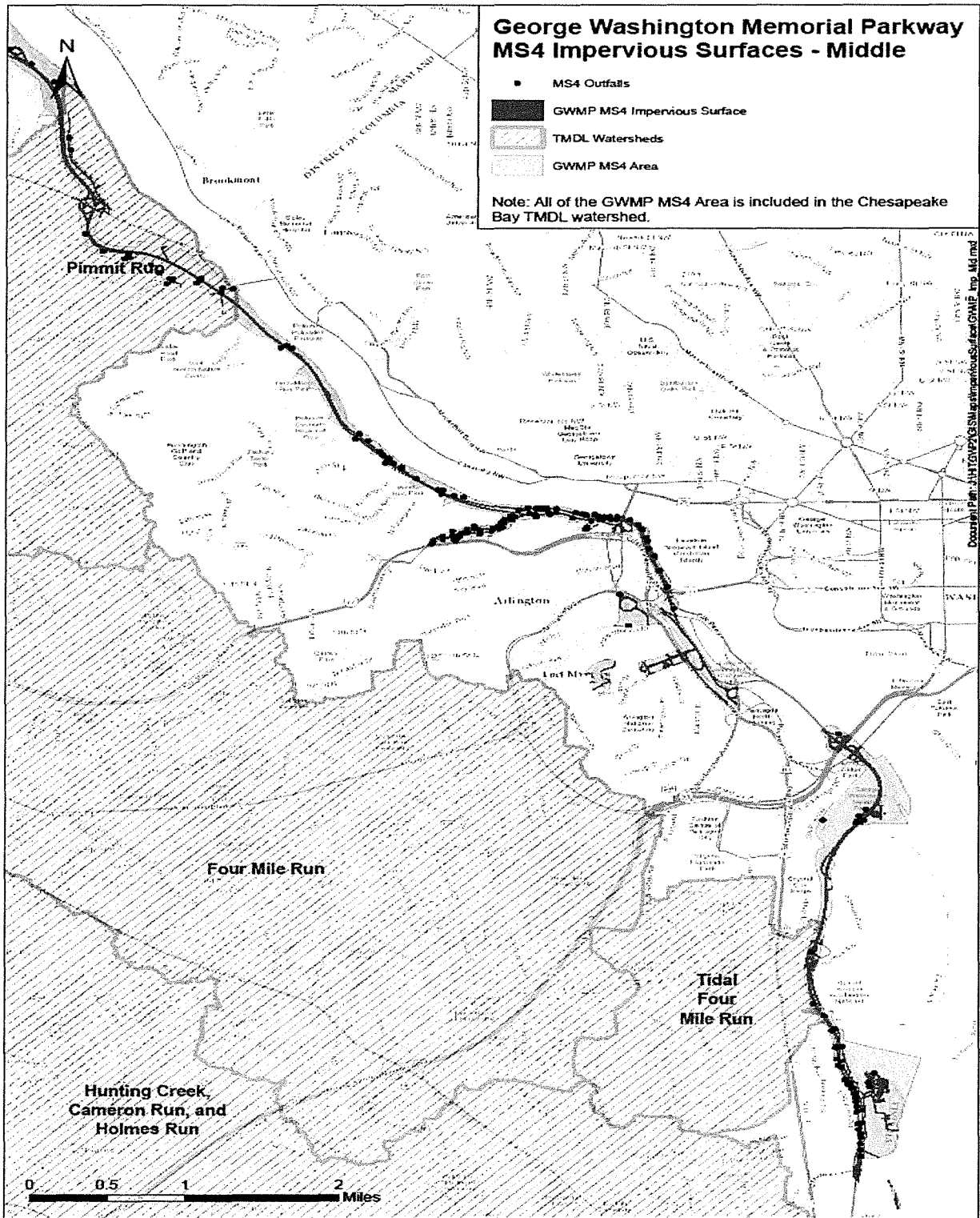
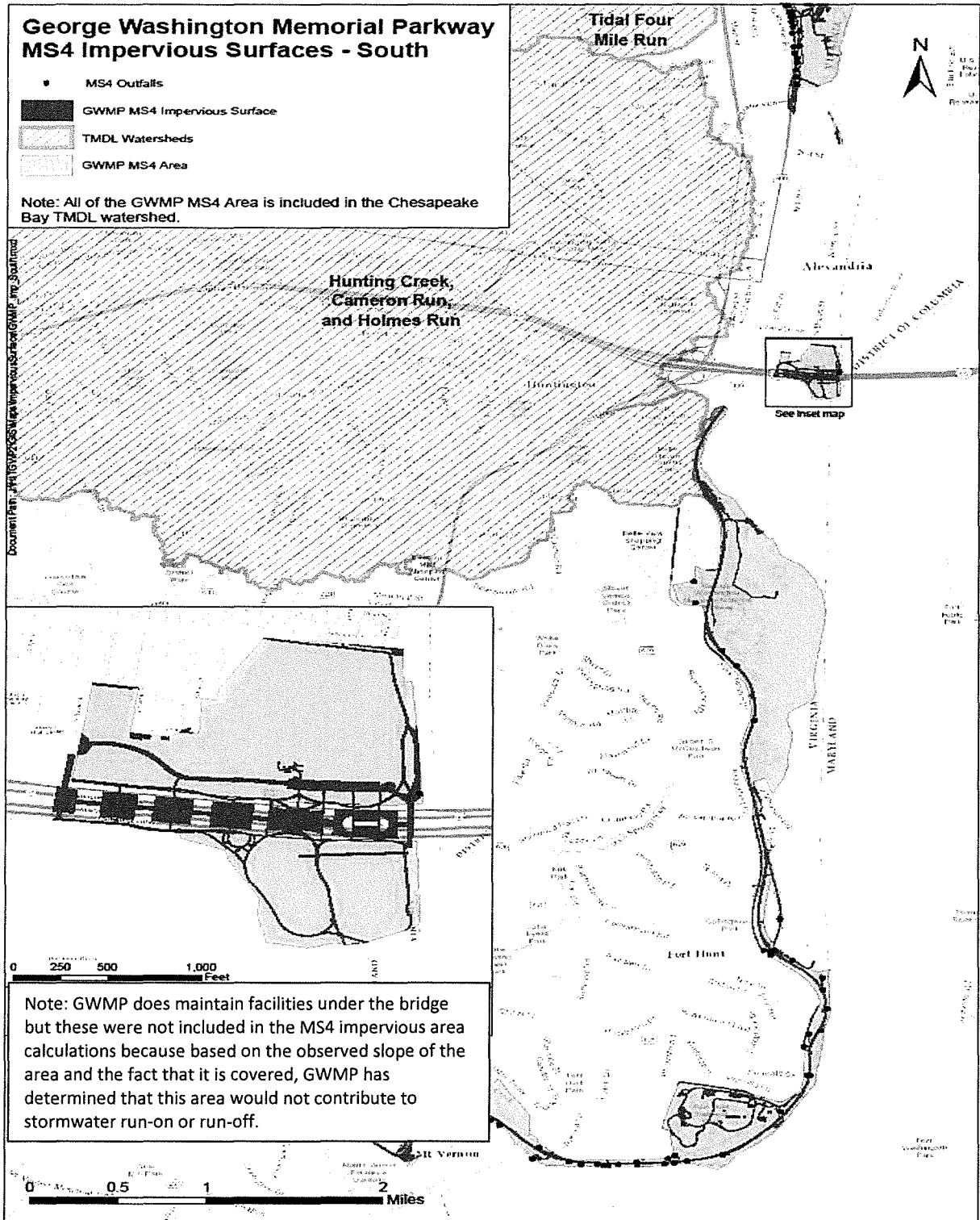




