City of Alexandria, Virginia

Municipal Separate Storm Sewer System (MS4) Program Plan



CLEAN THE BAY DAY 2023

In compliance with Permit No.VAR040057, "General Virginia Pollutant Discharge Elimination System Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems."

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May 8, 2025

ECO-CITY ALEXANDRIA
CLEAN WATERWAYS

Record of Document Updates & Changes

REV Level	Changes	Date of Revisions
Initial Document	Updated based on the 2023 – 2028 MS4 permit	April 30, 2024
Rev. 1	Updated based on the Construction General Permit, July 1, 2024, and Stormwater Regulations	July 1, 2024
Rev. 2	Added a new High Prioirty Facility and updated organizational chart. Incorporated final Phase 3 Chesapeake Bay TMDL Action Plan.	Dec. 16, 2024
Rev. 3	Update two name changes for City Departments: Development and Right-of-Way is now P&Z Development Review and Public Works Services is now Street and Sewer Maintenace. Minor edits to the IDDE Policy & Procedures.	Feb. 12, 2025
Rev. 4	Update to Outfall and Point of Discharge Table and updates to the two TMDL Action Plans and Chesapeake Bay Phase III Action Plan.	May 8, 2025

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ATTACHMENTS

Appendix 1 – Phase II Chesapeake Bay TMDL Action Plan
Appendix 2 – Local TMDL Action Plans

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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."



Signature	Date
	May 8, 2025

Name	Title
Jesse Maines	Division Chief, Department of T&ES Stormwater Management Division City of Alexandria

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City of Alexandria

Municipal Separate Storm Sewer System (MS4) Program Plan

A. Introduction

This document represents the City of Alexandria (City) plan to meet the requirements of 9VAC25-890-40 "General VPDES (Virginia Pollutant Discharge Elimination System) Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4s). The City was originally issued an MS4 general permit on July 8, 2003 (Permit No. VAR40057) which was subsequently reissued in 2008, 2013, and 2018. The current five-year permit was re-issued on November 1, 2023, and expires on October 31, 2028. To achieve the regulatory water quality goals, the permit requires the City to control the discharge of pollutants to the maximum extent practicable (MEP) by addressing permit special conditions and the following six minimum control measures (MCMs).

Six Minimum Control Measures

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 or Operated by the Permittee within the MS4 Service Area

On January 9, 2017, the Environmental Protection Agency (EPA) promulgated revised regulations governing how small MS4s obtain coverage under National Pollutant Discharge Elimination System (NPDES) general permits. The *Final MS4 General Permit Remand Rule* established two alternative approaches for administering the permits: (1) traditional general permit approach and (2) procedural approach. The Virginia Department of Environmental Quality (DEQ) developed the 2018-2023 permit in accordance with the traditional general permit approach, and as a result, the permit contains very specific, enforceable requirements and it is not necessary for the details of the MS4 program plan to be included as enforceable terms of the permit. DEQ interprets EPA's remand rule to mean that program plans are meant to describe how permittees will meet the requirements of the permit and allow for the plan to be revised in accordance with an adaptive management approach. All enforceable provisions of the MS4 program are contained within the permit and approval of the MS4 program plan by DEQ is not necessary.

The 2023-2028 general permit has been refined and contains more specific requirements and several updates. This document outlines the requirements contained in the 2023-2028 general permit and describes how the City will meet the requirements of the new permit through October 31, 2028.

The new permit requires the City to update the MS4 Program Plan no later than six months after the permit effective date (e.g., May 1, 2024) unless otherwise specified in another permit condition. In addition, the permit requires that the permittee shall post the most up-to-date version of the MS4 Program Plan on the permittees website within 30 days of updating the plan. This version of the MS4

Program Plan supersedes the previously dated program plans. Revisions to the MS4 Program plan are expected through the life of this permit as part of the iterative process to reduce stormwater pollution and protect water quality. As such, revisions made to the plan as a result of the iterative process shall be summarized as part of the annual report.

A key obligation contained in the permit is the requirement to submit an Annual Report by October 1st of each year. This Program Plan identifies how the City will maintain compliance with its MS4 General Permit, while the Annual Report documents the status of implementation of the Program Plan for each permit year. In effect, the Program Plan comprises a road map for compliance, which requires continuous management efforts and substantial resource commitments on the part of the City.

B. Stormwater Management Program Organization

While stormwater activities and functions are divided among several different departments and divisions, the Department of Transportation and Environmental Services (T&ES) has the primary responsibility for coordinating compliance with the permit. VPDES permit compliance activities are coordinated through the Stormwater Division within the Department of Transportation and Environmental Services (T&ES-SWM). While T&ES-SWM is responsible for overall permit coordination, including the submittal of annual reports and program plan updates, several other departments and divisions have important roles in implementing the VPDES permit. The following organizational chart provides an overview of relationships between the different departments and divisions and outlines roles and responsibilities.

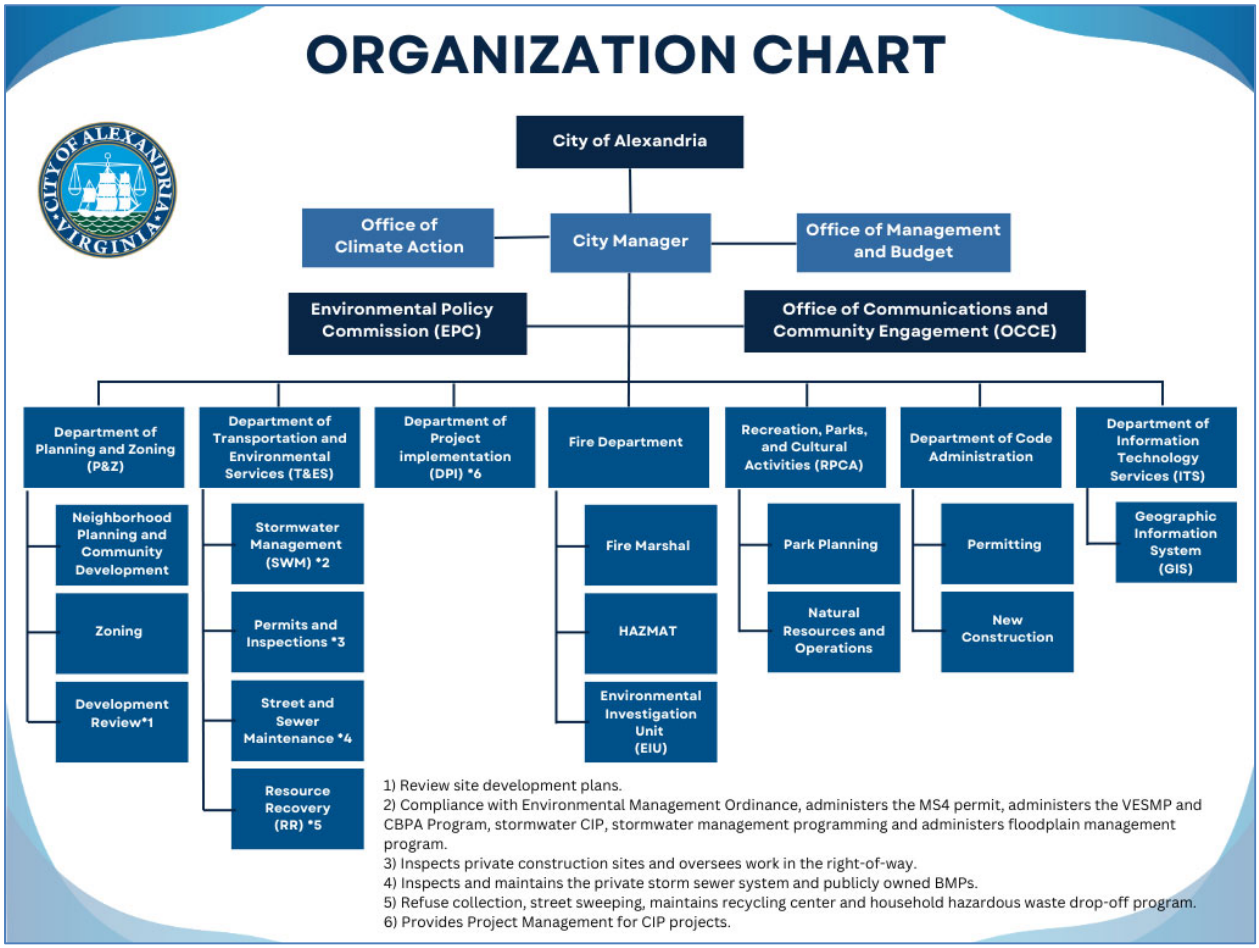


Figure 1. Organization of the City of Alexandria's Stormwater Management Program

The following acronyms and abbreviations are used in this Plan are listed in the table below.

Table 1. Department and Division Acronyms

Acronym	Department or Division
Code	Department of Code Administration
DPI	Department of Project Implementation
EIU	Environmental Industrial Unit coordinating group (from T&ES, Health Department, FD, RPCA, P&Z, General Services, AlexRenew, Alexandria City Public Schools, Virginia American Water and OCCE)
EPC	Environmental Policy Commission
FD	Fire Department
GS	Department of General Services
ITS	Department of Information Technology Services
ITS-GIS	Department of Information Technology Services, Geographic Information Systems Division
NVRC	Northern Virginia Regional Commission
OCCE	Office of Communications & Community Engagement
P&Z	Department of Planning and Zoning
RPCA	Department of Recreation, Parks, and Cultural Activities
SWCB	Virginia State Water Control Board
T&ES	Department of Transportation and Environmental Services
T&ES-SWM	T&ES, Stormwater Management Division
T&ES-C&I	T&ES, Construction and Inspection Division
T&ES-SSM	T&ES, Street and Sewer Maintenance Division
T&ES-RR	T&ES, Resource Recovery Division
Fleet	T&ES Fleet Services Division

C. Minimum Control Measures

The following describes the best management practices (BMPs) that the City will utilize and implement to meet each of the six minimum control measures (MCMs). Included with each BMP is a description of:

- Policies, ordinances, schedules, inspection forms, written procedures, and other documents necessary for BMP implementation.
- The objective and expected results of each BMP in meeting the measurable goals of the minimum control measure.
- Roles and responsibilities for BMP implementation.
- The implementation schedule for the proposed BMP.
- Documentation and the method that will be utilized to determine the effectiveness of the BMP.

1.0 MCM #1: Public Education and Outreach

Permit Reference Part I.E.1.

Relevant Excerpts:

a. The permittee shall 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 toward individuals or groups most likely to have significant stormwater impacts.*

b. The permittee shall identify no fewer than three high-priority stormwater issues to meet the goal of educating the public in accordance with Part I E 1 a. High-priority issues may include the following examples: Chesapeake Bay nutrients, pet wastes, local receiving water impairments, TMDLs, high-quality receiving waters, litter control, BMP maintenance, anti-icing and deicing agent application, planned green infrastructure redevelopment, planned ecosystem restoration projects, and illicit discharges from commercial sites.

c. The high-priority public education and outreach program, as a whole, shall:

1. *Clearly identify the high-priority stormwater issues;*
2. *Explain the importance of the high-priority stormwater issues;*
3. *Include measures or actions the public can take to minimize the impact of the high-priority stormwater issues; and*
4. *Provide a contact and telephone number, website, or location where the public can find out more information.*

d. The permittee shall use two or more of the strategies listed in Table 1 below per year to communicate to the target audience the high-priority stormwater issues identified in accordance with Part I E 1 b including how to reduce stormwater pollution.

e. The permittee may coordinate its public education and outreach efforts with other MS4 permittees; however, each permittee shall be individually responsible for meeting all of its state permit requirements.

f. The MS4 program plan shall include:

1. *A list of the high-priority stormwater issues the permittee will communicate to the public as part of the public education and outreach program;*
2. *The rationale for selection of each high-priority stormwater issue and an explanation of how each education or outreach strategy is intended to have a positive impact on stormwater discharges;*
3. *Identification of the target audience to receive each high-priority stormwater message;*
5. *Traditional permittees may identify staff and students as part of the target audience for education and outreach strategies; however, staff shall not be the majority of the target audience.*
6. *Staff training required in accordance with Part I E 6 d does not qualify as a strategy for public education and outreach.*
7. *The strategies from Table 1 of Part I E 1 d to be used to communicate each high-priority stormwater message; and*
8. *The anticipated time periods the messages will be communicated or made available to the public*

Table 2. Strategies for Public Education and Outreach

Strategies	Examples
Traditional written materials	Informational brochures, newsletters, fact sheets, utility bill inserts, or recreational guides for targeted groups of citizens
Alternative materials	Bumper stickers, refrigerator magnets, t-shirts, or drink koozies
Signage	Temporary or permanent signage in public places or facilities, vehicle signage, bill boards, or storm drain stenciling
Media materials	Information disseminated through electronic media, radio, televisions, movie theater, newspaper, or GIS story maps
Speaking engagements	Presentations to school, church, industry, trade, special interest, or community groups
Curriculum materials	Materials developed for school-aged children, students at local colleges or universities, or extension classes offered to local citizens
Training materials	Materials developed to disseminate during workshops offered to local citizens, trade organization, or industrial officials
Public education activities	Booth at community fair, demonstration of stormwater control projects, presentation of stormwater materials to schools to meet applicable education Standards of Learning or curriculum requirements, or watershed walks
Public meetings	Public meetings on proposed community stormwater management retrofits, green infrastructure redevelopment, ecosystem restoration projects, TMDL development, climate change's effects on stormwater management, voluntary residential low impact development, or other stormwater issues



Program Plan Update Requirement

The City developed the required Public Education and Outreach Plan in the previous permit cycles. The plan has been updated in accordance with the new requirements in Part I E 1 a of the current general permit. The plan is incorporated below.

Public Education and Outreach Plan Development

The City seeks to change pollution-causing behaviors through effective public education and outreach and has developed the Public Education and Outreach Plan in accordance with Part I E 1 of the MS4 permit. The Plan is integrated into the BMPs for MCM #1 and has been revised with this updated Program Plan. The Public Education and Outreach Plan is designed to provide general pollution prevention awareness and to target specific target audiences to increase their knowledge about the steps that can be taken to reduce stormwater pollution and the hazards associated with illegal discharges and improper disposal of waste. The plan specifically focuses on reducing impacts to impaired waters and other local water pollution concerns through the identification of high-priority stormwater issues.

Identification of High-Priority Stormwater Issues: The MS4 permit requires that the City identify a minimum of three high-priority stormwater issues that contribute to stormwater pollution, provide a rationale for their selection, and explain how each education and outreach strategy is intended to have a positive impact of stormwater discharges.

The Public Education and Outreach Plan continues to focus on the following high-priority stormwater issues identified by the City

1. Chesapeake Bay Nutrients (phosphorus and nitrogen);
2. Pet Waste; and,
3. Illicit Discharges.

Each of these high-priority stormwater issues will be addressed through the City's local efforts and participation in the Northern Virginia Regional Commission (NVRC) Clean Water Partners program. The NVRC Clean Water Partners memorandum of agreement can be found in Appendix A. The following rationale provides the basis of selecting the top three high-priority issues and explains their importance:

1. *Chesapeake Bay Nutrients*

   The Chesapeake Bay Total Maximum Daily Load (TMDL) was developed by EPA in December 2010 to address nutrient and sediment contributions from the agricultural, wastewater, and urban stormwater sectors. Excess nutrients can cause algae blooms, and when the algae die, they consume oxygen in the water, creating dead spots where aquatic life cannot survive. Sediment deposited in stream beds can smother aquatic life and harm fish. In response to the Bay TMDL and state reduction requirements, Virginia has adopted a Phase I, Phase II, and Phase III Watershed Implementation Plans (WIP). The Phase III WIP was completed in August 2019. The WIPs identify specific strategies for reducing the pollutants of concern in order to meet the Bay TMDL. Specific nutrient and sediment reduction targets have been included in the MS4 permit beginning with the 2013-2018 cycle and are found in Part II TMDL Special Conditions

under section A of the current permit. These reductions will be achieved through the implementation of a toolbox approach that includes current approved methods and possible future-approved methods. Primarily, the required nutrient reductions outlined in the MS4 General Permit will be met through redevelopment under the Virginia Stormwater Management Program regulations coupled with the City's more stringent local ordinance, retrofits of regional facilities, retrofits on City properties and rights-of-way, bi-lateral trading with AlexRenew, and stream restoration. In addition, nutrient pollution can be significantly impacted through public education via messaging that targets the misapplication of fertilizers to urban lawns.

2. *Pet Waste*

Bacteria from pet waste has been identified as one of the top three high-priority stormwater issues to target for education and outreach activities. While wildlife largely contributes to the bacteria load associated with parks and open space, pets are associated with residential lands and the potential bacteria sources associated with urban lands. Non-tidal and Tidal Four Mile Run stream segments are listed as impaired by DEQ for fecal coliform and TMDLs have been developed for both. Additionally, bacteria TMDLs (*E. coli*) have been developed and approved for Hunting Creek, Cameron Run, and Holmes Run watersheds. Potential key sources of bacteria from the MS4-permitted area may include pets and wildlife. Since public education and outreach is not an effective strategy to manage bacteria from wildlife, the City is focusing on targeting efforts on pet-owners in the City.

3. *Illicit Discharges*

The improper handling and disposal of waste materials can pose potential impacts to local water quality and has been identified as one of the top three high-priority stormwater issues. More specifically, the City has documented improper disposal of restaurant and food preparation materials (cooking oils, waste grease, food waste, trash); cleaning materials (soaps, wash water); and other general household materials (paint, pesticides, cleansers) into the storm drain system as having occurred within the City. Public complaint reporting and observations from proactive investigations have identified these as potential sources of pollution and messaging will be targeted to prevent these and other illicit discharges.

Strategies for Public Education and Outreach: As documented in Table 1 of the permit, the City may employ several different strategies for public education and outreach. The City currently uses and will continue to use most of the strategies listed in the Table. Specific strategies used for each high-priority stormwater issues is outlined in the sections below.