Figure 4. GWMP TMDL Watersheds and MS4 Area – Parkway South





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).

1. Public Education and Outreach on Stormwater Impacts	4. Construction Site Stormwater Runoff Control
2. Public Involvement / Participation	5. Post-Construction Stormwater Management
3. Illicit Discharge Detection and Elimination	6. 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 employees in stormwater pollution prevention, Best Management Practices, stream pollution recognition, prevention, reporting, and cleanup of spills. The park commits to providing additional awareness and education to its 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. Finally, employees are aware of the location of spill kits which are strategically located



near potential sources of spills. For more information about GWMP's specific employee training plan, please refer to section 4.6 of this plan.

4 Minimum Control Measures

In accordance with the park's MS4 permit, the park will develop and implement processes and procedures to address the six (6) minimum control measures (MCMs) that the state of Virginia has identified as essential elements of a MS4 program plan/TMDL action plan, in accordance with the permit Part 1, E, 1-6. The six MCMs are:

1. Public education and outreach
2. Public involvement and participation
3. Illicit discharge detection and elimination
4. Construction site stormwater runoff control
5. Post-construction stormwater management for new development and development on prior developed lands
6. Pollution prevention and good housekeeping for facilities owned and operated by the permittee within the MS4 service area

Each of the MCMs and required permit conditions are discussed below.

4.1 MCM #1: Public Education and Outreach

In accordance with permit requirements in Part 1, E, 1., GWMP will implement a public education and outreach program designed to:

- 1) Increase the public's knowledge of how to reduce stormwater pollution, placing priority on reducing impacts to impaired waters and other local water pollution concerns;
- 2) Increase the public's knowledge of hazards associated with illegal discharges and improper disposal of waste, including pertinent legal implications; and
- 3) Implement a diverse program with strategies that are targeted towards individuals or groups most likely to have significant stormwater impacts.

Based on qualitative staff expertise about the various stormwater topics that affect the park's MS4 service area, GWMP has determined that the following issues are the three (3) high-priority stormwater topics that will be focused on in the public education and outreach program. The issues are:

- 1) Pet wastes
- 2) Illicit discharges; and
- 3) Chesapeake Bay nutrients.

In tackling these three topics, GWMP aims to educate park visitors as to how their own individual actions, as well as the actions of others – either intended or unintended - can negatively affect water



quality.

GWMP will use the following strategies, in accordance with Table 1 in the VA DEQ MS4 permit, for communicating information about these high-priority issues

1) Signage:

- a. Summary: Signage examples include temporary or permanent signage in public places or facilities, or storm drain stenciling.
- b. Intended Audience: The public audience intended with this strategy will focus on park visitors that utilize park facilities and grounds.
- c. BMP Goal: The park aims to make at least one signage focused on at least one of the high-priority topics identified above available to the public per each year of coverage under this MS4 permit.
- d. Metric: It is difficult to monitor how many visitors will view each sign as a metric of success, therefore the key metric used will be the number of signage produced and posted.

2) Media Materials:

- a. Summary: Media material examples include information disseminated through electronic media, radio, television, websites and online sources such as Twitter and Facebook.
- b. Intended Audience: The public audience intended with this strategy will focus on park visitors that “follow” GWMP on the social media sites of Twitter and Facebook. This audience includes both local and non-local members of the public.
- c. BMP Goal: The park aims to post at least one social media message focused on stormwater and the high-priority issues identified above, per quarter (4 messages per year) on either Twitter and/or Facebook.
- d. Metric: The metric used to monitor “success” of this BMP will be based on the number of “Likes” and/or reposting’s of the park’s media messages.

Roles and responsibilities of GWMP staff in implementing public education and outreach requirements include:

- Information Technology – Post stormwater-related content on the park’s MS4 website and social media accounts.
- Environmental Protection – Develop pertinent messaging about stormwater topics and coordinate with the employees in Information Technology for posting to the park’s social media sites and other signage around the park.

4.2 MCM #2: Public Involvement and Participation

With limited park staff and 7,600 acres of park property, it is important to engage the public in the park’s stormwater management and MS4 programs to seek their support in identifying and reporting



any suspected illicit discharges, improper disposal, or spills within the park's MS4 service area as well as communicate about any stormwater complaints or land disturbing activities. The GWMP website on which the park posts MS4 information will be the primary mechanism by which the public can review pertinent stormwater/MS4 program information as well as locate contact information for GWMP employees who will be identified as the point-of-contact(s) for stormwater issues.

The GWMP website is accessible by the public and is available at:
<https://www.nps.gov/gwmp/learn/scienceresearch.htm>

The website will be updated in permit year 2019 to provide pertinent park staff email and phone numbers in case a member of the public wants to contact GWMP regarding stormwater issues. The GWMP Environmental Specialist, Mr. Robert Mocko's phone number (1-703-289-2540) and email address (Robert_Mocko@nps.gov) will be posted on the website as well as the phone numbers for the U.S. Park Police (1-202-610-7500), and the National Response Coordination Center (1-800-246-4335).

GWMP will respond to public comments as each comment is received. Additionally, a log of public comments that have been received and GWMP's response to each will be maintained on the website for the public to review. To protect privacy, individual comments will be kept anonymous.

In addition to the park's website, the NPS uses the Planning, Environment, and Public Comment (PEPC) web-based system created for and adopted by the NPS. The system is used nationwide and 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 this 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. This list will be made available on the park's MS4 public website, along with other comments received from the public related to the park's stormwater management and MS4 program.