BMP 1A - Traditional Written Materials

Traditional written materials are a proven and reliable strategy. The City has created general stormwater educational flyers/brochures and pamphlets that are distributed during outreach events, shared with local libraries and recreation centers, and posted online to the City's stormwater management webpages. The pamphlets include:

- Best Management Practices for Landscaping and Lawncare Companies;
- Best Management Practices for Restaurant and Food Handling Businesses;

- Best Management Practice for Automotive Garages and Service Centers;
- Make Your Home the Solution to Stormwater Pollution
- Pet Waste;
- Polychlorinated Biphenyls; and
- Household Hazardous Waste & Electronics Recycling Program.

BMP 1B - Alternative Materials

Distributed promotional items, or alternative materials, at outreach events are that include the City's Eco-City Clean Waterways logo. T&ES-SWM makes it a priority to select promotional items that are useful and related to stormwater while the logo brings awareness of the City's goal of improved water quality and clean waterways.

BMP 1C - Signage

The City requires all new and redevelopment projects to provide and install signage or labeling to identify new surface structural stormwater BMPs. This requirement is implemented during the City site plan approval process.

Additionally, the City has installed stream crossing signs at hike and/or bike trails that cross major waterways. The City maintains and replaces these signs as needed. The signs promote awareness of Alexandria's surface water resources, water bodies, and drainage basins.



The City was one of the first localities in Northern Virginia to implement a storm drain marking program. The City continues to require new development and redevelopment to mark storm drain inlets within the development and located within 50 feet of the project with information on the drainage destination of waters entering the structures. In addition, City staff continue to promote the storm drain marking program at community events and to work with interested residents to implement storm drain marking.

BMP 1D - Media Materials

The City continues to host a stormwater quality webpage and has created a dedicated webpage. The page has information about the City's Stormwater Management Program, the Chesapeake Bay Action Plan, the City's Virginia Erosion and Stormwater Management Program (VESMP) (formerly Virginia Stormwater Management Program, VSMP), the MS4 Program – to include the Program Plan and annual reports – and provides information for residents to learn how they can protect local streams and rivers. In addition, pages linked to this main page contain external links for the Chesapeake Bay Preservation Act, VESMP requirements, and the Construction General Permit. It also contains information and links for the City's Environmental Management and Erosion and Sediment Control ordinances as well as the Clean Water Partner's website. Staff continues to add new content to the site and update existing content.

In addition, the City highlights upcoming events or important information, and posts information on the T&ES Facebook page, Instagram account, and X (formerly Twitter) account. These tools are used to promote water quality events such as volunteer stream cleanups, "build your own" rain barrel workshops, pre-made rain barrel sales events, and other water quality related topics.

To distribute important information, the City uses *Alexandria eNews*, which is a service that allows users to receive information through email on nearly 100 topics (including stormwater-related messages). Users sign up for these email alerts and can choose what specific informational topics. For example, individuals may choose to receive news with a specific focus on environmental and water quality issues, and/or information on volunteer opportunities, tips, and workshops. T&ES communicators and program managers, and the OCCE work closely together to widely distribute eNews messages and other Citywide information.

In 2016, the City developed a video about stormwater pollution prevention and the City's Stormwater Program. This video can be found on the City's Stormwater website via a YouTube link and is also aired on both the government access channel (Channel 70) and the community access channel (Channel 69).

Finally, the City maintains its online resident reporting capabilities via Alex311 as indicated under BMP 3D.

BMP 1E - Speaking Engagements

T&ES-SWM staff often presents at various meetings and events including out rain barrel workshops, homeowner association meetings, and stream clean-ups. In addition, staff has also presented to students at Northern Virginia Community College about stormwater and the importance of pollution prevention. These activities all create awareness regarding the importance of preventing stormwater pollution. Speaking engagements may be in-person and virtual/online.

Coordination with Regional Efforts: In addition to local efforts, the City continues to participate with other MS4 communities in regional public education efforts through the Northern Virginia Regional Commission (NVRC) Clean Water Partners program. The program leverages local resources to reach a larger regional audience through a mix of media such as radio, TV, online and print. The Clean Water Partners focuses on nutrients from lawns and gardens, bacteria from pet waste, and illicit discharge and litter as their three high-priority stormwater issues.

Assessment: During the 2013-2018 permit cycle, the City included used motor oil recycling as one of the three high-priority issues. However, based on the annual NVRC surveys showing that individuals are less likely to change their own oil, the City replaced the motor oil issue with illicit discharges in 2015. The City will continue to evaluate each high-priority stormwater issues annually to determine if any changes should be made.

The City will implement the local education and outreach activities to address each of the three high-priority issues during this permit cycle. The City will also annually assess the effectiveness of each of these strategies toward meeting MS4 permit goals. If these selected BMPs are determined to not be meeting the goals, the City will revise the program accordingly and document any changes in this Program Plan.

Table 3. High Priority Issue #1 - Chesapeake Bay Nutrients

The following table provides the strategies that the City will use to communicate the importance of reducing the amount of nutrients in the Chesapeake Bay. In addition, each strategy includes a description, the corresponding potential positive impact, parties responsible for implementation, the time period or schedule that the message will be communicated, documentation, and measurable goal.

Strategy Name	Description	Impact on Stormwater Discharges	Target Audience	Responsible Parties	Implementation Schedule	Documentation	Measurable Goal
Traditional Written Materials	Distribute proper fertilization pamphlets and other written materials at outreach events	Provide education and outreach written materials on the proper use and application of fertilizers to reduce and minimize the impact of nutrients on waterways	Individuals attending outreach events	T&ES-SWM	Distribute materials during outreach events.	Sample written materials distributed	Dates and location of outreach events with the approximate number of attendees
Signage	Place BMP identification signs at surface structural stormwater BMPs (bioretention, swales, green roofs, etc.)	Increase awareness of structural stormwater BMPs used to treat stormwater by removing nutrients and improving water quality	Individuals that pass by existing surface structural stormwater BMPs	T&ES-SWM in coordination with private developers	Install surface structural stormwater BMP signs during BMP installation	Location map with BMPs	The total number of BMPs within the City
Media Materials	Use eNews (City electronic news distribution system), social media (Facebook, Instagram, or X), television, and/or websites to convey message	Provide education and outreach on the proper use and application of fertilizers to reduce and minimize the impact of nutrients	General public / single-family homeowners	T&ES-SWM in coordination with OCCE and NVRC Clean Water Partners for regional efforts	Annually distribute one (1) eNews and one (1) social media post. Implement television advertising and post information on the City's Stormwater Quality webpage	eNews, social media posts, screen captures of webpage	The number of individuals signed up to receive the City's eNews. The number of T&ES Facebook, Instagram, and X followers. The number of visits to the Stormwater Management webpage. Clean Water Partners Only Rain Summary Report of Findings
Speaking Engagements	Present at no less than two (2) events per year and include a message about excess nutrients in stormwater	Provide education on the proper use and application of fertilizers to reduce and minimize the impact of nutrients	Individuals attending the activity, event, or class / general public / single-family homeowners	T&ES-SWM	Annually present at no less than two (2) events per year	Presentation materials	Dates and locations of presentations with the approximate number of attendees

Table 4. High Priority Issue #2 - Pet Waste

The following table provides the strategies that the City will use to communicate the importance of reducing bacteria in our waterways by properly disposing of pet waste. In addition, each strategy includes a description, the corresponding potential positive impact, parties responsible for implementation, the time period or schedule that the message will be communicated, documentation, and measurable goal.

Strategy Name	Description	Impact on Stormwater Discharges	Target Audience	Responsible Parties	Implementation Schedule	Documentation	Measurable Goal
Traditional Written Materials	Distribute pet waste pamphlets and other written materials at outreach events	Provide education and outreach written materials on the proper disposal of pet waste to reduce the amount of bacteria that is carried to waterways	Individuals attending outreach events / pet owners	T&ES-SWM	Distribute materials at outreach events	Sample written materials distributed	Dates and location of outreach events with the approximate number of attendees
Signage	Installation, maintenance, and re-stocking of pet waste stations with appropriate signage "Poop Fairy" yard signs	Provide waste stations and/or bags for waste stations to make it convenient for pet owners to properly dispose of pet waste to reduce the amount of bacteria that is carried to waterways Inform public that they are responsible for picking up pet waste	Individuals using the area with their pet	T&ES-SWM in coordination with RPCA and general public	Provide bags to refill pet waste stations as needed Distribute "Poop Fairy" yard signs during outreach events and as requested	Photo of new pet waste station, documentation of existing pet waste stations Photo of "Poop Fairy" yard signs in neighborhoods	Number of existing and new pet waste stations Number of pet waste bags used and distributed to refill stations Number of "Poop Fairy" yard signs distributed
Media Materials	Use eNews (City electronic news distribution system), social media (Facebook, Instagram, or X), television, and/or websites to convey message	Provide education and outreach on the proper disposal of pet waste to reduce the amount of bacteria that is carried to waterways	General public / pet owners	T&ES-SWM in coordination with OCCE and NVRC Clean Water Partners for regional efforts	Annually distribute one (1) eNews and one (1) social media post. Implement television advertising and post information on the City's Stormwater Quality webpage	eNews, social media posts, screen captures of webpage	The number of individuals signed up to receive the City's eNews. The number of T&ES Facebook, Instagram, and X followers. The number of visits to the Stormwater Management webpage. Clean Water Partners Only Rain Summary Report of Findings
Speaking Engagements	Present at no less than two (2) events per year and include a message about proper disposal of pet waste	Provide education on the proper disposal of pet waste to reduce the amount of bacteria that is carried to waterways	Individuals attending the activity, event, or class / pet owners	T&ES-SWM	Annually present at no less than two (2) events per year	Presentation materials	Dates and locations of presentations with the approximate number of attendees

Table 5. High Priority Issue #3 - Illicit Discharges

The following table provides the strategies that the City will use to communicate the importance of reducing, recognizing, and reporting illicit discharges. In addition, each strategy includes a description, the corresponding potential positive impact, parties responsible for implementation, the time period or schedule that the message will be communicated, documentation, and measurable goal.

Strategy Name	Description	Impact on Stormwater Discharges	Target Audience	Responsible Parties	Implementation Schedule	Documentation	Measurable Goal
Traditional Written Materials	Distribute household hazardous waste pamphlets and other written materials at outreach events.	Provide education and outreach written materials on the proper disposal of household hazardous waste to reduce illicit discharges	Individuals attending outreach events	T&ES-SWM in coordination with T&ES-RR	Distribute materials at outreach events	Sample written materials distributed	Dates and location of outreach events with the approximate number of attendees
Signage	Install storm drain markers	Reduce dumping and increase awareness by visually alerting residents that anything that goes down the storm drain goes to the local waterway and is not treated	Individuals traveling past storm drains with the markers	T&ES-SWM in coordination with P&Z, private developers, and general public	Provide markers to public and private developers as needed	Graphic of the storm drain marker and sample plan sheet with the requirement for private developers to place the markers on all storm drains within 50-ft of the project	Number of markers placed
Media Materials	Use eNews (City electronic news distribution system), social media (Facebook, Instagram or X), television, and/or websites to convey message	Provide education and outreach on the proper disposal of non-stormwater materials to reduce illicit discharges along with recognizing and reporting illicit discharges	General public	T&ES-SWM in coordination with OCCE and NVRC Clean Water Partners for regional efforts	Annually distribute one (1) eNews and one (1) social media post. Implement television advertising and post information on the City's Stormwater Quality webpage	eNews, social media posts, screen captures of webpage	The number of individuals signed up to receive the City's eNews. The number of T&ES Facebook, Instagram, and X followers. The number of visits to the Stormwater Management webpage. Clean Water Partners Only Rain Summary Report of Findings
	Have a reporting mechanism on the City's website so that residents can report potential illicit discharges (Alex311)	Ensure the reporting of potential illicit discharges is convenient so that City staff can investigate and determine the source	General public	T&ES-SWM and EIU	Have the reporting mechanism continuously available	Screen capture of the webpage with the reporting mechanism	The number of stormwater pollution related complaints received
Speaking Engagements	Present at no less than two (2) events per year and include a message about illicit discharges	Provide education on the proper disposal of non-stormwater materials to reduce illicit discharges	Individuals attending the activity, event, or class	T&ES-SWM	Annually present at no less than two (2) events per year	Presentation materials	Dates and locations of presentations with the approximate number of attendees

Table 6. General Stormwater Pollution Prevention Public Education and Outreach

The following table provides the strategies that the City will use to communicate the general importance of water quality and stormwater pollution prevention. In addition, each strategy includes a description, the corresponding potential positive impact, parties responsible for implementation, the time period or schedule that the message will be communicated, documentation, and measurable goal.

Strategy Name	Description	Impact on Stormwater Discharges	Target Audience	Responsible Parties	Implementation Schedule	Documentation	Measurable Goal
Traditional Written Materials	Distribute other written materials about water quality and stormwater pollution prevention at outreach events.	Provide education and outreach written materials on about water quality and stormwater pollution prevention to increase awareness of the harmful effects of stormwater pollution	Individuals attending outreach events	T&ES-SWM	Distribute materials at spring and fall outreach events	Sample written materials distributed	Dates and location of outreach events with the approximate number of attendees
Alternative Materials	Distribute promotional items (giveaways) at education and outreach events. Include the Eco-City Alexandria Clean Waterways logo on these items, where possible.	Provide promotional items to increase awareness of the harmful effects of stormwater pollution	General public	T&ES-SWM	Distribute items at spring and fall outreach events	Photos of graphics of some of the items distributed	Dates and location of outreach events with the approximate number of attendees
Signage	Install and maintain stream crossing signs	Promote awareness of Alexandria's surface water resources, water bodies, and drainage basins	Individuals traveling past stream crossing signs	T&ES-SWM	Annually, check the stream crossing signs, and replace and/or maintain as needed	Photo of one of the stream crossing signs	Number of existing signs and number of signs added or replaced
Media Materials	Use social media (Facebook, Instagram, or X), website, and/or television including airing the City's stormwater pollution prevention video on the government/community access channel	Provide education and outreach on the proper disposal of non-stormwater materials on about water quality and stormwater pollution prevention to increase awareness of the harmful effects of stormwater pollution	General public	T&ES-SWM in coordination with OCCE and NVRC Clean Water Partners for regional efforts	Annually distribute one (1) social media post Continuously maintain information on the City's Stormwater Quality webpage Air the stormwater pollution prevention video at least daily on the government/community access channel	Screen captures of social media posts, webpage and video	The number of individuals signed up to receive the City's eNews The number of T&ES Facebook, Instagram, and X followers. The number of visits to the Stormwater Management webpage.
Speaking Engagements	Present at no less than two (2) events per year to include message about water quality and stormwater pollution prevention	Provide education on stormwater pollution prevention to improve water quality	Individuals attending the activity, event, or class	T&ES-SWM	Annually present at no less than two (2) events per year	Presentation materials	Dates and locations of presentations with the approximate number of attendees

2.0 MCM #2: Public Involvement and Participation

Permit Requirement: Part I.E.2.

Relevant Excerpts

a. The permittee shall develop and implement procedures for the following:
- *1. The public to report potential illicit discharges, improper disposal, or spills to the MS4, complaints regarding land disturbing activities, or other potential stormwater pollution concerns;*
- *2. The public to provide comments on the permittee's MS4 program plan;*
- *3. Responding to public comments received on the MS4 program plan; and*
- *4. Maintaining documentation of public comments received on the MS4 program and associated MS4 program plan and the permittee's response.*

b. No later than three months after this permit's effective date, the permittee shall update and maintain the webpage dedicated to the MS4 program and stormwater pollution prevention. The following information shall be posted on this webpage:
- *1. The effective MS4 permit and coverage letter;*
- *2. The most current MS4 program plan or location where the MS4 program plan can be obtained;*
- *3. The annual report for each year of the term covered by this permit no later than 30 days after submittal to the department;*
- *4. For permittees whose regulated MS4 is located partially or entirely in the Chesapeake Bay watershed, the most current Chesapeake Bay TMDL action plan or location where the Chesapeake Bay TMDL action plan can be obtained;*
- *5. For permittees whose regulated MS4 is located partially or entirely in the Chesapeake Bay watershed, the Chesapeake Bay TMDL implementation annual status reports for each year of the term covered by this permit no later than 30 days after submittal to the department;*
- *6. A mechanism for the public to report potential illicit discharges, improper disposal, or spills to the MS4, complaints regarding land disturbing activities, or other potential stormwater pollution concerns in accordance with Part I E 2 a (1); and*
- *7. Methods for how the public can provide comments on the permittee's MS4 program plan in accordance with Part I E 2 a (2) and if applicable, the Chesapeake Bay TMDL action plan in accordance with Part II A 13.*
- *8. Federal and state nontraditional permittees with security policies preventing a MS4 program and stormwater pollution prevention webpage from being publicly accessible may utilize an internal staff accessible webpage such as an intranet webpage to meet the requirements of Part 1 E 2 b.*

d. Traditional permittees shall implement no less than four activities per year from two or more of the categories listed in Table 2 below to provide an opportunity for public involvement to improve water quality and support local restoration and clean-up projects. The permittee may coordinate the public involvement opportunities listed in Table 2 with other MS4 permittees; however, each permittee shall be individually responsible for meeting all of the permit requirements.

e. The Permittee may include staff and students in public participation events; however, the activity cannot solely include or be limited to staff participants with stormwater, groundskeeping, and maintenance duties in order for an event to qualify as a public participation event.

f. Staff training required in accordance with Part I E 6 d does not qualify as a public participation event unless the training activity solicits participation from target audiences beyond staff or contractors with stormwater, groundskeeping, and maintenance duties.

g. The MS4 program plan shall include:
- *1. The webpage address where mechanisms for the public to report (i) potential illicit discharges, improper disposal, or spills to the MS4, (ii) complaints regarding land disturbing activities, or (iii) other potential stormwater pollution concerns;*
- *2. The webpage address that contains the methods for how the public can provide input on the permittee's MS4 program; and*
- *3. A description of the public involvement activities to be implemented by the permittee, the anticipated time period the activities will occur, and a metric for each activity to determine if the activity is beneficial to water quality. An example of metrics may include the weight of trash collected from a stream cleanup, the number of participants in a hazardous waste collection event, etc.*

BMP 2A – Public Reports, Input, and Participation Procedures

Description, Objective and Expected Results: Providing an opportunity for public input and comment enables the City to utilize the expertise of residents and strengthen community understanding of the program objectives to help further community engagement and programmatic support for water quality initiatives. The City is committed to complying with all local, state, and federal public notice requirements for local ordinances or legislative actions related to the stormwater management program.