In 2019, GWMP will update the park's MS4 website to include the following additional information:

- The VA DEQ MS4 Permit for November 1, 2018 – October 31, 2023;
- Updated GWMP TMDL Consolidated and Chesapeake Bay TMDL Action Plans;
- Each previous year's annual report;



- List of GWMP staff and phone numbers (as noted above) for the public to contact regarding reporting potential illicit discharges, improper disposal, spills, complaints or other potential stormwater concerns. The contact information will be the primary mechanism by which the public can provide input on the MS4 program.

GWMP will also utilize a variety of public involvement strategies and BMP opportunities each year to encourage public engagement and awareness of stormwater issues affecting the park. GWMP commits to four (4) activities per year in accordance with Table 2 of the park's MS4 permit. The activities are as follows:

- 1) Volunteer Cleanups
 - a. Summary: The cleanups will include engagement by the public to help park staff cleanup waste and litter from a particular park area.
 - b. BMP Goal: Conduct one to two cleanups each permit year.
 - c. Metric: The metric used as an indication of success in protecting water quality will be the number of full trash bags collected at the end of each event.
- 2) Public presentation of the visitor interpretation video called "Leave No Trace."
 - a. Summary: The video aims to educate viewers on practical ways in which they can reduce their impact on the environment by "leaving no trace."
 - b. BMP Goal: Conduct one to two viewing of the video each permit year.
 - c. Metric: The metric used as an indication of success in protecting water quality will be the estimated number of visitors who viewed the video.
- 3) Representation of GWMP and Regional personnel on local agency stormwater management panels
 - a. Summary: Park staff will participate on committees such as the Fairfax County Little Hunting Creek Watershed Management Steering Committee.
 - b. BMP Goal: Participate in at least two (2) meetings each permit year.
 - c. Metric: The metric used as an indication of success in protecting water quality will be the number of meetings attended by NPS GWMP personnel.
- 4) Work with park partners to present watershed and stormwater management information to public audiences.
 - a. Summary: Park staff will seek opportunities with partner organizations, e.g., Friends of Dyke Marsh, to present information to the public about the park's MS4 program and stormwater management issues.
 - b. BMP Goal: Update partner work plans to incorporate information about stormwater management.
 - c. Metric: The metric used as an indication of success in protecting water quality will be the number of people who received the information.

Roles and responsibilities of GWMP staff in implementing public involvement and participation



requirements include:

- Chief of Staff – Maintaining up-to-date MS4 program information on the park’s publicly accessible website. Also continue to work with park partners to update work plans.
- Environmental Protection – Reviewing and responding to public comments regarding the park’s stormwater program/MS4 program.
- Natural Resources – Seek opportunities to participate on committees and public forums such as conferences to discuss stormwater management.
- Interpretation – Interact with the public and provide stormwater information.

4.3 MCM #3: Illicit Discharge Detection and Elimination (IDDE)

GWMP has and maintains an MS4 map and information table with all required elements as specified in the permit, Part 1, E, 3. GWMP will submit the GIS-compatible map to Virginia DEQ in this permit year, no later than July 1, 2019.

Although unlikely, GWMP will update annually by October 1 any new storm sewer outfalls that have been constructed or TMDLs approved during the preceding reporting period.

Although unlikely, GWMP will provide written notification to any downstream adjacent MS4 of any known physical interconnection discovered. This is unlikely to apply to GWMP because the park MS4 service area borders the Potomac River and generally is the most eastern, downstream MS4 in the area. Currently there are no known interconnections with other downstream MS4 holders, however GWMP will notify these holders if an interconnection is identified. GWMP however does maintain communication with other MS4 permittees that are located upstream of the park.

GWMP prohibits the discharge of unauthorized nonstormwater discharges in accordance with its MS4 permit. Employees receive training on unauthorized nonstormwater discharges (refer to the park’s training plan in section 4.6 for details). In addition, the park maintains IDDE written procedures on what is an illicit discharge, and how to use visual observation analysis to help determine if in fact an IDDE, and finally, what are allowed and prohibited discharges to the storm sewer system. These procedures (updated July 2019) are posted on the GWMP MS4 website and available electronically via the park’s internal Google drive.

With regard to permit condition Part 1, E, 3, c, (2), (a) “A prioritized schedule of field screening activities...” GWMP has more than 50 outfalls within the MS4 area and while many of the outfalls along the parkway are difficult to access due to terrain and environmental conditions (e.g., difficult to find, covered by vegetation, access needed by boat) park staff will strive to screen 50 outfalls a year such that no more than 50% are screened in the previous 12-month period.