To address Part I.E.2.a of the permit, the following public notice and participation procedures and methods have been developed, as presented below, and will be implemented during the 2023-2028 permit cycle:

Public Reports of Illicit Discharges, Complaints, and/or Input

Alex311 is the City's web-based problem reporting form and call center (703-746-HELP) that can be used by residents and others to report suspected illicit discharges (including improper disposal or spills), complaints (including ones regarding land disturbing issues), and other comments. The reporting form can be found on the main City landing page and is available on subordinate webpages. Responses to submitted reports are entered into the Alex311 system and can be made viewable to the public or if an email address is provided, staff may respond via email. Typically, suspected illicit discharge reports are responded to via phone or email if the proper contact information is available. Additionally, the main phone number (703-746-6499) for T&ES-SWM can be used by the public and is found on several City Stormwater webpages, including the Illicit Discharge webpage. The City also utilizes 911 for reports of suspected hazardous illicit discharges. In an event an IDDE is reported "after hours" (defined as for weekdays, 4 p.m. to 7 a.m., weekends and holidays), the City will follow Emergency Standby Procedures, which indicates that if the event is thought to be hazardous or cause wildlife death to contact 911; otherwise to call the Fire Marshall's Dispatch Center.

MS4 Program Plan

In accordance to Part I.C.3, this MS4 Program Plan will be posted on the City's Stormwater MS4 Program webpage no later than 30 days of updating the plan. The webpage includes a general email address (MS4ProgramPlan@alexandriava.gov) and the main phone number for T&ES-SWM for the public to use to submit comments and feedback on the plan. The emails will be kept in a separate email account and compiled. Comments and/or feedback that requires a response, will be responded to within 14 days of receipt. If corresponding updates are required to the MS4 Program Plan as a result of comments and/or feedback, these updates will be made within 60 days of receipt and the updated plan will be posted on the website. Documentation of the comments and/or feedback and the City's response will be kept on the City's electronic SharePoint system.

Implementation and Schedule:

- Maintain Alex311 along with the main phone number for T&ES-SWM. Reference these items on the City's webpage.
- Post the updated MS4 Program Plan no later than 30 days after update for public input and feedback. Updates to the Program Plan shall be completed as needed and posted on the City's MS4 webpage within 30 days of the update.

- Each annual report shall be posted online within 30 days of submittal to the department. Annual reports shall be retained online for the duration of the permit. Implementation reports for the Chesapeake Bay TMDL also will be posted online annually.

Responsible Party: T&ES-SWM is responsible for responding to stormwater related complaints received through the Alex311 system, maintaining the T&ES-SWM phone number, and posting the MS4 Program plan.

Documentation and Measurable Goal: In the annual report, the City will include a screen capture of the Alex311 page and the webpage with the phone number for T&ES -SWM. In addition, the City will provide a summary of any public comments received regarding the MS4 program received and details on the City's response.

BMP 2B – MS4 Program and Stormwater Pollution Prevention Webpage

Description, Objectives and Expected Results: The City's Stormwater Management website provides information on stormwater pollution prevention, water quality, and the MS4 Program and links to other aspects of the stormwater management program. According to 2022 Census data, over 93% of households in the City have a broadband Internet subscription. The site provides information about the program, serves as a forum to distribute educational materials, and includes information on where to report suspected illegal dumping.

In accordance with Part I.E.2.b, the MS4 Program and Stormwater Pollution Prevention webpage contains or will contain by the applicable due date:

1. Current MS4 permit and coverage letter;
2. Most current MS4 Program Plan;
3. MS4 annual reports;
4. Chesapeake Bay TMDL Implementation Status reports;
5. T&ES-SWM main phone number and link to Alex311 for reporting illicit discharging or other potential stormwater pollution concerns; and
6. Email address for providing input on the MS4 Program Plan.

The website is a tool to provide water quality and pollution prevention information to the general public in an easily accessible format. It also provides a way to make documents accessible to the public for review and comment.

Implementation and Schedule:

- Continue to host the website and update it with the most recent MS4 Program Plan and annual reports, as they are completed.
- Continue to maintain the Alex311 web portal.

Responsible Party: T&ES-SWM is responsible for keeping site content up-to-date and for assessing options for increasing site traffic. The City's ITS Department is responsible for website hosting and technical development.

Documentation and Measure of Effectiveness: The City will provide the webpage address and a hyperlink to the webpage.

BMP 2C – Local Activities Public Involvement

Description, Objective and Expected Results: By implementing at least four activities per year, the City will increase overall stormwater quality awareness and education, strengthen private environmental stewardship efforts, and provide citizens with a broad range of environmentally related volunteer and engagement opportunities.

In accordance with Part I.E.2.c, the City will implement no less than four activities per year from two or more of the categories listed in Table 2.

Table 7. Public Involvement Opportunities

Public Involvement Opportunities	Examples
Monitoring	Establish or support citizen monitoring group
Restoration	Stream, or watershed, shoreline, beach, or park clean-up day, adopt-a-waterway program, tree plantings, and riparian buffer plantings
Public Education Activities	Booth at community fair, demonstration of stormwater control projects, climate change's effects on stormwater management, presentation of stormwater materials to schools to meet applicable education Standards of Learning or curriculum requirements, or watershed walks
Public Meetings	Public meetings on proposed community stormwater management retrofits, green infrastructure redevelopment, ecosystem restoration projects, TMDL development, voluntary residential low impact development, climate change's effects on stormwater management, or other stormwater issues
Disposal or Collection Events	Household hazardous chemicals collection, vehicle fluids collection
Pollution Prevention	Adopt-a-storm drain program, implement a storm drain marking program, promote use of residential stormwater BMPs, implement pet waste stations in public areas, adopt-a-street program.

Monitoring

The City conducts stream monitoring workshops periodically and anticipates continuing workshops, as requested, to convey the importance of water quality for education and outreach purposes. Monitoring is done using the Virginia Save Our Streams methodology where benthic macroinvertebrates are sampled. The City considers these workshops as activities that go above the permit requirements since the four activities required by the permit are met through the restoration and education activities described below.

Restoration

The City will implement at least two clean-ups per year; if there are no extenuating health and safety concerns, such as the COVID-19 pandemic. Examples of cleanups include the Alice Ferguson Foundation Trash Free Potomac Watershed Initiative, Clean the Bay Day, or Clean Virginia Waterways Cleanup. Typically, the City provides and/or distributes the supplies for the clean-ups including trash grabbers, gloves, and bags, in addition to staff time and support.

Public Education Activities

The City will participate in at least two educational events per year, such as outreach activities in celebration of Earth Month, the Student Environmental Action Showcase (SEAS), or Bike to Work Day. Typically, the City has a table at the event with various educational materials and promotional give-away items. These events may also be virtual due to health and safety concerns. Staff answers questions that the public may have regarding stormwater quality and pollution prevention. In some cases, staff also has an activity for the public to take part in to reinforce the message.

Disposal or Collection Event

The City's T&ES-RR operates the Household Hazardous Waste & Electronics Collection facility at 3224 Colvin Street to give residents the opportunity to properly dispose of unwanted cleaning materials and other liquids, as well as, electronics. The City provides frequent eNews and other notifications of the facility as an activity that goes above the permit requirements since the four activities required by the permit are met through the restoration and education activities described above.

Pollution Prevention

The City will continue the storm drain marking program by supplying volunteers with the material to put markers on storm drains. The markers are a visual reminder that anything that goes into the drain will go to local waterways. In addition, the City requires private developers to mark all storm drains internal to the project and within 50-feet of the project site. Finally, the City has installed and continues to maintain several pet waste stations. The City also supplies bags for some pet waste stations which were privately installed but are in common areas.

Implementation and Schedule:

- Annually implement at least two stream clean-ups in the spring, summer, or fall.
- Annually participate in at least two educational events in the spring, summer, or fall.
- Continuously implement the storm drain marker program and maintain City-owned pet waste stations.

Responsible Party: T&ES-SWM and RPCA support these efforts, sends out information via Environmental News eNews, and develops press releases for OCCE when necessary, and act as site hosts for clean-up events. T&ES-RR collects the bags of trash after stream clean-up events. The City's Earth Month Committee is comprised of several different internal and external stakeholders including T&ES-SWM and T&ES RR, the City's Office of Climate Action, the Public Library system, and Alexandria City Schools; among others.

Documentation and Measurable Goal: The City will document its sponsorship, participation, and promotion of clean-ups and educational events in the Annual Report and provide an approximate number of participants. Event organizers assess the success of the event each year and make changes as appropriate to ensure that the event is a success. The number of individuals marking storm drains each permit year will also be documented.

3.0 MCM #3: Illicit Discharge Detection and Elimination

Permit Reference: Section II.B.3.

Relevant Excerpts:

a. The permittee shall develop and maintain an accurate MS4 map and information table as follows:

1. An updated map of the MS4 owned or operated by the permittee within the census urbanized area identified by the 2020 census no later than 24 months after the permit effective date that includes, at a minimum:

(a) MS4 outfalls discharging to surface waters, except as follows:

1) In cases where the outfall is located outside of the MS4 permittee's legal responsibility, the permittee may elect to map the known point of discharge location closest to the actual outfall; and

2) In cases where the MS4 outfall discharges to receiving water channelized underground, the permittee may elect to map the point downstream at which the receiving water merges above ground as an outfall discharge location. If there are multiple outfalls discharging to an underground channelized receiving water, the map shall identify that an outfall discharge location represents more than one outfall. This is an option a permittee may choose to use and recognizes the difficulties in accessing outfalls to underground channelized stream conveyances for purposes of mapping, screening, or monitoring.

(b) A unique identifier for each mapped item required in Part I E 3;

(c) The name and location of receiving waters to which the MS4 outfall or point of discharge discharges;

(d) MS4 regulated service area; and

(e) Stormwater management facilities owned or operated by the permittee.

2. The permittee shall maintain an outfall information table associated with theMS4 map that includes the following information for each outfall or point of discharge for those cases in which the permittee elects to map the known point of discharge in accordance with Part I E 3 a (1) (a). The outfall information table may be maintained as a shapefile attribute table. The outfall information table shall contain the following:

(a) A unique identifier as specified on the MS4 map;

(b) The latitude and longitude of the outfall or point of discharge;

(c) The estimated regulated acreage draining to the outfall or point of discharge;

(d) The name of the receiving water;

(e) The 6th Order Hydrologic Unit Code of the receiving water;

(f) An indication as to whether the receiving water is listed as impaired in the Virginia 2022 305(b)/303(d) Water Quality Assessment Integrated Report; and

(g) The name of any EPA approved TMDLs for which the permittee is assigned a wasteload allocation.

3. No later than 24 months after permit issuance, the permittee shall submit to DEQ a format file geodatabase or two shapefiles that contain at a minimum:

(a) A point feature class or shapefile for outfalls with an attribute table containing outfall data elements required in accordance with Part I E 3 a (2); and

(b) A polygon feature class or shapefile for the MS4 service area as required in accordance with Part I E 3 a (1) (d) with an attribute table containing the following information:

(i) MS4 operator name;

(ii) MS4 permit number (VAR04); and

(iii) MS4 service area total acreage rounded to the nearest hundredth.

4. All file geodatabase feature classes or shapefiles shall be submitted in the following data format standards:

(a) Point data in NAD83 or WGS84 decimal degrees global positional system coordinates;

(b) Data projected in Virginia Lambert Conformal Conic format;

(c) Outfall location accuracy shall be represented in decimal degrees rounded to at least the fifth decimal place for latitude and longitude to ensure point location accuracy (e.g., 37.61741, -78.15279); and

(d) Metadata shall provide a description of each feature class or shapefile dataset, units of measure as applicable, coordinate system, and projection.

5. No later than October 1 of each year, the permittee shall update the MS4 map and outfall information table to include any new outfalls constructed or TMDLs approved or both during the immediate preceding reporting period.

6. The permittee shall provide written notification to any downstream adjacent MS4 of any known physical interconnection established or discovered after the effective date of this permit.

b. b. The permittee shall prohibit, through ordinance, policy, standard operating procedures, or other legal mechanism, to the extent allowable under federal, state, or local law, regulations or ordinances, unauthorized nonstormwater discharges into the MS4 system. Nonstormwater discharges or flows identified in 9VAC25-890-20 D 3 shall only be addressed if they are identified by the permittee as a significant contributor of pollutants discharging to the MS4. Flows that have been identified by the department as de minimis discharges are not significant sources of pollutants to surface water.

c. *The permittee shall maintain, implement, and enforce illicit discharge detection and elimination (IDDE) written procedures designed to detect, identify, and address unauthorized nonstormwater discharges, including illegal dumping, to the MS4 to effectively eliminate the unauthorized discharge. Written procedures shall include:*

1. *A description of the legal authorities, policies, standard operating procedures or other legal mechanisms available to the permittee to eliminate identified sources of ongoing illicit discharges including procedures for using legal enforcement authorities.*
2. *Dry weather field screening protocols to detect, identify, and eliminate illicit discharges to the MS4. The protocol shall include:*
   (a) A prioritized schedule of field screening activities and rationale for prioritization determined by the permittee based on such criteria as age of the infrastructure, land use, historical illegal discharges, dumping or cross connections;
   (b) If the total number of MS4 outfalls is equal to or less than 50, a schedule to screen all outfalls annually;
   (c) If the total number of MS4 outfalls is greater than 50, a schedule to screen a minimum of 50 outfalls annually such that no more than 50% are screened in the previous 12-month period. The 50% criteria is not applicable if all outfalls have been screened in the previous three years; and
   (d) The permittee may adopt a risk-based approach to dry weather screening identifying observation points based upon illicit discharge risks upstream of an outfall. Observation points may include points of 640 interconnection, manholes, points of discharge, conveyances, or inlets suspected to have a high likelihood of receiving illicit discharges;
   (e) Each observation point screened may be counted as one outfall screening activity equivalent and counted towards the requirements of Part I E 3 c (2) (b) or (2) (c); however, at least 50% of the minimum annual screening events must include outfall screening;
   (f) Illicit discharges reported by the public and subsequent investigations may not be counted as screening events; however once the resolution of the investigation and the date the investigation was closed has been documented, an observation point may be established for future screening events; and
   (g) A checklist or mechanism to track the following information for dry weather screening events:
      i. The unique identifier for the outfall or observation point;
      ii. Time since the last precipitation event;
      iii. The estimated quantity of the last precipitation event;
      iv. Site descriptions (e.g., conveyance type and dominant watershed land uses);
      v. Observed indicators of possible illicit discharge events such as, floatables, deposits, stains, and vegetative conditions (e.g., dying or dead vegetation, excessive vegetative growth, etc.);Whether or not a discharge was observed;
      vi. If a discharge was observed, the estimated discharge rate and visual characteristics of the discharge (e.g., odor, color, clarity) and the physical condition of the outfall; and
      vii. For observation points, the location, downstream outfall unique identifier, and risk factors or rationale for establishing the observation point.
3. *A timeframe upon which to conduct an investigation to identify and locate the source of any observed unauthorized nonstormwater discharge. Priority of investigations shall be given to discharges of sanitary sewage and those believed to be a risk to human health and public safety. Discharges authorized under a separate VPDES or state permit require no further action under this permit.*
4. *Methodologies to determine the source of all illicit discharges. If the permittee is unable to identify the source of an illicit discharge within six months of beginning the investigation then the permittee shall document that the source remains unidentified. If the observed discharge is intermittent, the permittee shall document that attempts to observe the discharge flowing were unsuccessful.*
5. *Methodologies for conducting a follow-up investigation for illicit discharges that are continuous or that permittees expect to occur more frequently than a one-time discharge to verify that the discharge has been eliminated except as provided for in Part I E 3 c (4);*
6. *A mechanism to track all illicit discharge investigations to document the following:*
   (a) The dates that the illicit discharge was initially observed, reported, or both;
   (b) The results of the investigation, including the source, if identified;
   (c) Any follow-up to the investigation;
   (d) Resolution of the investigation; and
   (e) The date that the investigation was closed.

d. The MS4 program plan shall include:

1. *The MS4 map and outfall information table required by Part I E 3 a. The map and outfall information table may be incorporated into the MS4 program plan by reference. The map shall be made available to the department within 14 days upon request;*
2. *Copies of written notifications of physical interconnections given by the permittee to other MS4s; and*
3. *The IDDE procedures described in Part I E 3 c.*

Program Plan Update Requirement

The City must have and maintain an accurate MS4 map and an outfall information table that meet the requirements of Part I.E.3.a of the permit. A GIS compatible shapefile of the map must be submitted to DEQ no later than July 1, 2019. The City developed and maintains an Illicit Discharge Detection and Elimination Program Manual which is included in Appendix C.

BMP 3A – Storm Sewer System Outfall Map and Outfall Information Table

Description: The City has developed and maintains an updated MS4 outfall map showing all stormwater outfalls discharging to the waters of the Commonwealth, points of discharge, pipes, catch basins, and inlets. Periodic quality assurance and quality control is performed as needed. Associated with the map is the outfall information table.

Objective and Expected Results: This measure ensures that the City has a full understanding of the storm sewer system and enables the City to respond to reports of potential illicit discharges, perform maintenance, and conduct outfall field screening as required in the permit.

Implementation and Schedule:

- Maintain an up-to-date MS4 outfall map and outfall information table for review upon request by the public or by DEQ (made available to DEQ within 14 days upon request).
- The map and outfall information table will be updated by October 1st of each year with any changes in the system occurring on or before June 30th of the reporting year.
- No later than November 1, 2025, updated GIS file geodatabase or two shapefiles shall be provided to DEQ so that the City's MS4 map can be recreated.
- Downstream regulated MS4s shall be notified in writing of any physical interconnections as they *established or discovered after the effective date of this permit.*

Responsible Party: T&ES-SWM maintains the storm sewer system map and outfall information table in coordination with P&Z-EROW and ITS.

Documentation and Measurable Goal: The City will collect any new data, primarily through development and re-development plans, and record updates to the City's storm sewer outfall map and associated table. The MS4 map and information table can be found in Appendix C. The City will provide a summary of annual activities regarding map updates and submit the corresponding shapefiles to DEQ no later than November 1, 2025. The City will send written notifications of physical interconnection in the event a new interconnection established or discovered after the effective date of the 2023 – 2028 general permit. Previously, notifications for existing interconnections were provided to George Washington Memorial Parkway, Arlington County, Fairfax County, and Virginia Department of Transportation by the City shared during the previous permit cycle. Copies of these notifications can be found in Appendix C.

BMP 3B – Prohibition on Illicit Discharges

Description: In 2004, the City Attorney determined that the City's existing enforcement and right-of-entry tools meet MS4 permit requirements. These are found in Title 11, Chapter 13 of the City Code "Environmental Offenses." In recent years, the City did recognize the need for civil penalties for offenses that are not categorized as criminal. As a result, the City adopted an updated Environmental Offenses ordinance in February 2018 to include civil penalties related to certain illicit discharges along with criminal penalties.

Objective and Expected Results: This measure ensures that the legal tools are in place to effectively prohibit illicit discharges to the storm sewer system and to conduct necessary enforcement in the case of an illicit discharge.

Implementation and Schedule: This BMP is continuously implemented.

Responsible Party: T&ES-SWM with support from the EIU and T&ES-SSM.

Documentation and Measure of Effectiveness:

- Have adopted appropriate enforcement and right-of-entry provisions in the City Code.
- Enforcement policies and procedures for incidents of illicit discharges are contained in the City's IDDE manual (See Appendix C).
- Annually report the number of illicit discharges identified and report how the discharges were controlled or eliminated.
- After a significant enforcement activity, or where a pattern of illicit discharges indicates the need for more rigorous enforcement, the City will review policies, procedures, and ordinances and make recommendations for program enhancements, as appropriate.

BMP 3C – Illicit Discharge Detection and Elimination Written Procedures

During the 2013-2018 permit cycle, the City developed the Illicit Discharge Detection and Elimination Program manual which included written policies and procedures for the detection, investigation, and elimination of illicit discharges. Additionally, the City's IDDE Program manual provides policies, procedures, methodologies and legal authority for dealing with illicit discharges. Outfall field screening shall be performed in accordance with the IDDE Program manual which includes the requirement outlined in Part I.E.3.c of the 2023-2028 permit. The City's IDDE Program manual is updated to ensure current methodology and compliance with the current permit and can be found in Appendix C.

Objective and Expected Results: The purpose of this BMP is to detect and eliminate illicit discharges.

Implementation and Schedule:

- Suspected illicit discharges will be investigated in accordance with the IDDE Program manual which outlines the methods to determine the source and follow-up investigations. Those discharges suspected of being sanitary sewage or those believed to be a risk to human health and public safety are prioritized.

- Perform dry weather field screening on at least 50 outfalls annually such that no more than 50% are screened in the previous 12-month period.
    - Outfalls shall be prioritized for field screening by the City in accordance with the rationale and procedure found in the IDDE Program manual.
    - Screened observation points may include those that are based upon illicit discharge risks upstream of an outfall. These may include points of interconnection, manholes, points of discharge, conveyances, or inlets suspected to have a high likelihood of receiving illicit discharges;
        - Each observation point screened may be counted as one outfall screening activity equivalent and counted towards the requirements of Part I E 3 c (2) (b) or (2) (c); however, at least 50% of the minimum annual screening events must include outfall screening;
        - Illicit discharges reported by the public and subsequent investigations may not be counted as screening events; however once the resolution of the investigation and the date the investigation was closed has been documented, an observation point may be established for future screening events
    - Inspections will be documented using paper and/or electronic forms which contain the information outlined in Part I.E.3.g.
- Enforcement actions and legal penalties as outlined in the IDDE Program manual shall be used for incidents of illicit discharge, when necessary.
- Incidents of illicit discharge, as well as the outcome of investigations and any follow up investigations or actions will be tracked in the City's database. The corresponding procedures are outlined in the IDDE Program manual.

Responsible Party: T&ES-SWM

Documentation and Measurable Goal: The City will maintain, implement and enforce the written procedures found in the City's IDDE Program manual. This includes documenting and tracking reported suspected illicit discharges or illicit discharges discovered during dry weather field screening, and the results of any investigations in accordance with the requirements in Part I.E.3.c.(2) of the 2023-2028 permit. The City will include with each annual report the results of outfall screenings for that permit year. Any follow-up actions required for illicit discharges discovered during the field screening shall also be included. The annual report shall also include a summary of each investigation performed for reported suspected illicit discharges to include investigation results, resolution, and date of investigation closure.

BMP 3D – Alex311

Description: The City's Alex311 system consists of a web-based problem reporting form and call center (703-746-HELP or 311) that can be used by residents and others to report suspected illicit discharges and other environmental concerns. The web-based reporting form can be found on the City's main landing page and is available on subordinate webpages. Reports of illicit discharges and investigation results are tracked using Cityworks™ asset management software and Permit Plan software. Reports of illicit discharges are investigated by the Fire Marshal's Environmental Investigation Unit (EIU),

T&ES-SWM and T&ES-SSM on occasion. The City's policies and procedures for responding to reports of illicit discharges are found in the City's Illicit Discharge Detection and Elimination (IDDE) manual, which is included in Appendix C.

Objective and Expected Results: The purpose of Alex311 is to empower residents to report potential stormwater pollution or illicit discharges.

Implementation and Schedule: The City will maintain the web-based Alex311 reporting form. The City will continue to promote the availability of this tools through the website and education and outreach brochures.

Responsible Party: T&ES- SWM and T&ES-SSM respond to complaints and ITS manages the web portal.

Documentation and Measurable Goal: In the Annual Report, the City will provide a hyperlink to Alex311 and report the number and types of stormwater related incidents handled.

BMP 3E – Household Hazardous Waste (HHW) Program

Description: Household hazardous waste (HHW) has been identified by the City as a potential source of illicit discharges to the storm sewer system. To help prevent such discharges, the City has a long-standing HHW program. In addition to HHW, the program also accepts used oil, antifreeze, and other automotive fluids. The City produces a brochure that provides information on the types of materials that may be left at program drop-off points. The information is also available on the City's website.

Objective and Expected Results: The HHW program reduces illegal dumping by providing residents with an opportunity to properly dispose of hazardous household waste materials and used oil, antifreeze, and automotive fluids.

Implementation and Schedule: The City will continue to provide HHW collection services to all residents. In addition, the City will continue to produce and distribute materials promoting the program and provide program information on the City's website.

Responsible Party: T&ES-RR operates the HHW facility.

Documentation and Measurable Goal: In the Annual Report, the City will provide the hyperlink to the program website and brochure, track and report the number of residents taking advantage of the City's program, and report the number of barrels of HHW accepted by the City. The City will also report on any efforts by T&ES-RR to enhance program effectiveness.

BMP 3F – Identification of Permitted Stormwater Discharges

Description: Annually, T&ES-SWM staff obtains the data related to permitted stormwater discharges in the City from the DEQ website and incorporates it into the City's GIS data. This provides a visual tool for identifying permitted and non-permitted discharges during outfall field screening, and when investigating reports of illicit discharges, such as those received via Alex311 or the T&ES main phone line.

Objective and Expected Results: The purpose of this effort is to provide T&ES-SWM staff with the ability to quickly identify and better monitor permitted discharges. It also provides staff with a tool

to identify if a reported discharge has a permit, so they may locate the source quickly, if it is determined it is not a permitted discharge.

Implementation and Schedule: The City will download updated information from DEQ's website to incorporate changes into a GIS map.

Responsible Party: Updated information will be kept by T&ES-SWM.

Documentation and Measurable Goal: Staff with T&ES-SWM will maintain an up-to-date map and a list of State-permitted stormwater discharges within the City limits. A map of these permitted discharges will be submitted in the annual report.

BMP 3G – Prohibition of Outdoor Cleaning of Restaurant Equipment

Description: The City has included as standard language on all special use permits (SUP) issued for restaurant facilities, a prohibition against outdoor cleaning of equipment and the deposition of cooking residue into the storm sewer system.

Objective and Expected Result: Outdoor cleaning of restaurant equipment has been identified by the City as a potential source of stormwater pollution. Prohibiting outdoor cleaning of equipment will reduce the likelihood that cooking residue will enter the storm sewer system.

Implementation and Schedule: This BMP is continuously implemented for all SUPs issued for restaurant facilities.

Responsible Party: P&Z is responsible for ensuring compliance with the overall SUP approval process, with review assistance from T&ES-SWM.

Documentation and Measurable Goal: All applicable SUPs will contain the appropriate prohibition against outdoor cleaning of restaurant equipment and the deposition of restaurant cooking residue into the storm sewer system. The City will include a sample SUP (if one was approved during the permit year) in each annual report.

4.0 MCM #4: Construction Site Stormwater Runoff and Erosion and Sediment Control

Permit Reference: Part I.E.4.

Relevant Excerpt:

a. The permittee shall utilize its legal authority, such as ordinances, permits, orders, specific contract language, and interjurisdictional agreements, to address discharges entering the MS4 from regulated construction site stormwater runoff. The permittee shall control construction site stormwater runoff as follows:
1) If the traditional permittee is a city, county, or town that has adopted a Virginia Erosion and Sediment Control Program (VESCP), the permittee shall implement the VESCP consistent with the Virginia Erosion and Sediment Control Law (§ 62.1-44.15:51 et seq. of the Code of Virginia) and Virginia Erosion and Sediment Control Regulations (9VAC25-840)

b. The permittee shall require implementation of appropriate controls to prevent nonstormwater discharges to the MS4, such as wastewater, concrete washout, fuels and oils, and other illicit discharges identified during land disturbing activity inspections. The discharge of nonstormwater discharges other than those identified in 9VAC25-890-20 D through the MS4 is not authorized by this state permit.

c. Employees and contractors serving as plan reviewers, inspectors, program administrators, and construction site operators shall obtain the appropriate certifications as required under the Virginia Erosion and Sediment Control Law and its attendant regulations;

d. The permittee's MS4 program plan shall include:
1) If the permittee implements an erosion and sediment control program for construction site stormwater runoff in accordance with Part I E 4 a (1), the local ordinance citations for the VESCP program;
3) A description of the legal authorities utilized to ensure compliance with Part I E 4 a for erosion and sediment control and construction site stormwater runoff control such as ordinances, permits, orders, specific contract language, policies, and interjurisdictional agreements;
4) For traditional permittees, written inspection procedures to ensure VESCP requirements are maintained in accordance with 9VAC25-840-90 A and onsite erosion and sediment controls are properly implemented in accordance with 9VAC25-840-60 B;
7) Traditional permittees shall maintain written procedures for requiring VESCP compliance through corrective action or enforcement action in accordance with § 62.1-808 44.15:58 of the Code of Virginia. The roles and responsibilities of each of the permittee's departments, divisions, or subdivisions in implementing erosion and sediment control and construction site stormwater runoff control requirements in Part I E 4.



Program Plan Update Requirement

The City must ensure that impacts to water quality are minimized from construction activities, and that they meet all applicable local, state and federal requirements. The following details the City's program and adherence to the general permit.

Description of Legal Authorities

The construction site stormwater runoff control program includes Chapter 4 of Title 5 of the Code of the City of Alexandria, the "Erosion and Sediment Control" ordinance. Chapter 4 implements requirements of the Virginia Erosion and Sediment Control Law (VESCL) and attendant regulations. The City amended the ordinance and adopted the changes at the June 10, 2015 City Council Legislative Meeting. The changes were precipitated when the Erosion and Sediment Control program was transferred from the Virginia Department of Conservation and Recreation (DCR) to DEQ. This transfer required a renumbering of state law and code. To more closely align the City code with the revised State code, editorial revisions to Title 5, 20 Chapter 4 of the Code of Alexandria. During the April 13, 2024, Public Hearing, City Council approved a Text Amendment to the Zoning Ordinance to amend various Sections of Article XIII to revise existing Sections 13-102 through 13-126 to reflect updated language reflecting the consolidation efforts pertaining to the Erosion and Sedimentation

Control and Stormwater Management Program regulations. The April 13, 2024, City Council docket and amendments to the ordinance are included in Appendix D.

The City submitted the requisite applications to DEQ to receive designation as a local Virginia Stormwater Management Program (VSMP) authority for land-disturbing activities. Starting July 1, 2024, this program was updated to the Virginia Erosion and Stormwater Management Program (VESMP) and updates are referenced herein.

The City submitted the VSMP application for final approval on January 15, 2014, which included amendments to Article XIII of the Zoning Ordinance (the Environmental Management Ordinance). This application included pending amendments to the Environmental Management Ordinance (EMO) that went through the local approval process and was subsequently adopted by the City Council on March 15, 2014. However, actions in the 2014 General Assembly required DEQ to make late changes to the VSMP regulations as incorporated into the EMO. The DEQ comments on the January 15, 2014, VSMP application were reviewed based on the late-incorporated changes to the VSMP regulations and received May 6, 2014 – after the EMO was adopted. These late changes to the VSMP were minor; however, the City was required to incorporate the changes. On June 12, 2014, the City sent a letter to DEQ requesting "Provision Approval" to administer the local VSMP effective July 1, 2014, until the minor amendments could be adopted into the EMO. These required amendments went through the approval process and were adopted by the City Council on October 18, 2014. The City submitted final documentation to DEQ and received Full Approval on November 4, 2014. During the 2013-2018 permit cycle, the City reviewed the Erosion and Sediment Control (E&SC) Ordinance for consistency with the changes to the EMO. Amendments made to the E&SC ordinance were adopted by City Council on June 10, 2015.

On April 13, 2024, the City received Full Approval to amend and reordain Article XIII in accordance with Text Amendment No. 2024-0003 by authority of §§ 62.1-44.15:24 - 62.1-44.15:50, Code of Virginia. These consolidated regulations combine both the Virginia Erosion and Sediment Control Program and the Stormwater Management Program into one regulatory chapter: Virginia Erosion and Stormwater Management Program (VESMP), 9VAC25-875, as amended.

Written Plan Review Procedures

T&ES is the plan approving authority with respect to this MCM – with P&Z being the ultimate plan approving authority. The Principal Planner in T&ES-SWM is the program administrator for VESMP. The City reviews erosion and sediment control plans and stormwater management plans for proposed land-disturbing activities of 2,500 square feet or greater. Projects must receive approval prior to the commencement of land-disturbing activities. The City's *Development Review Process* plan review procedures provided in Appendix D are used to ensure that plans meet ordinance requirements.

Written Inspection and Enforcement Procedures

City inspectors maintain certification status to perform erosion and sediment control inspections and appropriate staff have received DEQ Stormwater Inspector Training in order to perform periodic comprehensive onsite stormwater pollution prevention plan (SWPPP) inspections. Inspectors complete inspection reports and note corrective action, if applicable. Failure to comply can trigger penalties in the E&S ordinance or Article XIII of the Alexandria Zoning Ordinance. The City's

formalized policies and procedures for construction site inspections are outlined in *Policies and Procedures for Construction Site Runoff Control Inspections* which can be found in Appendix D. This document includes a description of legal authority, written procedures to ensure the erosion and sediment controls are properly implemented, inspections documents, inspection schedule, and procedures for requiring compliance.

Roles and Responsibilities

P&Z DEVELOPMENT REVIEW and T&ES-C&I, along with T&ES-SWM review and approve E&S plans. T&ES-SWM and P&Z DEVELOPMENT REVIEW review and approve stormwater management plans.

Construction site inspection and enforcement is conducted by T&ES-C&I in consultation with the VESMP program administrator. The City's inspection and enforcement program is unique in that inspectors' responsibilities go beyond E&S and stormwater responsibilities. Inspectors with T&ES-C&I are tasked to perform multiple inspections and enforcement multiple permits required by the City. Most onsite activities require the oversight of the City's onsite inspector. These activities may range from the installation of onsite infrastructure, placement of fill material, enforcement of excavation permits. Because of the multiple functions performed by the inspection staff, onsite visits are conducted at a frequency that may require the inspector to visit the site multiple times daily. Because of this, the City can provide enhanced construction oversight for projects within the City.

BMP 4A – Maintain Erosion and Sediment Control Program Consistency

Objective and Expected Results: The MS4 permit requires the City to ensure land disturbing activities obtain the proper permits and approval prior to commencement of land disturbing activities and ensure that discharges into the MS4 from those land disturbing activities meet the requirements set forth in the VESCL and regulations.

Implementation and Schedule: The City will continue to implement the Erosion and Sediment Control Program consistent with State regulations.

Responsible Party: The Principal Planner from T&ES-SWM is the Erosion and Sediment Control Program Administrator. Staff from P&Z DEVELOPMENT REVIEW and T&ES-C&I perform site plan reviews and construction site inspections.

Documentation and Measurable Goal: The effectiveness of the City's program is measured by consistency with State regulations as determined by staff from the T&ES-SWM. Should differences be identified between the City and State Program requirements, the City will take action to address them.

BMP 4B – Site Control Implementation

Description: The City has incorporated language into its plan review checklist, policies and procedures, and Environmental Management Ordinance (Sec. 13-111) which requires applicable proposed land disturbing activities to secure coverage under the construction general permit prior to commencing land-disturbance. Proper controls are required to be implemented at these sites to prevent nonstormwater discharges to the MS4. These nonstormwater discharges include wastewater, concrete washout, fuels and oils, and other illicit discharges. To ensure that these

controls are in place, the City has developed a policies and procedures document entitled *Policies and Procedures for Construction Site Runoff Control Inspections* which can be found in Appendix D.

Objective and Expected Result: This measure implements proper controls to prevent nonstormwater discharges to the MS4.

Implementation and Schedule: Continuously ensure that the proper controls are implemented to prevent nonstormwater discharges to the MS4 in accordance with *Policies and Procedures for Construction Site Runoff Control Inspections.*

Responsible Party: T&ES-SWM, and P&Z DEVELOPMENT REVIEW

Documentation and Measure of Effectiveness: The City's policies and procedures for preventing non stormwater discharges to the MS4 from construction sites can be found in Appendix D.