During the outfall inspection, GWMP will use the form titled “Storm Water Outfall Dry Weather Screening Inspection Form” (June 2019) to log information about each outfall. The form is available on the park’s Google drive. Once the form is completed for an outfall, park staff will submit the form



to the GWMP Environmental Protection Specialist who will maintain an electronic log of outfalls and the schedule of inspection. The list will contain the following details:

- Unique outfall identifier as provided on the GIS map;
- Time since the last precipitation event;
- Estimated quantity of the last precipitation event;
- Site description;
- Whether or not a discharge was observed; and
- If discharge was observed the estimated discharge rate and any visual characteristics of the discharge.

If during an outfall inspection, or upon other discovery of a potential illicit unauthorized nonstormwater discharge, the GWMP Environmental Protection Specialist will initiate and conduct an investigation as soon as it is practical. Priority of investigations will be given to discharges of suspected sanitary sewage and those believed to be a risk to human health and public safety. During the investigation, the Environmental Protection Specialist will coordinate as needed with other park divisions including but not limited to Natural Resources, U.S. Park Police, and the GWMP management team to support the investigation.

The IDDE written procedures will be followed as the methodology to identify the source of the illicit discharge. If at the conclusion of the investigation, no later than six (6) months following the discovery of the discharge, the source has not been determined, the GWMP Environmental Protection Specialist will document his/her attempts to identify the source. As appropriate, GWMP will coordinate with VA DEQ for support during an illicit discharge investigation.

Investigation information will be maintained in the park's Google electronic log. At a minimum, the log tracks the following information:

- Dates when the illicit discharge was initially observed or reported;
- Results of the investigation, including the source, if identified;
- Follow-up as necessary;
- Resolution of the investigation; and
- Date the investigation was closed.

GWMP commits to the following BMP opportunities related to IDDE procedures.

1) Procedures and Form Review:

- a. Summary: Park staff will review pertinent IDDE written procedures and forms once to ensure they are comprehensive and reflect any new information based on any previous year's IDDE investigations.
- b. BMP Goal: Review and update (as needed) every two years the IDDE written procedures and "Storm Water Outfall Dry Weather Screening Inspection Form."
- c. Metric: The metric used as an indication of success in protecting water quality will be the number of uses of the updated IDDE procedures and Inspection Form.



Roles and responsibilities of GWMP staff in implementing IDDE requirements include:

- GIS Specialist – Maintaining up-to-date MS4 GIS map of the park and associated information log.
- Environmental Protection – Receiving and initiating investigations into illicit discharges. Maintaining investigative information in the park’s IDDE log. Coordinating with other park divisions and as necessary, VA DEQ on investigative matters. Identifying, on an annual basis, the storm water outfalls (a minimum of 10) that park staff will inspect in each permit year.
- Employees as Assigned – Inspecting storm water outfalls and completing the “Storm Water Outfall Dry Weather Screening Inspection Form” for each outfall.

4.4 MCM #4: Construction Site Stormwater Runoff Control

Generally, GWMP conducts limited construction activities. As a National Park, a historic landscape, in addition to being listed on the National Historic Register, construction on park property is minimal and only conducted when necessary to improve the operations and/or facilities of the park. All construction projects within park boundaries are administered by the NPS except for permitted utility work which is allowed via special use permits and generally do not have associated land disturbing activities.

As a federal entity, GWMP has not developed its own standards and specifications in accordance with Virginia Erosion and Sediment Control Law (§ 62.144.15:51 et seq. of the Code of Virginia) and Virginia Erosion and Sediment Control Regulations (9VAC25-840). The park requires permittees conducting land-disturbing activities to comply with these regulations as stated in their park-issued permit. In addition, contractors must perform inspections for land-disturbing activities as defined in § 62.144.15:51 of the Code of Virginia that result in disturbance activities greater than 2500 square feet. These inspections will occur as follows:

- During or immediately following initial installation of erosion and sediment controls;
- At least once per every two-week period;
- Within 48 hours following any runoff producing storm event; and
- At the completion of the project prior to the release of any performance bond.

GWMP periodically confirms compliance with the contractor’s construction stormwater permit through visual inspection of the land-disturbing activity.