BMP 4C – Construction General Permit Inspections and Tracking

Description: The City received local VSMP authority approval to administer the Construction General Permit effective July 1, 2014. The CGP is updated on a 5-year permit cycle with the most recent one providing coverage from July 1, 2024, through June 30, 2029. Starting July 1, 2024, the VSMP was updated to the VESMP.. All applicable construction sites must submit a stormwater pollution prevention plan (SWPPP) to the City for review and approval in order to secure coverage under the General VPDES Permit for Stormwater Discharges Associated with Construction Activities prior to final site plan release. The City has incorporated language into its plan review checklist, policies and procedures, and Environmental Management Ordinance (Sec. 13-111) which requires applicable proposed land disturbing activities to secure coverage prior to commencing land-disturbance.

Administration of the Erosion and Sediment Control Program, now consolidated through VESMP effective July 1, 2024, and Part I.E..4.c of the permit requires the City to conduct inspections and have written inspection procedures, including an inspection schedule, of land-disturbing activities. T&ES-C&I inspectors perform other duties beyond E&SC inspections. The City's Progressive Compliance and Enforcement Strategy uses the fact that inspectors may visit a site up to two times daily to perform a whole list of duties as a way to provide added E&SC oversight. During these more frequent site visits, inspectors may provide verbal direction regarding E&SC and stormwater measures. This verbal direction is considered formal but may not always be documented formally in an inspection report unless a required inspection and report is due, or if a major corrective action is required. Due to this enhanced oversight, City inspectors provide continual direction which tends to keep a site in order and not create the need for enforcement action; however, any necessary enforcement action will be included in the associated annual report.

Land disturbing activities are tracked by P&Z DEVELOPMENT REVIEW through the plan review process. The information is recorded and logged when final approved plan mylars and grading plans are released. Reports are sent to T&ES-SWM who provides the data quarterly to DEQ.

Inspectors and plan reviewers are required to maintain the appropriate certification of competency from the state.

Objective and Expected Results: This measure implements permit requirements to ensure that all construction site owners and operators secure a separate VPDES stormwater permit for construction

activities and implement a SWPPP. In addition, land-disturbing activities are properly tracked and comply with VESMP regulations, where applicable.

Implementation and Schedule:

- Continue to require applicable land-disturbing activities secure coverage under the construction general permit.
- Review and approve SWPPPs submitted as part of plan review for projects required to seek coverage under the VPDES stormwater permit for construction activities and ensure SWPPP implementation.
- Continue to maintain a database log for tracking all land disturbing activities and provide reports to DEQ on a quarterly basis.
- Continue to inspect land-disturbing activities in compliance with the E&S ordinance, the EMO and written policies and procedures.
- Ensure inspectors and plan reviewers obtain and hold certificates of competence in accordance with 9VAC25-850-40 (this will be updated to 9VA25-875-400 as of July 1, 2024) and keep records on file.
- Continue to utilize its legal authority to require compliance with an approved plan or require plan revisions or modifications if the inspection shows an approved plan to be inadequate to control stormwater runoff.

Responsible Parties: T&ES-SWM, P&Z DEVELOPMENT REVIEW, and T&ES-C&I

Documentation and Measurable Goal: The City's plan review policies and procedures as well as checklists used during plan reviews can be found in Appendix D along with the City's inspection policies and procedures document entitled *Policies and Procedures for Construction Site Runoff Control Inspections.*

Article XIII of the Zoning Ordinance (the Environmental Management Ordinance) can be found via the City's website.

The City will track and inspect regulated land disturbing activities and will document the following in the annual report:

- Total number of inspections conducted.
- Total number and type of enforcement actions taken during the reporting period as well as a summary of the enforcement actions.

5.0 MCM #5: Post Construction Stormwater Management

Permit Reference: Part I.E.5

Relevant Excerpt:

a. *The permittee shall address post-construction stormwater runoff that enters the MS4 from the following land disturbing activities by implementing a post-construction stormwater runoff management program as follows:*
   1) *If the traditional permittee is a city, county, or town, with an approved Virginia Stormwater Management Program (VSMP), the permittee shall implement the VSMP consistent with the Virginia Stormwater Management Act (§ 62.1-44.15:24 et seq. of the Code of Virginia) and VSMP Regulations (9VAC25-870) as well as develop an inspection and maintenance program in accordance with Parts I E 5 b and c;*

b. *The permittee shall implement an inspection and maintenance program for those stormwater management facilities owned or operated by the permittee as follows:*
   1) *The permittee shall develop and maintain written inspection and maintenance procedures in order to ensure adequate long-term operation and maintenance of its stormwater management facilities; The permittee may use inspection and maintenance specifications available from the Virginia Stormwater BMP Clearinghouse or inspection and maintenance plans developed in accordance with the department's Stormwater Local Assistance Fund (SLAF) guidelines.*
   2) *Employees and contractors implementing the stormwater program shall obtain the appropriate certifications as required under the Virginia Stormwater Management Act and its attendant regulations.*
   3) *The permittee shall inspect stormwater management facilities owned or operated by the permittee no less than once per year. The permittee may choose to implement an alternative schedule to inspect these stormwater management facilities based on facility type and expected maintenance needs provided that the alternative schedule and rationale is included in the MS4 program plan. The alternative inspection frequency shall be no less than once per five years; and*
   4) *If during the inspection of the stormwater management facility conducted in accordance with Part I E 5 b (2), it is determined that maintenance is required, the permittee shall conduct the maintenance in accordance with the written procedures developed under Part I E 5 b (1).*

c. *For traditional permittees described in Part I E 5 a (1), (2), or (3), the permittee shall:*
   1) *Implement an inspection and enforcement program for stormwater management facilities not owned by the permittee (i.e., privately owned) that includes:*
      a) *An inspection frequency of no less than once per five years for all privately owned stormwater management facilities that discharge into the MS4; and*
      b) *Require adequate long-term operation and maintenance by the owner of the stormwater management facility by requiring the owner to develop and record a maintenance agreement, including an inspection schedule to the extent allowable under state or local law or other legal mechanism;*
   2) *Utilize its legal authority for enforcement of the maintenance responsibilities in accordance with 9VAC25-870-112 if maintenance is neglected by the owner; and*
   3) *The permittee may develop and implement a progressive compliance and enforcement strategy provided that the strategy is included in the MS4 program plan.*
   4) *The permittee may utilize the inspection reports provided by the owner of a stormwater management facility as part of an inspection and enforcement program in accordance with 9VAC25-870-114 C.*

d. *The MS4 program plan shall include:*
   1) *If the permittee implements a VSMP in accordance with Part I E 5 a (1), (2), or (3):*
      a) *A copy of the VSMP approval letter issued by the department;*
      b) *Written inspection procedures and all associated documents utilized in the inspection of privately owned stormwater management facilities;*
      c) *Written procedures for compliance and enforcement of inspection and maintenance requirements for privately owned stormwater management facilities.*
   2) *If the permittee implements a post-development stormwater runoff control program in accordance with Part I E 5 a (4):*
      a) *The most recently approved standards and specifications or if incorporated by reference, the location where the standards and specifications can be viewed; and*
      b) *A copy of the most recent standards and specifications approval letter from the department.*
   3) *A description of the legal authorities utilized to ensure compliance with Part I E 5 for post-construction stormwater runoff control such as ordinances (provide citation as appropriate), permits, orders, specific contract language, and interjurisdictional agreements;*
   4) *Written inspection and maintenance procedures and other associated template documents utilized during inspection and maintenance of stormwater management facilities owned or operated by the*

permittee; and

5) *The roles and responsibilities of each of the permittee's departments, divisions, or subdivisions in implementing the post-construction stormwater runoff control program*



Program Plan Update Requirement

The City must meet applicable regulatory requirements to ensure that post-construction stormwater controls are properly installed and adequately maintained to minimize impacts to water quality from development and redevelopment. The following is an overview of the City's program to meet these requirements and adhere to the general permit.

Description of Legal Authorities

The City's post-construction stormwater requirements are found in Article XIII of the Zoning Ordinance – the Environmental Management Ordinance (EMO). As described in the "Description of Legal Authorities" under MCM#4, the City has amended the EMO and created the appropriate policies and procedures to receive full approval by DEQ as a local VESMP authority.

Written Stormwater Facility Design and Installation Procedures

Stormwater management facilities must be properly designed and installed, to ensure proper function. The City reviews development site plans to ensure water quality and water quantity designs meet the requirements found in the VESMP regulations, the Virginia Stormwater BMP Clearinghouse, and approved design standards. Projects must use the Virginia Runoff Reduction Method spreadsheet to demonstrate compliance and project plans must contain a note that the stormwater facility will be installed under the supervision of the design professional and certified that it is constructed and installed as designed. Stormwater facilities must be installed under the general supervision of the design engineer, and as-built plan submission must be signed/sealed by the design professional and include a signed/sealed separate certification that the facility was installed as designed.

Written Inspection, Compliance, and Enforcement Procedures

Stormwater facilities require periodic inspections to determine if maintenance is needed to ensure proper long-term functioning in order to provide water quality benefits. The City inspects privately-owned facilities at least once every five years and requires private owners to perform maintenance as needed per Section 13-109(G) of the EMO. The City inspects public facilities at least once annually and performs maintenance as needed. Policies, procedures, checklists, and guidelines for the program are found in Appendix E.

Roles and Responsibilities

T&ES-SWM conducts inspection of private stormwater management facilities at least once every five years. T&ES-SSM conducts inspections of public facilities at least annually and performs maintenance as needed. T&ES-SWM, with support from the City Attorney, conducts enforcement procedures as necessary.

Individual Residential Lot Special Criteria

During the 2013-2018 permit cycle, the City revised its ordinances concerning maintenance agreements for BMPs used to treat stormwater solely from individual residential lots, to exempt

single-family residential detached projects from meeting state phosphorus requirements. The revision eliminated the requirement of BMP maintenance agreements for *individual residential lots* separately built and not part of a larger common plan of development or sale. Instead, homeowner outreach and education is provided which includes mailing of City developed information sheets to the homeowners for each specific type of stormwater BMP on the property.

Reporting of Historical BMPs

DEQ Guidance Memo 15-2005, dated May 18, 2015, instructs localities to comply with Special Conditions related to the development and implementation of the Chesapeake Bay TMDL Action Plan. The City submitted the full database of "Historical BMPs" to DEQ by September 1, 2015. Based on Part IV 2 of the Guidance, localities may receive nutrient and sediment reduction credits for historical water quality BMPs installed between January 1, 2006, and June 30, 2009, if this data is submitted to DEQ by September 1, 2015, and included the Chesapeake Bay TMDL Action Plan. The Phase 1 Chesapeake Bay TMDL Action Plan includes the requisite reporting.

BMP 5A –VESMP Implementation Consistent with Regulations

Description: During the 2013-2018 permit cycle, the City amended the EMO for consistency with the VSMP regulations and maintained consistency with the Chesapeake Bay Act requirements. The City received provisional approval as a local VSMP authority effective July 1, 2014, and received full approval in November 2014. On April 13, 2024, the City Council approved an amendment of non-substantive revisions to Chapter 4 of Title 5 of the Code of the City of Alexandria, the Erosion and Sediment Control Ordinance, for consistency due to consolidation of Virginia regulations that warranted a renumbering of the Virginia Code. The revised and adopted ordinance (Article XIII.– Environmental Management) can be found in Appendix D. The VSMP is updated to the VESMP starting July 1, 2024.

Section 13-109 of the EMO, as amended, requires that development and redevelopment projects subject to VESMP Chapter 6, Stormwater Site Design and BMP Selection to design specifications of the Virginia Stormwater BMP Clearinghouse for stormwater facility BMPs, and utilize the Virginia Runoff Reduction Method spreadsheet to demonstrate compliance with water quality and quantity requirements. Grandfathered projects and those meeting the "Time Limits" associated with coverage under the Construction General Permit are subject to the Part II.C technical criteria and may use stormwater facility BMPs previously approved by the City and adhere to the design guidelines in the Alexandria Supplement to the Northern Virginia BMP Handbook. The City has also adopted a Green Building Policy to encourage development to meet green building standards such as LEED certification or equivalent, which includes incentives to comply with stormwater management requirements by implement Low Impact Development (LID) or Green Infrastructure (GI) techniques. BMP use may be limited in accordance with policies established by the director of T&ES in accordance with 13-104(c) of the City Code. In 2018. TES-SWM implemented a policy through Memorandum to Industry 01-18, *Use of Manufactured/Proprietary Stormwater BMPs,* requiring development and redevelopment projects to treat at least 65% of the required state phosphorous removal through nonproprietary surface BMPs.

Objective and Expected Results: The EMO requires that post-construction runoff is properly managed and that BMP design guidelines are consistent with the requirements of the VESMP regulations.

Implementation and Schedule: The City will continue to implement a stormwater management program, including design standards, that is compliant with the Chesapeake Bay Preservation Area Designation and Management Regulations and the VESMP regulations, and incorporated in the EMO.

Responsible Party: T&ES-SWM staff has primary responsibility for ensuring City consistency with the VESMP and the Chesapeake Bay Preservation Area Designation and Management Regulations. T&ES-SWM is supported by P&Z DEVELOPMENT REVIEW to ensure compliance.

Documentation and Measurable Goal: A copy of the 2014 VSMP approval letter issued by DEQ is found in Appendix D. The effectiveness of the City's program is measured by consistency with the 2024 consolidated VESMP, as determined by staff from the T&ES-SWM and VDEQ review of annual VESMP reporting provided by the City.

BMP 5B – Public Stormwater Facility Inspection and Maintenance

Description: For the purposes of this program plan, "public" stormwater management facilities are those owned or operated by the City. Public stormwater management facilities include those installed as a requirement of development and redevelopment, as a target of opportunity during infrastructure work, and those installed to meet the nutrient and sediment target reductions under the permit special conditions for the Chesapeake Bay TMDL. Inspection and maintenance of all public stormwater management facilities is the responsibility of the City.

During the 2013-2018 permit cycle, the City developed written policies and procedures for the inspection and maintenance of public stormwater management facilities to ensure adequate long-term operation and maintenance. The policies and procedures document entitled *Policies and Procedures for Post-Construction BMP Inspection and Maintenance* was updated in April 2019 and can be found in Appendix E.

Objective and Expected Results: Maintenance of public stormwater management facilities is essential to ensuring that these investments continue to provide their intended water quality benefits.

Implementation and Schedule:

- The City will inspect each public stormwater management facility no less than once per year.
- Regular maintenance will be performed according to the maintenance schedule and guideline specific to each BMP.
- The DEQ BMP Warehouse will be used to report BMPs brought online during the reporting period.

Responsible Party: T&ES-SSM is responsible for this effort, with assistance from T&ES-SWM.

Documentation and Measurable Goal: The annual report will include the number of public stormwater management facilities inspected with a description of significant maintenance, repair or retrofit activities performed (not including routine maintenance such as grass mowing or trash collection) during the reporting period.

BMP 5C – Private Stormwater Facility Inspection and Enforcement

Description: For the purposes of this program plan, "private" stormwater management facilities are those not owned or operated by the City. In accordance with Part I.E.5.c.1 of the permit, private stormwater management facilities need to be inspected no less than once per five years. In addition, the owner of the facility must develop and record a maintenance agreement, which includes an inspection schedule. During the 2013-2018 permit cycle, the City developed written policies and procedures for the inspection and enforcement of maintenance for private stormwater management facilities. The policies and procedures document entitled *Policies and Procedures for Post-Construction BMP Inspection and Maintenance* are updated as needed and can be found in Appendix E.

As discussed above, these requirements will not apply to stormwater management facilities built on individual residential lots separately built and not part of a larger common plan of development or sale. The City will use homeowner outreach and education to promote maintenance of BMPs on individual residential lots.

Objective and Expected Results: Maintenance of private BMP facilities is essential to ensuring that these investments continue to provide their intended water quality benefits.

Implementation and Schedule: The VESMP permit regulations require the City to implement a BMP inspection program based on the Virginia Stormwater Management Regulations. The City will continue to implement an inspection program in accordance with the following:

- Inspect each applicable private stormwater management facility not less than once per five years.
- Enforcement procedures will follow the procedures outlined in the City's *Policies and Procedures for Post-Construction BMP Inspection and Maintenance*. Legal authority is also described in this document.
- The DEQ BMP Warehouse is used to report BMPs brought online during the reporting period.
- Ensure stormwater management facility inspectors have appropriate certifications and keep them on file.

Responsible Party: T&ES-SWM staff is responsible for this effort, with assistance from T&ES-SSM.

Documentation and Measurable Goal: The City will document the number of BMPs inspected each year and provide statistics on the number of facilities for which follow-up enforcement action was required including the type of enforcement action. Sample copies of the letters to the private stormwater management facility owners will be provided.

BMP 5D – Stormwater Facility Inventory and Reporting

Description: Stormwater management facilities and/or BMPs that were implemented to improve water quality are tracked in an electronic database. No later than October 1 of each year the permittee shall electronically report new BMPs implemented and inspected as applicable between July 1 and June 30 of each year using the DEQ BMP Warehouse. Information tracked in the DEQ BMP Warehouse includes the following, as required in Part III.C. of the permit:

1) The BMP type:
2) The BMP location as decimal degree latitude and longitude;
3) The acres treated by the BMP, including total acres and impervious acres;
4) The date the BMP was brought online (MM/YYYY). If the date brought online is not known, the permittee shall use 06/2005.
5) The 6th Order Hydrologic Unit Code in which the BMP is located;
6) Whether the BMP is owned or operated by the permittee or privately owned;
7) Whether or not the BMP is part of the permittee's Chesapeake Bay TMDL action plan required in Part II A or local TMDL action plan required in Part II B, or both;
8) If the BMP is privately owned, whether a maintenance agreement exists; and
9) The date of the permittee's most recent inspection of the BMP; and
10) Any other information specific to the BMP type required by the DEQ BMP Warehouse (e.g.., linear feet of stream restoration)

Objective and Expected Results: The purpose of this BMP is to continue to maintain a database for tracking required information for stormwater management facilities/BMPs installed in the City. This information enables a better understanding of areas being treated and is used to support Chesapeake Bay Action Plan reporting. The facilities and/or BMPs are reported to DEQ through the DEQ Construction Stormwater Database or the DEQ BMP Warehouse.

Implementation and Schedule:

- No later than October 1 of each year, the permittee shall electronically report the most recent inspection date for any existing BMP that was previously reported and re-inspected between July 1 and June 30 using the BMP Warehouse.
- The database will be updated no later than 30 days after the stormwater management facility is brought online, implementation of a new BMP to meet the Chesapeake Bay TMDL or discovered if it is a new existing facility. For the City, the facility is consider being brought online when the as-built plan is approved and the certification documentation is received.
- The DEQ Construction Stormwater Database will continue to be used to report each stormwater management facility installed after July 1, 2014, to address the control of post-construction runoff from land disturbing activities where a General VPDES Permit for Discharge of Stormwater from Construction Activities was required. The City reports the stormwater management facilities to the DEQ Construction Stormwater Database with the CGP notice of termination (NOT).
- The stormwater management facilities and BMPs implemented during the reporting period (July 1 to June 30 of each year) and not reported through the DEQ Construction Stormwater Database (as described above) will be reported using the DEQ BMP Warehouse no later than October 1 of each year.

Responsible Party: T&ES-SWM is responsible for this BMP.

Documentation and Measurable Goal: The City will provide a spreadsheet of all certified BMPs brought online during the reporting period. The database information will include the information

outlined in Part I.E.5.d. The annual report will also include confirmation statements that (1) the permittee submitted stormwater management facility information through the Virginia Construction Stormwater database, as applicable, and that (2) stormwater management facilities and BMPs were electronically reported using the DEQ BMP Warehouse.

BMP 5E – Stormwater Facility Maintenance Agreements

Description: During the site plan review process, projects other than single-family residential that are separately built and not part of a larger common plan of development or sale, are required to implement stormwater facility BMPs must submit a BMP maintenance agreement (including inspection schedule) and guidelines for review. This requirement is stricter than the VESMP maintenance agreement requirements, since these agreements are also required for BMPs on land disturbances less than 1 acre. Following approval of the draft, the project owner must execute the agreement and provide proof of recordation in land records prior to release of the site plan. T&ES-SWM performs the review. Individual residential lot criteria requires annual educational materials mailed to applicable facility owners. The information is captured in the City's database and the agreement is saved on the City's network. A copy of the City's BMP maintenance agreement form is included in Appendix E.

Objective and Expected Results: Legally executed and enforceable maintenance agreements help ensure that stormwater management facilities continue to provide their intended water quality functions.

Implementation and Schedule:

- Continue to review and ensure that all appropriate stormwater management facilities and/or BMPs have executed maintenance agreements with inspection schedules, and that these are recorded in Land Records.
- Plans shall be tracked in the City's BMP database to ensure that appropriate maintenance agreements are received. Copies of the maintenance agreement will be saved on the City's network.
- A combination of homeowner outreach and education will be implemented for owners of stormwater management facilities on individual residential lots (as discussed above).

Responsible Party: P&Z DEVELOPMENT REVIEW staff ensure that the BMP maintenance agreement is submitted to T&ES SWM during site plan review. Staff from T&ES-SWM are responsible for ensuring that the necessary content is in the maintenance agreement and they that are recorded, executed, and enforced. The City Clerk of the Circuit Court files the agreements with the appropriate land records.

Documentation and Measurable Goal: A sample BMP maintenance agreement from the reporting year will be provided.

6.0 MCM #6: Pollution Prevention and Good Housekeeping for Municipal Facilities

Permit Requirement: Part I.E.6

Relevant Excerpt:

a. *The permittee shall maintain and implement written good housekeeping procedures for those activities listed in Part I E 6 b at facilities owned or operated by the permittee designed to meet the following objectives:*
   (1) Prevent illicit discharges;
   (2) Ensure permittee staff or contractors properly dispose of waste materials, including landscape wastes and prevent waste materials from entering the MS4;
   (3) Prevent the discharge of wastewater or wash water not authorized in accordance with 9VAC25-890-20 D 3 u, into the MS4 without authorization under a separate VPDES permit; and
   (4) Minimize the pollutants in stormwater runoff.

b. *The permittee shall develop and implement written good housekeeping procedures that meet the objectives established in Part I E 6 a for the following activities:*
   (1) Road, street, sidewalk, and parking lot maintenance and cleaning;
   (a) Within 24 months of permit issuance, permittees that apply anti-icing and deicing agents shall update and implement procedures in accordance with this subsection to include implementation of best management practices for anti-icing and deicing agent application, transport, and storage.
   (b) Procedures developed in accordance with this subsection shall prohibit the application of any anti-icing or deicing agent containing urea or other forms of nitrogen or phosphorus;
   (2) Renovation and significant exterior maintenance activities (e.g., painting, building power-washing, roof resealing, and HVAC coil cleaning) not covered under a separate VSMP construction general permit. The permittee shall develop and implement procedures no later than 36 months of permit issuance;
   (3) Discharging water pumped from construction and maintenance activities;
   (4) Temporary storage of landscaping materials;
   (5) Maintenance of permittee owned or operated vehicles and equipment (i.e., prevent pollutant discharges from leaking permittee vehicles and equipment);
   (6) Application of materials, including pesticides, and herbicides shall not exceed manufacturer's recommendations; and
   (7) Application of fertilizer shall not exceed maximum application rates established by applicable nutrient management plans. For areas not covered under nutrient management plans where fertilizer is applied, application rates shall not exceed manufacturer's recommendations.

c. *The permittee shall require through the use of contract language, training, written procedures, or other measures within the permittee's legal authority that contractors employed by the permittee and engaging in activities described in Part I E 6 b follow established good housekeeping procedures and use appropriate control measures to minimize the discharge of pollutants to the MS4.*

d. *The written procedures established in accordance with Part I E 6 a and b shall be utilized as part of the employee training program and the permittee shall develop a written training plan for applicable field personnel that ensures the following:*
   (1) Applicable field personnel shall receive training in the prevention, recognition, and elimination of illicit discharges no less than once per 24 months;
   (2) Employees performing road, street, sidewalk, and parking lot maintenance shall receive training in good housekeeping procedures required under Part I E 6 b 1 no less than once per 24 months;
   (3) Employees working in and around facility maintenance, public works, or recreational facilities shall receive training in applicable Part I E 6 a and b good housekeeping procedures required no less than once per 24 months;
   (4) Employees working in and around high-priority facilities with a stormwater pollution prevention plan (SWPPP) shall receive training in applicable site specific SWPPP procedures no less than once per 24 months;
   (5) Employees whose duties include emergency spill control and response shall be trained in spill control and response. Emergency responders such as firefighters and law-enforcement officers trained on the handling of spill control and response as part of a larger emergency response training shall satisfy this training requirement and be documented in the training plan.
   (6) Employees and contractors hired by the permittee who apply pesticides and herbicides shall be trained and certified in accordance with the Virginia Pesticide Control Act (§ 3.2-3900 et seq. of the Code of Virginia). Certification by the Virginia Department of Agriculture and Consumer Services (VDACS) Pesticide and Herbicide Applicator program shall constitute compliance with this requirement. Contracts for the application of pesticide and herbicides executed after the effective date of this permit shall require contractor certification.

e. The permittee shall maintain documentation of each training activity conducted by the permittee to fulfill the requirements of Part I E 6 d for a minimum of three years after training activity completion. The documentation shall include the following information:
(1) The date when applicable employees have completed the training activity;
(2) The number of employees that have completed the training activity; and
(3) The training objectives and good housekeeping procedures required under Part I 1121 E 6 a covered by training activity.

f. The permittee may fulfill the training requirements in Part I E 6 d, in total or in part, through regional training programs involving two or more MS4 permittees; however, the permittee shall remain responsible for ensuring compliance with the training requirements.

Note: The updates to the 2020 census urban areas with a population of at least 50,000, did not update the City's MS4 area and, therefore, Part g and h of this Section do not apply.

i. The permittee shall maintain and implement a site specific SWPPP for each high-priority facility as defined in 9VAC25-890-1 that does not have or require separate VPDES permit coverage, and which any of the following materials or activities occur and are expected to have exposure to stormwater resulting from rain, snow, snowmelt or runoff:
(1) Areas where residuals from using, storing or cleaning machinery or equipment remain and are exposed to stormwater;
(2) Materials or residuals on the ground or in stormwater inlets from spills or leaks;
(3) Material handling equipment;
(4) Materials or products that would be expected to be mobilized in stormwater runoff during loading or unloading or transporting activities (e.g., rock, salt, fill dirt);
(5) Materials or products stored outdoors (except final products intended for outside use where exposure to stormwater does not result in the discharge of pollutants);
(6) Materials or products that would be expected to be mobilized in stormwater runoff contained in open, deteriorated or leaking storage drums, barrels, tanks, and similar containers;
(7) Waste material except waste in covered, nonleaking containers (e.g., dumpsters);
(8) Application or disposal of process wastewater (unless otherwise permitted); or
(9) Particulate matter or visible deposits of residuals from roof stacks, vents or both not otherwise regulated (i.e., under an air quality control permit) and evident in the stormwater runoff.

j. Each SWPPP as required in Part I E 6 g shall include the following:
(1) A site description that includes a site map identifying all outfalls, direction of stormwater flows, existing source controls, and receiving water bodies;
(2) A description and checklist of the potential pollutants and pollutant sources;
(3) A description of all potential nonstormwater discharges;
(4) A description of all structural control measures such as stormwater management facilities and other pollutant source controls applicable to SWPPP implementation (e.g., permeable pavement or oil-water separators that discharge to sanitary sewer are not applicable to the SWPPP) such as oil-water separators, and inlet protection designed to address potential pollutants and pollutant sources at risk of being discharged to the MS4;
(5) A maintenance schedule of all stormwater management facilities and other pollutant source controls applicable to SWPPP implementation described in Part I E 6 h (4);
(6) Site specific written procedures designed to reduce and prevent pollutant discharge that incorporate by reference applicable good housekeeping procedures required under Part I E 6 a and b;
(7) A description of the applicable training as required in Part I E 6 d (4);
(8) An inspection frequency of no less than once per year and maintenance requirements for site specific pollutant source controls. The date of each inspection and associated findings and follow-up shall be logged in each SWPPP; and
(9) A log of each unauthorized discharge, release, or spill incident reported in accordance with Part IV G including the following information:
a) Date of incident;
b) Material discharged, released, or spilled; and
c) Estimated quantity discharged, released or spilled.
(10) A log of modifications to the SWPPP made as the result of any unauthorized discharge, release, or spill in accordance Part I E 6 j or changes in facility activities and operation requiring SWPPP modification; and
(11) The point of contact for SWPPP implementation.

k. No later than June 30 of each year, the permittee shall annually review any high-priority facility owned or operated by the permittee for which a SWPPP has not been developed to determine if the facility meets any of

the conditions described in Part I E 6 g. If the facility is determined to need a SWPPP, the permittee shall develop a SWPPP meeting the requirements of Part I E 6 h no later than December 31 of that same year. The permittee shall maintain a list of all high-priority facilities owned or operated by the permittee not required to maintain a SWPPP in accordance with Part I E 6 g and this list shall be available upon request.

l. The permittee shall review the contents of any site specific SWPPP no later than 30 days after any unauthorized discharge, release, or spill reported in accordance with Part IV G to determine if additional measures are necessary to prevent future unauthorized discharges, releases, or spills. If necessary, the SWPPP shall be updated no later than 90 days after the unauthorized discharge.

m. The SWPPP shall be kept at the high-priority facility and utilized as part of employee SWPPP training required in Part I E d (4). The SWPPP and associated documents may be maintained as a hard copy or electronically as long as the documents are available to employees at the applicable site.

n. If activities change at a facility such that the facility no longer meets the definition of a high-priority facility, the permittee may remove the facility from the list of high-priority facilities with a high potential to discharge pollutants.

o. If activities change at a facility such that the facility no longer meets the criteria requiring SWPPP coverage as described in Part I E 6 g, the permittee may remove the facility from the list of high-priority facilities that require SWPPP coverage.

p. The permittee shall maintain and implement turf and landscape nutrient management plans that have been developed by a certified turf and landscape nutrient management planner in accordance with § 10.1-104.2 of the Code of Virginia on all lands owned or operated by the permittee where nutrients are applied to a contiguous area greater than one acre. If nutrients are being applied to achieve final stabilization of a land disturbance project, application shall follow the manufacturer's recommendations.

q. If nutrients are being applied to achieve final stabilization of a land disturbance project, application shall follow the manufacturer's recommendations. For newly established turf where nutrients are applied to a contiguous area greater than one acre, the permittee shall implement a nutrient management plan no later than six months after the site achieves final stabilization.

r. Nutrient management plans developed in accordance with Part I E 6 n shall be submitted to the Department of Conservation and Recreation (DCR) for approval.

s. Nutrient management plans that are expired as of the effective date of this permit shall be submitted to DCR for renewal no later than six months after the effective date of this permit. Thereafter, all nutrient management plans shall be submitted to DCR at least 30 days prior to nutrient management plan expiration. Within 36 months of permit coverage, no nutrient management plans maintained by the permittee in accordance with Part I E 6 n shall be expired due to DCR documented noncompliance with 4VAC50-85-130 provided to the permittee.

t. Nutrient management plans may be maintained as a hard copy or electronically as long as the documents are available to employees at the applicable site.

u. The MS4 program plan shall include:

- *a. A list of written good housekeeping procedures for the operations and maintenance activities as required by Part I E 6 a and b;*
- *b. A list of all high-priority facilities owned or operated by the permittee required to maintain a SWPPP in accordance with Part I E 6 g that includes the facility name, facility location, and the location of the SWPPP hardcopy or electronic document being maintained. The SWPPP for each high-priority facility shall be incorporated by reference.*
- *c. A list of locations for which turf and landscape nutrient management plans are required in accordance with Part I E 6 n and s, including the following information:*
  - *i. The total acreage covered by each nutrient management plan;*
  - *ii. The DCR approval date and expiration date for each nutrient management plan*
  - *iii. The location of the nutrient management plan hardcopy or electronic document being maintained.*
- *d. A summary of mechanisms the permittee uses to ensure contractors working on behalf of the permittees implement the necessary good housekeeping and pollution prevention procedures, and stormwater pollution plans as appropriate; and*
- e. *The written training plan as required in Part I E 6 d.*

Program Plan Update Requirement

The general permit requires that the updated program plan to include 1) continued maintenance and implementation of SWPPPs, 2) continued maintenance and implementation of nutrient management plans, and 3) development and implementation of a training plan. The following BMPs provide an overview of the City's program to meet these requirements and adhere to the general permit.

BMP 6A – Written Good Housekeeping Procedures

Description: For the purposes of this program plan, municipal facilities are those facilities owned or operated by the permittee. Permit Part I.E.6.a requires the maintenance and implementation of written procedures for public facilities for best practices for stormwater pollution prevention. During the 2013-2018 permit cycle, the City developed standard operating procedures (SOP) to minimize or prevent pollutant discharge from daily operations such as road, street, and parking lot maintenance; equipment maintenance; and the application, storage, transport, and disposal of pesticides, herbicides, and fertilizers.

Table 8 provides an overview of the current written Good Housekeeping Procedures that meet the objectives as required in Part I E.6.b. All written Good Housekeeping procedures discussed in this Program Plan are contained in Appendix F along with Pollution Prevention procedures for municipal activities. The City further maintains other written Good Housekeeping procedures that are used for staff training focused on best management practices for (1) Vehicle and Equipment Washing; (2) Garbage Storage; and (3) Equipment Maintenance. Further, the following operations have written Good Housekeeping procedures developed and maintained: (1) Stormwater Pollution Prevention for Alexandria Fire Department; (2) Hydrant Inspection and Maintenance; and (3) Jet Truck Operations.

Table 8. Overview of Written Good Housekeeping Procedures

Permit Requirement	Document Title
Road, street, sidewalk, and parking lot maintenance and cleaning	Brick Sidewalk Maintenance Concrete Sidewalk Maintenance Crack Sealing, Strip Patching, and Paving/Patching/Concrete Construction Maintenance Pothole Patch Maintenance Bus Shelter and Bike Rack Installation and Maintenance
Best management practices for anti-icing and deicing agent application, transport, and storage	Brine System and Application: Pollution Prevention Measures
Renovation and significant exterior maintenance activities	To be developed by 11/01/2026

Discharging water pumped from construction and maintenance activities	Water Disposal from Dewatering Activities During Utility Construction and Maintenance Activities
Temporary storage of landscaping materials	Bulk Material Storage Disposal of Landscape Organic Waste
Maintenance of permittee owned or operated vehicles and equipment	Fleet and Vehicle Maintenance
Application of materials, including pesticides and herbicides and application of fertilizer	Pesticide, Herbicide, and Fertilizer Application

Objectives and Expected Results: The written Good Housekeeping procedures are were designed to meet the requirements of Part I.E.6.a –

1) Prevent illicit discharges;
2) Ensure permittee staff or contractors properly dispose of waste materials, including landscape wastes and prevent waste materials from entering the MS4;
3) Prevent the discharge of wastewater or wash water not authorized in accordance with 9VAC25-890-20 D 3 u, into the MS4 without authorization under a separate VPDES permit; and
4) Minimize the pollutants in stormwater runoff.

Implementation and Schedule:

- Continue to maintain the implement the written Good Housekeeping procedures ; and update as needed.
- Annually, utilize the written Good Housekeeping procedures as part of the employee training program and in accordance with Permit Part I.E.6.d.
- Review written Good Housekeeping procedures as needed to ensure they include up-to-date information and effective procedures.

Responsible Party: T&ES-SWM will take the lead to maintain the written Good Housekeeping procedures and they will be implemented within T&ES-SWM, T&ES-SSM, RPCA, T&ES Resource Recovery, T&ES-Fleet, and GS.

Documentation and Measure of Effectiveness: The City will document if any SOPs have been developed or modified during the reporting period.

BMP 6B – Stormwater Pollution Prevention Plans (SWPPPs) for High-Priority Facilities

Description: Permit Part I.E.6.g requires the maintenance and implementation of SWPPPs for facilities that have been identified as high-priority facilities with a high potential for discharging pollutants. Part I.E.6.h through I.E.6.m outlines the required SWPPP content and requirements for review and updates.

Objective and Expected Results: Maintaining and implementing SWPPPs for high-priority municipal facilities greatly reduces the potential for pollutant discharges in stormwater runoff through the implementation and periodic inspection of good housekeeping and pollution prevention best practices for municipal facilities.