Contractors must meet contract requirements implement appropriate controls to prevent nonstormwater discharges to the MS4. These prohibited discharges include, but are not limited to, wastewater, concrete washout, fuels and oils, and other illicit discharges identified during either the park’s or the contractors’ inspections. Nonstormwater discharges, other than those identified in 9VAC25-890-20 D and described in the IDDE Written Procedures are not authorized by the park’s MS4 permit. Specific contract language examples related to stormwater management are provided



below:

- National Park Service, Special Use Permit, NPS Form 10-114 (Rev. 01/2017)
 - Condition #33: Before commencement of work, Permittee will provide the NPS with copies of any and all documentation utilized in the planning of the work, including diagrams, schematics, pictures, drawings, and/or plans of any kind (e.g., architectural drawings, security plans, storm water management plans, and erosion & sediment control measures). In the event that such documentation changes, Permittee will promptly submit updated copies to the NPS.
 - Condition #34: Before work begins: Permittee will perform a preliminary walk-through with NPS to define the Limit of Disturbance (LOD) area, document prior existing conditions, review the work-plan with all construction crews and be familiar with the pre-approved staging area(s) and site plans.
 - Condition #48: The Permittee shall comply with all Federal, State, and Local regulations pertaining to environmental quality and safety. This includes but is not limited to the Resource Conservation Recovery Act (“RCRA”), the Clean Water Act (“CWA”), the Clean Air Act (“CAA”), the Oil Pollution Act (“OPA”), and OSHA 1910.120 (“Hazardous”). The Permittee must show proof of licenses if applicable when performing work on NPS property. The Permittee shall show proof that employees are in a medical monitoring program if applicable. If Applicable, the Permittee shall submit written emergency response procedures for NPS review and approval.
 - Condition #49: Hazardous Incidents: In the event of any action or occurrence at the site which causes or threatens the environment or public health and welfare, such as hazardous material release or hazardous environmental conditions that constitutes an emergency situation, the Permittee shall immediately take all appropriate action to prevent or abate and mitigate such threat and shall immediately notify the NPS. Such incidents might include, but are not limited to examples such as fire or accidental release of hazardous materials.
 - Condition #50. The Permittee shall take responsibility for all vehicles and equipment used during this permitted activity including any and all releases and/or discharges of hazardous substances, petroleum products, and non-hazardous wastes into the environment resulting from project activities. The Permittee will assume responsibility for immediate clean-up for any such releases and discharges.
 - Condition #51. Any waste entering on park land shall be removed and the affected property cleaned, stabilized, or restored, to the satisfaction of NPS. This restoration shall take place within the time period directed by NPS.
 - Condition #55: No refueling or maintenance of equipment on park property is permitted. The Permittee shall have an approved Spill Response Kit available on-



site at all times and personnel shall be trained in the use of the equipment. All spills must be reported to NPS point of contact, or alternate contact, or USPP immediately.

- Condition #56. Flood Plan: Permittee shall submit a flood plan to the NPS outlining the general actions and communication plan of the Permittee and contractors in the event of a prediction of major flooding by the Potomac River.
- Condition #61: The permittee is (or shall require its contractor) to be responsible for the cost and repairs to any structures, facilities, installation, sod, soils, or landscape vegetation on park land damaged by the work authorized under this permit and shall, at the direction of the NPS, submit detailed plans for the repair, restoration and/or replacement of such. All parkland and structures disturbed by the work authorized by this permit will be restored to the satisfaction of the Superintendent or their designee. Restoration of turf areas shall be according to the NPS Specifications for Turf Restoration.
- Condition #67: Erosion control methods shall be used to prevent silt-laden water from entering the stream and watershed. These may include, but are not limited to, silt fencing, filter fabric, excelsior or fumigated straw filter logs, temporary sediment ponds, check dams of pea gravel-filled burlap bags or other material, and/or immediate mulching of exposed areas. In order to prevent import of non-native plants, straw bales or non-fumigated products shall not be permitted. This measure is designed to keep fine and coarse sediments from reaching flowing waters where they can be transported downstream and may affect spawning gravels, substrate embeddedness, pool frequency/quality and the development of large pools. Silt protection structures should be inspected and cleaned out periodically.
- Condition #68. Both during and upon completion of the construction phase of the project, Permittee agrees to take all measures necessary to curtail erosion and sedimentation caused by the excavation, and further to restore and re-vegetate the area to its original condition as agreed to at the preconstruction meeting as described above. Furthermore, Permittee agrees to meet, at a minimum, all state and local erosion and sedimentation regulations.

During the planning of a construction project expected to disturb more than 2500 square feet of land, park staff ensure that proper erosion and sediment control measures are part of the project planning. Additionally, GWMP must undergo compliance with the federal National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) to ensure protection of the park's natural and cultural resources.

GWMP's construction inspection procedures include an inspection report and checklist. The checklist is available on the park's MS4 website. If corrective action is required, the park will use contracts



between the park and the contractor to enforce compliance.

GWMP commits to the following BMP opportunities related to construction site stormwater runoff procedures.

1) Procedures and Form Review:

- a. Summary: Park staff will review stormwater management practices at construction sites affecting more than 2500 square feet to ensure contractors are meeting contract obligations.
- b. BMP Goal: Conduct at least two (2) site visits per permit year at construction sites that disturb more than 2500 square feet of soil. Identify non-compliance and require the contractor to rectify the issue(s).
- c. Metric: The metric used as an indication of success in protecting water quality will be the number of non-compliance issues identified and corrected by the contractor.

Roles and responsibilities of GWMP staff in implementing the construction site stormwater runoff control requirements include:

- Contracting (NPS Denver Service Center Staff and Federal Highways Staff) – Develop and enforce contracts.
- Engineering – Develop and incorporate stormwater language into construction contracts.
- Environmental Protection – Develop and incorporate stormwater language into construction contracts; inspect land disturbing activities for compliance with contract requirements.

4.5 MCM #5: Post-Construction Stormwater Management for New Development and Development on Prior Developed Lands

As mentioned previously, construction is rarely conducted on park property. However, if construction occurs for new development or development on prior developed lands, GWMP will manage post-construction stormwater in accordance with MS4 permit requirements. GWMP has not developed its own standards and specifications in accordance with the Virginia Stormwater Management Act (§ 62.1-44.15:24 et seq. of the Code of Virginia) and Virginia Stormwater Management Regulations (9VAC25-870). Therefore, the park addresses post-construction stormwater runoff control by requiring compliance with 9VAC25-870.

In accordance with 9VAC25-870, GWMP understands that "stormwater management facility" (SMFs) means a control measure that controls stormwater runoff and changes the characteristics of that runoff including the quantity and quality, the period of release or the velocity of flow. Examples of SMFs include but are not limited to

- Pervious concrete and asphalt;
- Raingardens and bioretention ponds;
- Stormwater pre-treatment chambers;
- Stormceptors.



Currently, GWMP does not maintain, own, nor operate any SMFs within the MS4 service area. If, however, in the future SMF(s) are installed, GWMP commits to maintaining them in good working order and to meet conditions of the MS4 permit as set forth in Part 1, E, d, 5 including but not limited to maintaining information about each one as well as developing and implementing written inspection procedures.

GWMP will maintain a list of the BMPs that the park has implemented to meet its Chesapeake Bay TMDL load reduction requirements as required in the MS4 permit, Part II, A and in accordance with the GWMP Chesapeake Bay TMDL Action Plan. The list will be available on the park's MS4 website and it will contain the following details:

- The stormwater BMP type;
- The stormwater BMPs location as latitude and longitude;
- The acres treated by the BMP, including total acres, pervious acres, and impervious acres;
- Whether or not the BMP is part of the park's Chesapeake Bay TMDL action plan required in Part II A or local TMDL action plan required in Part II B, or both;
- The date of the permittee's most recent inspection of the BMP.

GWMP will update its spreadsheet no later than 30 days after a new stormwater management facility is brought online, a new BMP is implemented to meet TMDL load reductions, or an existing stormwater management facility is discovered.

By October 1st of each year, GWMP will electronically report the BMPs implemented between July 1 and June 30 for any practices not reported in accordance with General Permit Part I E 5 f. These include stormwater management facilities installed to control post-development stormwater runoff from land disturbing activities greater than 2500 square feet in accordance with the Chesapeake Bay Preservation Act regulations (9VAC25-830) and for which a General VPDES Permit for Discharges of Stormwater from Construction Activities was not required. GWMP will use the DEQ BMP Warehouse and associated reporting template to complete the reporting.

Roles and responsibilities of GWMP staff in implementing the post-construction stormwater runoff control requirements for new development include:

- Engineering – As appropriate, develop and incorporate the design and installation of SMFs into construction contracts.
- Environmental Protection – Maintain a list of SMF BMPs and report the information annually to VA DEQ. As SMFs are installed, develop and implement maintenance procedures.

4.6 MCM #6: Pollution Prevention and Good Housekeeping for Facilities Owned or Operated by GWMP within the MS4 Service Area

GWMP implements pollution prevention and good housekeeping practices throughout the park to



minimize and prevent pollutants from discharging to its MS4. Written procedures, stormwater pollution prevention plans (SWP3), and training are key parts of the park's pollution prevention and good housekeeping program. In addition to providing training to its own employees, GWMP uses the following mechanisms to ensure contractors working on their behalf, who may have the potential to impact stormwater management implement good housekeeping procedures and pollution prevention procedures:

- Specific contract language (for contract language examples, refer to [section 4.4](#)); and
- Compliance with VDEQ regulations including VPDES permits.