Implementation and Schedule: During the 2013-2018 permit cycle, the City originally identified its high-priority municipal facilities that may require the development and implementation of a SWPPP. Facilities that meet the definition in 9VAC25-890-1 and meet the criteria listed in Section II B.6.i (1)-(9) in the City are indicated in Table 9. Since the 2013-2018 permit cycle, the City has utilized an inspection checklist to for high-priority municipal facilities with a SWPPP. The checklist covers good housekeeping practices, material storage and handling, as well as maintenance practices. The checklist is included in the SWPPPs and is updated as needed.

The City will continually maintain and implement SWPPPs for the identified municipal facilities. Facilities implementing SWPPPs shall keep an updated copy onsite, when applicable, or in the City's Field Services Division offices located at 2900 Business Center Drive. Information in the SWPPPs is incorporated into the pollution prevention training given to municipal employees.

Responsible Party: The maintenance and implementation of the SWPPPs is the responsibility of the department or division with the high-priority facilities with the high potential for discharging pollutants per Section II B.6.i (1)-(9). T&ES-SWM will oversee the maintenance and implementation of the SWPPPs to ensure proper implementation of the plans by working with the departments and divisions listed above, coordinate and perform employee training as outlined in this Program Plan, and perform the annual facility inspection and follow up per the MS4 permit requirements.

Documentation and Measure of Effectiveness: A list of the municipal facilities with SWPPPs will be included in the annual report along with a documentation of any SWPPPs developed, removed, or modified during the reporting period. The annual report will also include a description of any changes to the SWPPPs during the reporting period.

Table 9. High Priority Facility Details

Facility	Facility Location	Site Activity[1]	SWPPP Location
Middle Yard at 3220 Colvin Street ("Sign Shop")	3220 Colvin Street	Long-Term Bulk Materials Storage	3220 Colvin Street
Household Hazardous Waste & Electronics Recycling Center	3224 Colvin Street	Solid Waste Handling and Transfer Recycling	2900 Business Center Drive – Resource Recovery Office
Equipment and Materials Storage and Vehicle Wash Facility	133 South Quaker Lane	Anti-Icing and Deicing Agent Storage, Handling, and Transfer Equipment Storage, Cleaning, and Maintenance Long-Term Bulk Materials Storage Permittee-Owned or Operated Vehicle Washing	2900-B Business Center Dr. - Operations Office
Material Storage Yard	3130 Business Center Drive	Equipment Storage Long-Term Bulk Materials Storage	2900-B Business Center Dr. - Operations Office
Field Operations Center	2900-A/B Business Center Drive	Anti-Icing and Deicing Agent Storage, Handling, and Transfer Equipment Storage	2900-B Business Center Dr. - Operations Office
Leaf Mulch Facility	4251 Eisenhower Avenue	Composting Equipment Storage Long-Term Bulk Materials Storage Recycling	2900-B Business Center Dr. – Resource Recovery Office
Transportation Division Impound Lot	5249 Eisenhower Avenue	Vehicle Salvage	5249 Eisenhower Avenue

[1] Defined per 9VAC25-890-1

Facility	Facility Location	Site Activity[1]	SWPPP Location
Impound Lot	3000 Business Center Drive	Vehicle Salvage	5249 Eisenhower Avenue
Vehicle and Equipment Maintenance Center	3550 Wheeler Avenue	Vehicle Maintenance and Salvage Equipment Storage	3550 Wheeler Avenue
Fuel Island	3400 Duke Street	Long-Term Bulk Materials Storage	3550 Wheeler Avenue

BMP 6C – Turf and Landscape Nutrient Management

Description: Landscape nutrients, if improperly applied, have the potential to pollute the local waterways, the Potomac River and the Chesapeake Bay. Part I.E.6.n requires the maintenance and implementation of turf and landscape nutrient management plans (NMP).

The list of municipal lands where nutrient management plans are required is presented in Table 10. This list includes the location and corresponding acreage for each plan and will be updated as needed.

Objective and Expected Results: By implementing NMPs developed by a certified nutrient planner consistent with § 10.1-104.2 of the Code of Virginia on applicable municipal lands, stormwater impacts can be minimized.

Implementation and Schedule:

- Turf and landscape NMPs will be maintained and implemented continuously. All NMPs are maintained as a hard-copy at 2900-A Business Center Drive.
- Continue to ensure that municipal employees responsible for applying nutrients on municipal land receive and maintain proper certification.
- Continue to require that all contractors engaging in the application of nutrients abide by manufacturer's recommendations.

Responsible Party: RPCA, T&ES-SSM and GS, in coordination with T&ES-SWM.

Documentation and Measure of Effectiveness: The annual report will include any new turf and landscape NMPs developed and the corresponding location and total acreage of each land area and the date of the approved NMP.

Table 10. Nutrient Management Plans

Facility	Street Address	Latitude	Longitude	Ac.	% of Total	Approval Date	Expiration Date
Angel Park	201 W. Taylor Run Parkway	38°48'35"N	77°4'30"W	2.5	3.11%	4/01/23	03/31/26
Armistead Boothe Park	520 Cameron Station Blvd	38°48'18.9"N	77°07'37.5"W	1.2	1.49%	4/01/23	03/31/26
Ben Brenman Park	4800 Ben Brenman Park Dr.	38°48'30"N	77° 6'52"W	10.7	13.29%	01/01/24	12/31/27
Braddock Park	1005 Mt. Vernon Ave	38°49'15.5"N	77° 3'13.3"W	5.1	6.34%	4/01/23	03/31/26
Charles Barrett Elementary School	1115 Martha Custis Drive	38°50'32"N	77° 4'37"W	1.2	1.49%	4/01/23	03/31/26
Chinquapin Park	3210 King St.	38°49'15.5"N	77° 3'13.3"W	2.9	3.60%	4/01/23	03/31/26
Founders Park	351 North Union Street	38°48'27"N	77° 2'20"W	3.7	4.60%	11/01/23	10/31/26
Four Mile Run Park	3700 Commonwealth Ave	38°50'24"N	77° 3'34"W	7.3	9.07%	4/01/23	03/31/26
George Washington Middle School	1005 Mt. Vernon Ave	38°49'15.6"N	77°03'13.4"W	2.8	3.48%	4/01/23	03/31/26
Harborside Park	487 S. Union St	38°47'58.8"N	77°02'28.5"W	1.3	1.61%	11/01/23	10/31/26
Hensley Park	4200 Eisenhower Ave	38°48'12"N	77° 6'29"W	4.7	5.84%	4/01/23	03/31/26
Luckett Park	3540 Wheeler Ave	38°48'26.3"N	77°05'22.8"W	1.3	1.61%	4/01/23	03/31/26

Facility	Street Address	Latitude	Longitude	Ac.	% of Total	Approval Date	Expiration Date
Lyles-Crouch Traditional Academy	530 S St Asaph St.	38°47’58”N	77° 2’47”W	1.9	2.36%	4/01/23	03/31/26
Montgomery Park	901 North Royal Street	38°48’51”N	77° 2’27”W	1.1	1.37%	11/01/23	10/31/26
Mount Vernon Community Center	2601 Commonwealth Ave.	38°49’41”N	77° 3’34”W	1.2	1.49%	4/01/23	03/31/26
Oronoco Park	100 Madison Street	38°48’40”N	77° 2’23”W	3.8	4.72%	11/01/23	10/31/26
Polk Elementary School	5000 Polk Ave.	38°49’18”N	77° 6’57”W	7.7	9.57%	4/01/23	03/31/26
Potomac Yards Park	2501 Potomac Ave	38°49’44.2”N	77° 2’52.6”W	5.5	6.83%	4/01/23	03/31/26
Rivergate Park	2 Montgomery Street	38°48’46”N	77° 2’17”W	2.8	3.48%	11/01/23	10/31/26
Simpson Park	426 E. Monroe Ave	38°49’18”N	77° 3’4”W	5.3	6.58%	4/01/23	03/31/26
West Point	1 Oronoco St.	38°48’12”N	77° 2’21”W	3.3	4.10%	4/01/23	03/31/26
Windmill Hill Dog Park	501 South Union Street	38°47’58”N	77° 2’30”W	3.2	3.98%	11/01/23	10/31/26
			Total	80.5	100%		

BMP 6D – Prohibiting Deicing Agents with Urea

Description: Nutrients, if improperly applied, have the potential to pollute the local waterways, the Potomac River and the Chesapeake Bay. Part I.E.6.k prohibits the use of deicing agents containing urea or other forms of nitrogen or phosphorus to parking lots, roadways, and sidewalks, or other paved surfaces.

Objective and Expected Results: By not using deicing agents with urea or other nutrients, stormwater impacts from deicing agents can be minimized.

Implementation and Schedule: The City will not apply deicing agents containing urea or other forms of nitrogen or phosphorus to roadways, parking lots, sidewalks, or other paved surfaces per permit Part I.E.6.b.1.b.

Responsible Party: RPCA, T&ES-SSM and GS, in coordination with T&ES-SWM.

Documentation and Measure of Effectiveness: The annual report will include a statement confirming that the City did not apply deicing agents containing urea or other forms of nitrogen or phosphorus to roadways, parking lots, sidewalks, or other paved surfaces.

BMP 6E – Contractor Controls and Oversight

Description: Contractors perform work on behalf of the City must use the appropriate control measures and standard procedures to control impacts to the MS4 from stormwater discharges. Contractors must follow the appropriate laws and regulations, and secure applicable permits as required.

Objective and Expected Results: Through the use of contract language, training, standard operating procedures, or other measures within the City's legal authority will require the use of the appropriate control measures by City Contractors and ensure that operations do not contribute to stormwater pollution.

Implementation and Schedule: Continue to ensure that contractors follow proper procedures and employ required control measures. The mechanisms used by the City to ensure City contractors implement the necessary good housekeeping and pollution prevention procedures include having SOPs in place for activities that could lead to stormwater pollution, requiring necessary permits and certifications, adding language in contracts, and ensuring that City employees charged with oversight of City capital projects receive annual water quality training.

Responsible Party: Various divisions in T&ES and DPI are responsible for implementation.

Documentation and Measure of Effectiveness: Provide an annual summary on the types of tools used to ensure compliance.

BMP 6F – Training

Description: A written training plan is required as outlined in Part I.E.6.d of the permit. Employees performing applicable duties shall be trained in recognizing and reporting illicit discharges no less than once every 24 months. Staff whose normal duties require a considerable amount of field work play a valuable role in identifying and addressing illicit discharges. Training will provide the

appropriate tools for field staff to recognize, document relevant information and report the incident for follow-up by the appropriate staff.

City staff engage in daily activities that have the potential to adversely impact water quality. The likelihood of these impacts occurring may be minimized or avoided by providing staff training once every 24-months on pollution prevention and good housekeeping. Employees performing applicable duties including the following:

- Employees performing road, street, sidewalk, and parking lot maintenance shall receive training in good housekeeping procedures;
- Employees working in and around facility maintenance, public works, or recreational facilities; and
- Employees working in and around high-priority facilities with a stormwater pollution prevention plan (SWPPP) shall receive training in applicable site specific SWPPP procedures.

In addition, employees hired by the City who apply pesticides and herbicides shall be trained or certified with the Virginia Pesticide Control Act. Certification by the Virginia Department of Agriculture and Consumer Services (VDACS) Pesticide and Herbicide Applicator program shall constitute compliance with this requirement.

The City's employees and contractors serving as plan reviewers, plan inspectors, program administrators, construction site operators and those implementing the City's stormwater program will obtain and maintain the appropriate certification as required under the Virginia Erosion and Sediment Control Law and the Virginia Stormwater Management Act. The employees whose duties include emergency response will be properly trained in spill reporting which may be satisfied through a larger emergency response training program.

Objective and Expected Results: Providing the proper training to City employees will ensure that good housekeeping procedures are followed so that operations do not contribute to stormwater pollution. In addition, field personnel trained in recognizing and reporting illicit discharges are additional eyes in the field that can alert other staff of potential illicit discharges with the goal of improving water quality.

Implementation and Schedule: The City will provide biennial training for the field positions listed below. Training will take place annually with the topic alternating between (1) recognizing and reporting illicit discharges and (2) pollution prevention and good housekeeping. Training tools may include, but are not limited to, videos, presentations, manuals, desktop exercises, and field exercises, as appropriate. Training is coordinated with SWPPP training in BMP 6B and may be conducted with the entire group or smaller functional areas as appropriate to minimize impact on carrying out normal duties. The Training Plan below provides information on staff positions and the schedule for planned training to be provided. The plan is integrated into this BMP and is presented below.

Responsible Party: T&ES-SWM will coordinate the overall effort with the assistance from listed agencies and personnel. Other municipal departments or divisions may provide training as appropriate.

Documentation and Measure of Effectiveness: A list of training events held, the date, number of staff receiving training and the objective of the training will be provided in each associated annual report.

Sign-in sheets and materials, such as emails pertaining to training, will be retained for a minimum of three years.

TRAINING PLAN

The City will provide biennial training for the positions listed in Table 11. Training will take place annually with the topic alternating between (1) recognizing and reporting illicit discharges and (2) pollution prevention and good housekeeping. Training is held in-person, virtually, and, by pre-recorded video. The type of training will be determined annually based on Department and Division needs. Table 11 provides the general Training Plan and Schedule to comply with the permit requirements outlined in Part I.E.6.d.

Table 11. Staff Training Plan and Timeline

Department	Division	IDDE Training	PPGH Training
T&ES	Street Maintenance	PY1, PY3, & PY5	PY2 & PY4
	Sewer Maintenance	PY1, PY3, & PY5	PY2 & PY4
	Refuse Collection	PY1, PY3, & PY5	PY2 & PY4
	Traffic Operations	PY1, PY3, & PY5	PY2 & PY4
	C&I	PY1, PY3, & PY5	
	Fleet Services		PY2 & PY4
RPCA	Park Ops	PY1, PY3, & PY5	PY2 & PY4
GS	Facility Maintenance		PY2 & PY4
Code Administration	New Construction	PY1, PY3, & PY5	
	Maintenance Code	PY1, PY3, & PY5	

The Household Hazardous Waste & Electronics Recycling Center high priority facility is managed through a contract overseen by T&ES Resource Recovery and training is provided to contractors on PPGH and associated City staff in PY2 and PY4.

Emergency response employees with Hazmat certification are required to have 24 hours of training annually in order to retain certification.

BMP 6G – Street Sweeping and Leaf Collection Programs

Description: The City continues to implement a street sweeping program in the MS4 area. The leaf collection program also continues to operate to remove leaves from properties, sidewalk and roadways within the City.

Objective and Expected Results: Removing trash, debris, organic material and sediment from roadways ensures that these materials do not enter the storm sewer system and later get deposited in local waterways, the Potomac River and the Chesapeake Bay. Removing leaves from properties within the City keeps this organic material out of the storm sewer system and removes possible sources of nutrients and impacts on biological and chemical oxygen demand in surface waters.

Implementation and Schedule:

- Continue to perform street sweeping.
- Continue to operate the leaf collection program.

Responsible Party: T&ES-RR is responsible for implementing the street sweeping and leaf collection programs.

Documentation and Effectiveness: Each annual report will include statistics for street sweeping and leaf collection.

BMP 6H – Catch Basin and Inlet Cleaning Program

Description: The City has a long-standing program to inspect and clean stormwater catch basins and inlets. Catch basin cleaning varies year by year depending on the weather.

Objective and Expected Results: The catch basin and inlet cleaning program is meant to both reduce spot flooding and drainage problems as well as to prevent materials, including floatables and vegetative debris captured in inlets, from continuing to local streams.

Implementation and Schedule: The City will continue catch basin and inlet cleaning operations.

Responsible Party: T&ES-SSM is responsible for implementing the City's catch basin and inlet cleaning program.

Documentation and Measure of Effectiveness: The City will discuss catch basin and inlet cleaning in the annual report and provide metrics, as available.

BMP 6I – Employee Complaint Reporting

Description: Trusting employees to be the "eyes and ears" of the City and providing a reporting mechanism empowers employees and encourages ownership. It also allows the quick and efficient

routing of possible problems so that they may be addressed. Staff may report problems to their immediate supervisor or via Alex311.

Objective and Expected Results: City employees are trained and encouraged to report potential stormwater pollution or illicit discharges to improve water quality.

Implementation and Schedule: The City will continue to educate staff about reporting issues to their immediate supervisor or Alex311.

Responsible Party: T&ES-SSM and T&ES-SWM are the main agencies addressing water quality concerns, with staff City-wide having access to report a complaint.

Documentation and Measure of Effectiveness: A screen capture of Alex311 will be included in each annual report.

BMP 6J – Environmental Stakeholder Groups

Description: The City receives input on the stormwater program from several stakeholder groups including the Environmental Policy Commission (EPC) and the Stormwater Utility and Flood Mitigation Advisory Committee, the Fire Department's Environmental and Industrial Use Unit (EIU), and other internal meetings as needed.

The EPC is appointed by the City Council and makes recommendations on environmental issues, including stormwater management. Alexandria City Council established the Ad Hoc Stormwater Utility and Flood Mitigation Advisory Group by resolution on Jan. 26, 2021. On December 16, 2023, the Council approved by ordinance the creation of the permanent Stormwater Utility and Flood Mitigation Advisory Committee. The Stormwater Utility and Flood Mitigation Advisory Committee makes recommendations on stormwater issues. The Fire Marshal's Environmental Investigation Unit (EIU) acts as the lead for coordination of environmental issues, including water quality investigation, enforcement, and documentation.

Objective and Expected Results: Stakeholder groups create ties across the organization among the various departments and divisions that are responsible for implementing the MS4 Program Plan, allows for interactions and collaborative problem solving, fosters team building, and creates organizational ownership for the program. They also provide a forum for the exchange of ideas and allows for the input of staff expertise from varied disciplines to help create a more holistic stormwater program.

Implementation and Schedule:

- The EIU will continue to focus on environmental issues and meet periodically.
- The EPC will meet monthly.
- The Stormwater Utility and Flood Mitigation Advisory Committee meets as needed (typically every other month).

Responsible Parties: The various stakeholder groups are comprised of residents, interested parties, and City staff. They are responsible for meeting and their corresponding work with support from T&ES-SWM technical staff.

Documentation and Measure of Effectiveness: Sample meeting agendas and/or presentations from meetings held during the reporting period will be included in the annual report.