GWMP maintains and implements written pollution prevention and good housekeeping procedures for activities such as road, street, and parking lot maintenance; equipment maintenance; and waste management. The list of good housekeeping procedures is available on the park's MS4 website. The procedures are part of the biennial (every two years) staff training on stormwater management. Other sources of good housekeeping procedures include but are not limited to:

- GWMP Maintenance Complex Stormwater Pollution Prevention Plan (SWP3);
- GWMP Daingerfield Island SWP3;
- Spill prevention, control and countermeasures (SPCC) plans for the GWMP Maintenance Complex and Glen Echo Park (in Maryland).

After considering stormwater potential of areas throughout the park, two (2) locations are considered high-priority facilities that have the potential to discharge pollutants in accordance with the MS4 permit, Part 1, E, 6, c. Both locations have a written SWP3 plan in place. The locations are:

- GWMP Maintenance Complex; and
- GWMP Daingerfield Island.

Should an unauthorized discharge, release or spill occur at either of these two locations, the identified Team Leader for each of the SWP3 plans will conduct a review of the SWP3 plan to determine if additional measures are necessary to prevent future unauthorized discharges. As needed the plans will be updated within 90 days following the discharge. Each site's plan and associated documents are available either electronically or in hard copy at each facility. Appropriate staff are trained on each plan annually.

At this time, the park does not meet the threshold requirement to develop and maintain nutrient management plans in accordance with § 10.1-104.2 of the Code of Virginia because the park does not apply nutrients to contiguous areas of greater than 1 acre. As needed, if at some point in the future the park triggers this threshold and applies nutrients in areas of greater than 1 acre, park management will comply with developing and implementing a nutrient management plan.

GWMP does not apply deicing agent containing urea or other forms of nitrogen or phosphorus to parking lots, roadways, sidewalks, or other paved surfaces.

GWMP understands that employee training on stormwater related matters is an important part of the park's MS4 program and will help ensure compliance with this plan and permit requirements. A



table summarizing the park’s training program is provided below:

Training Topic	Audience	Frequency
Recognition and reporting of illicit discharges	Park personnel	Every two years and for new employees
Pollution prevention and good housekeeping associated with road, street and parking lot maintenance	Employees performing road, street or parking lot maintenance	Every two years and for new employees
Pollution prevention and good housekeeping associated with maintenance, public works or recreational facilities	Employees working in or around maintenance, public works, or recreational facilities	Every two years and for new employees
Virginia Pesticide Control Act	Contractors hired by GWMP who apply pesticides and herbicides	As required
Virginia Erosion and Sediment Control Law	Employees and contractors serving as plan reviewers, inspectors, program administrators, or construction site operators	As required
Virginia Stormwater Management Act	Employees implementing stormwater plans	As required
Spill Response	Employees who could cause or respond to petroleum, oils, and lubricants spills	Annual HAZWOPER training for emergency response personnel. Annually for oil-handling employees as part of required facility SPCC Plans.

GWMP will maintain documentation of each training event for a minimum of 3 years, including date, number of attendees, and objective.

GWMP commits to the following BMP opportunities related to good housekeeping and pollution prevention practices:

1) Procedures Review:

- a. Summary: Park staff will review stormwater good housekeeping and pollution prevention practices and make updates as appropriate.
- b. BMP Goal: Review and update (as needed) every two years the written procedures and associated training content for employees.
- c. Metric: The metric used as an indication of success in protecting water quality will be the number of employees who received training on good housekeeping and pollution



prevention practices.

Roles and responsibilities of GWMP staff in implementing the good housekeeping and pollution prevention requirements include:

- Facility Maintenance – Serve as the SPCC Coordinator and SWP3 Team Lead. Responsible for overall management and implementation of the park’s SPCC and SWP3 plans.
- Environmental Protection – Schedule required trainings for staff and maintain training documentation.

5 Assessment of Effectiveness

The GWMP will assess the effectiveness of its efforts by reviewing this plan annually as a component of developing the annual report submitted to DEQ 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. The Chesapeake Bay TMDL provides additional specifics on the required pollutant load reductions and the plan park management agree to take in order to meet the required load reductions.