D. TMDL Special Conditions

While the focus of the MS4 permit is on pollution prevention, the general permit includes special conditions to address the Chesapeake Bay TMDL and local TMDLs where a wasteload allocation (WLA) has been approved by the State Water Control Board (SWCB) and is assigned to sources in the City. These special conditions were first introduced in the 2013-2018 permit. The City's MS4 Program Plan carries forward previous documented actions to address pollutants of concern for impaired waters and incorporates new requirements as applicable. The sections below describe how the City will address these special conditions.

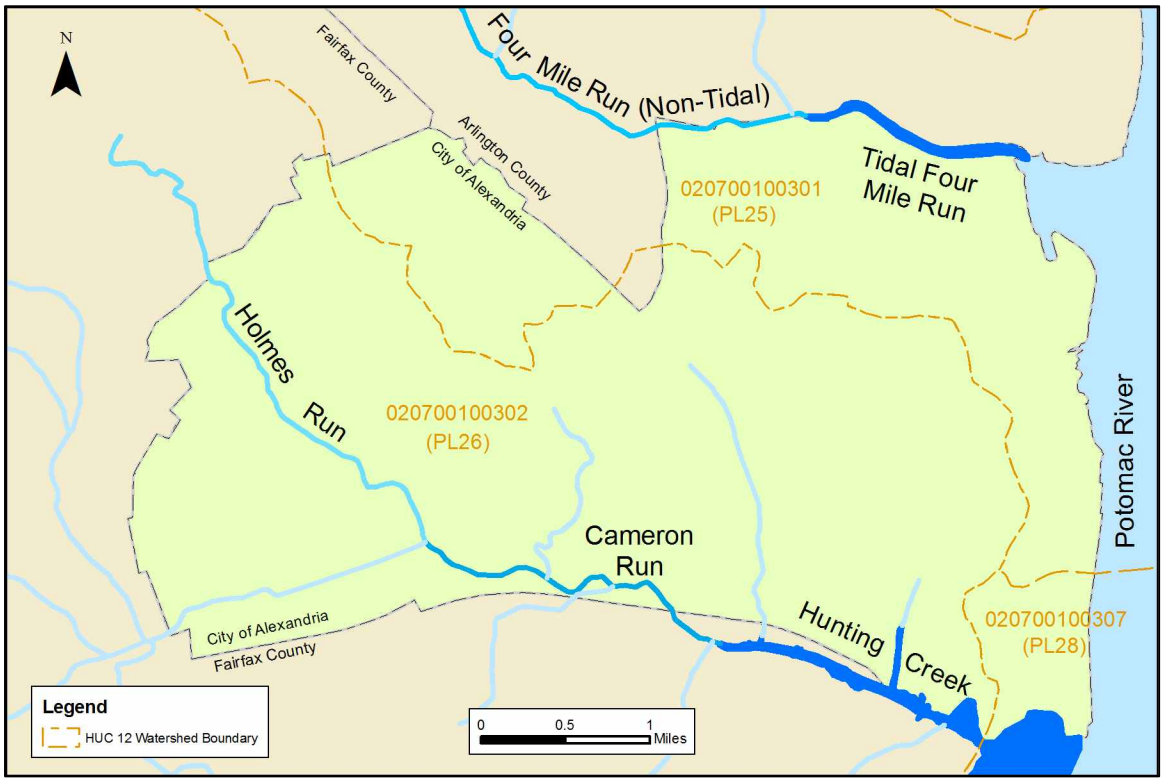


Figure 2. Alexandria's Waterways with Local TMDLs

1. Chesapeake Bay TMDL Special Condition

Finalized in December 2010 by the United States Environmental Protection Agency (EPA), the Chesapeake Bay TMDL and the associated Phase I, Phase II, and Phase III Watershed Implementation Plans (WIP) developed by the Commonwealth of Virginia, set limits on nitrogen, phosphorus and sediment entering the Bay. The requirement for sediment reductions was removed for the 2023-2028 permit. Pollutant reduction targets have been incorporated into the City's MS4 General Permit, with a total of 100% reductions in the L2 Scoping loads required by the end of this permit cycle. As a condition in the permit, the means and methods to achieve these reductions must be included in the City's Chesapeake Bay TMDL Action Plan. The City was required to prepare the Phase I Action Plan by June 30, 2015, based on the requirements in the 2013-2018 permit and using DEQ Guidance Memo No. 15-2005 dated May 18, 2015. The City was required to prepare the Draft Phase II Action Plan and submit it with the registration statement for permit reissuance in May 2018 and the Plan was finalized September 24, 2019. The City was required to prepare the Draft Phase III Action Plan and submit it with the registration statement for the 2023-2028 permit.

In accordance with the permit, the Phase III Action Plan was submitted November 1, 2024, or 12 months after the permit effective date. The City provided an opportunity for public comment on the additional BMPs proposed to meet the required 100% reductions. A summary of comments received, the City's response, documentation of corresponding public meeting(s) and revisions made resulting from public participation are documented with the final Action Plan. The Phase III Action Plan is incorporated as Attachment 1. DEQ reviewed the Action Plan and provided observations related to nutrient calculations associated with the Four Mile Run which were adjusted by the City and shared with the Commonwealth in March 2025. The City also adjusted calculations associated with the anticipated redevelopment credits provided in the original submission. DEQ provided their approval of the Phase III Action Plan on April 9, 2025.

The annual report will contain a separate Chesapeake Bay TMDL implementation annual status report. Requirements for this report are included as Part II.A.14.d. and include a confirmation statement indicating that the City reported the BMPs to the DEQ BMP Warehouse, the corresponding estimated reduction of pollutants, documentation of any acquired credits to meet the reductions in accordance with the permit, progress toward meeting the required pollutant reductions, and a list of BMPs planned to be implemented during the next reporting period.

2. Local TMDL Special Condition

Part II.B.2. requires updates to TMDL action plans for TMDLs approved by EPA prior to July 1, 2018, no later than May 1, 2025. The City has four existing TMDLs with an approved WLA for the MS4 area, all of which were approved prior to July 1, 2018 (see Table 2). Each Action Plan is revised based on requirements outlined in the MS4 permits and other updates as needed.

> The MS4 program plan as required by Part I B of this permit shall incorporate each local TMDL action plan. Local TMDL action plans may be incorporated by reference into the MS4 program plan provided that the program plan includes the date of the most recent local TMDL action plan and identification of the location where a copy of the local TMDL action plan may be obtained.

As required in the Permit, the City provided an opportunity for public comment; no public comments were received. To satisfy the public comment notice, the City sent out an eNews on April 1, 2025. The public comment period was from April 1 – April 18. The City sent DEQ copies of the revised TMDL Action Plans on April 30, 2025, for review. The updated TMDL Action Plans are included in Attachment 2.

Table 12. Approved TMDLs for the City of Alexandria and Action Plan Completion Date

Approved TMDLs	Action Plan Completion Date & Revision Dates
Tidal Potomac Polychlorinated Biphenyls (PCB) Total Maximum Daily Load (TMDL) Action Plan	
Total Maximum Daily Loads of Polychlorinated Biphenyls (PCBs) for Tidal Portions of the Potomac and Anacostia Rivers in the District of Columbia, Maryland, and Virginia • PCBs in Fish Tissue EPA approval – 4/11/2008	June 28, 2015 Revised November 20, 2015 Revised April 14, 2020
Bacteria Total Maximum Daily Load (TMDL) Action Plan	
Fecal Coliform TMDL Development for Four Mile Run, Virginia • Bacteria – fecal coliform • First listed – 1998 SWCB approval – 4/11/2008	June 17, 2015 Revised November 20, 2015 Revised June 30, 2016 Revised April 6, 2020 Revised April 13, 2022
Bacteria TMDL for the Tidal Four Mile Run Watershed • Bacteria – *E. coli* • First listed – 1996 • SWCB approval – 9/30/2010	
Bacteria TMDLs for the Hunting Creek, Cameron Run, and Holmes Run Watersheds • Bacteria – *E. coli* • First listed – 1998, 2008, 2004 (respectively) • SWCB approval – 8/4/2011	

E. Annual Report and Program Evaluation

Annual Report

The City will submit annual reports to DEQ each year covering the period of July 1st through June 30th. The annual report will be submitted to DEQ no later than October 1st of each year. The information provided to DEQ will be in accordance with MCM-specific items in the general permit, as well as the provisions of Part I.E, which includes the following:

Permit Section	Annual Report Requirements
I.E.1.f	*1) A list of the high-priority stormwater issues the permittee addressed in the public education and outreach program;* *2) A summary of the public education and outreach activities conducted for the report year, including the strategies used to communicate the identified high-priority issues; and* *3) A description of any changes in high-priority stormwater issues including, strategies used to communicate high-priority stormwater issues, or target audiences for the public education and outreach plan. The permittee shall provide a rationale for any of the above changes.*
I.E.2.i	*1) A summary of any public comments on the MS4 program received and how the permittee responded;* *2) A summary of stormwater pollution complaints received under the procedures established in Part I E 2 a (1) (excluding flooding complaints) and how the permittee responded;* *3) A webpage address to the permittee's MS4 program and stormwater website;* *4) A description of the public involvement activities implemented by the permittee;* *5) A report of the metric as defined for each activity and an evaluation as to whether or not the activity is beneficial to improving water quality; and* *6) The name of other MS4 permittees with whom the permittee collaborated in the public involvement opportunities.*
I.E.3.e	*1) A confirmation statement that the MS4 map and outfall information table have been updated to reflect any changes to the MS4 occurring on or before June 30 of the reporting year;* *2) The total number of outfalls and observation points screened during the reporting period as part of the dry weather screening program; and* *3) A list of illicit discharges to the MS4 including spills reaching the MS4 with information as follows:* *a. The location and source of illicit discharge;* *b. The dates that the discharge was observed, reported, or both;* *c. Whether the discharge was discovered by the permittee during dry weather screening, reported by the public, or other method (describe);* *d. How the investigation was resolved;* *e. A description of any follow-up activities; and*

	f. The date the investigation was closed.
I.E.4.e	*1) Total number of erosion and sediment control inspections conducted; and* *2) Total number of each type of compliance action and enforcement action implemented.*
I.E.5.e	*1) If the traditional permittee implements a VSMP in accordance with Part I E 5 a (1), (2), and (3):* *(a) The number of privately owned stormwater management facility inspections conducted; and* *(b) The number of enforcement actions initiated by the permittee to ensure long-term maintenance of privately owned stormwater management facilities including the type of enforcement action;* *2) Total number of inspections conducted on stormwater management facilities owned or operated by the permittee;* *3) A description of the significant maintenance, repair, or retrofit activities performed on the stormwater management facilities owned or operated by the permittee to ensure it continues to perform as designed. This does not include routine activities such as grass mowing or trash collection;* *4) For traditional permittees as specified in Part I E 5 a (1), a confirmation statement that the permittee submitted stormwater management facility information through the Virginia Construction Stormwater General Permit database for those land disturbing activities for which the permittee was required to obtain coverage under the General VPDES Permit for Discharges of Stormwater from Construction Activities in accordance with Part III B 1 f or a statement that the permittee did not complete any projects requiring coverage under the General VPDES Permit for Discharges of Stormwater from Construction Activities;* *5) A confirmation statement that the permittee electronically reported stormwater management facilities using the DEQ BMP Warehouse in accordance with Part III B 1 and 2; and* *6) A confirmation statement that the permittee electronically reported stormwater management facilities inspected using the DEQ BMP Warehouse in accordance with Part III B 5.*
I.E.6.u	*1) A summary of written procedures developed or modified in accordance with Part I E 6 a and b during the reporting period;* *2) A confirmation statement that all high-priority facilities were reviewed to determine if SWPPP coverage is needed during the reporting period;* *3) A list of any new SWPPPs developed in accordance Part I E 6 i during the reporting period;* *4) A summary of any SWPPPs modified in accordance with Part I E 6 j, l, or m;* *5) The rationale of any high-priority facilities delisted in accordance with Part I E 6 l or m during the reporting period;* *6) The status of each nutrient management plan as of June 30 of the reporting year (e.g., approved, submitted and pending approval, and expired);* *7) A list of the training activities conducted in accordance with Part I E 6 d, including the following information:* *a) The completion date for the training activity;* *b) The number of employees who completed the training activity; and* *c) The objectives and good housekeeping procedures covered by the training activity.*

II.A.13	*1) A list of Chesapeake Bay TMDL action plan BMPs, not including annual practices, implemented prior to the reporting period that includes the following information for reported BMP;* *a. The number of BMPs for each BMP type;* *b. The estimated reduction of pollutants of concern achieved by each BMP type and reported in pounds of pollutant reduction per year; and* *c. A confirmation statement that the permittee electronically reported Chesapeake Bay TMDL action plan BMPs inspected using the DEQ BMP Warehouse in accordance with Part III B 5.* *2) A list of newly implemented BMPs including annual practices implemented during the reporting period that includes the following information for each reported BMP or a statement that no BMPs were implemented during the reporting period:* *a. The BMP type and a description of the location for each BMP;* *b. The estimated reduction of pollutants of concern achieved by each BMP and reported in pounds of pollutant reduction per year; and* *c. A confirmation statement that the permittee electronically reported BMPs using the DEQ BMP Warehouse in accordance with Part III B 3.* *3) If the permittee acquired credits during the reporting period to meet all or a portion of the required reductions in Part II A 3, A 4, or A 5, a statement that credits were acquired.* *4) Pollutant load reductions generated by annual practices, such as street and storm drain cleaning, shall only be applied to the compliance year in which the annual practice was implemented.* *5) The progress, using the final design efficiency of the BMPs, toward meeting the required cumulative reductions for total nitrogen and total phosphorus.* *6) Any revisions made to the Chesapeake Bay TMDL action plan.* *7) A list of BMPs that are planned to be implemented during the next reporting period.*
II.B.9	*1) A summary of actions conducted to implement each local action plan.*

Evaluation of Effectiveness: During the annual reporting process, the City will provide an annual evaluation of the MS4 Program implementation, include a review of each MCM to determine the MS4 program's effectiveness and whether or not changes to the MS4 Program Plan are necessary.

Record Keeping: The City will retain records required by the MS4 permit for at least three years and make them available to DEQ and the public as requested.

City of Alexandria

Municipal Separate Storm Sewer System (MS4) Program Plan

Appendix A – MCM #1: Public Education and Outreach

NORTHERN VIRGINIA

CLEAN WATER PARTNERS PROGRAM

MEMORANDUM OF AGREEMENT

In order to establish an effectively coordinated stormwater education and outreach program, the parties whose authorized agents are signatories to the Memorandum of Agreement do hereby enter into the following Memorandum of Agreement.

SECTION I PURPOSE OF MEMORANDUM

The purpose of this Memorandum is to establish and maintain a coordinated stormwater education program in the Northern Virginia region, hereinafter referred to as the "Program". The signatories, hereinafter referred to as the "Northern Virginia Clean Water Partners," or "Partners," comprise a group of local governments, public school systems, institutions of higher education, drinking water and sanitation authorities, and businesses that choose to work together to inform individuals about the pollution potential of common activities, so that individuals can take direct action to reduce stormwater pollution. To meet this goal, the Partners work together to:

- Identify high priority water quality issues for the region;
- Identify the target audience(s) for outreach;
- Educate the region's residents on simple ways to reduce pollution around their homes;
- Monitor changes in behavior through surveys and other data collection techniques; and
- Pilot new cost-effective opportunities for public outreach and education.

By working together the Partners are able to leverage their funds and services to develop and place English and Spanish bilingual educational products with common messages and themes, thereby extending the campaign's reach.

SECTION II GENERAL DEFINITIONS

The term "Northern Virginia" refers, at a minimum, to the area comprising the Northern Virginia planning district, as specified in Section III.

The terms "Clean Water Partners," "Partners," "Participants," and "Partnership" refer to all entities which enter into this Agreement and abide by its terms.

"Contributing Partners" refers to those partners who contribute direct funds to the Program.

SECTION III AREA OF COVERAGE

Contribution and Participation in this Agreement and Program is available to any local government, public authority or institution of higher education within the confines of the Northern Virginia planning district, or adjacent planning districts.

SECTION IV OPERATIONAL ARRANGEMENTS

A. Staff Services

NVRC shall provide staff support for the Program, to the extent that funds are available. This may include procuring multi-media advertising services, procuring behavior change surveys, coordinating and hosting meetings, and maintaining website hosting and domain services. All contracts and administrative agreements approved by the Partnership shall be submitted to the NVRC Board for review and execution. The Executive Director of NVRC shall be the chief administrative agent of the Partnership and in this capacity shall be responsible to the Partnership for managing its staff support.

Upon the conclusion of each fiscal year NVRC shall prepare an annual report summarizing the status, progress and effectiveness, to the extent possible, of all significant outreach efforts during the previous fiscal year. This report shall include a preliminary work program for the upcoming fiscal year, and it shall be presented to the Partnership for approval. The report will be prepared so that it can be used to support individual permit requirements.

B. Meeting Space

NVRC shall provide adequate space and facilities for the meeting of the Program participants.

C. Budget

An annual budget for the Program shall be developed and funded through a special assessment of the Contributing Partners for inclusion in the annual NVRC budget. The annual operating budget shall be submitted by the NVRC staff to each Participant for its approval. Prior to the assessment of a participating local government, the allocation of program costs must be approved by its governing body.

The funding formula for the Program is as follows: $ 0.05 per capita based on the most recent decennial census unless more current population estimates are available from the Weldon Cooper Center for Public Service of the University of Virginia.

SECTION V TERMS

This Memorandum shall exist subject to amendment or dissolution in accordance with the following provisions:

A. Amendments

This Agreement may be amended at any time by the concurrence of all Participants. Proposed amendments shall be presented in writing to the NVRC staff and must be approved unanimously by all Participants.

The acceptance of additional Parties to this Agreement shall not require an amendment to this Agreement, but shall require the consent of a simple majority of the Partner participants. Each new Participant shall be bound to the terms of this Agreement as evidenced by the signature of its authorized agent.

B. Severability

Each paragraph and provision of this Agreement is severable from the entire Agreement and if any provision is declared invalid or unenforceable the remaining provisions shall nevertheless remain in effect.

C. Dissolution

This Agreement may be dissolved at any time by majority agreement of all participant Partners.

If a single Partner unit wishes to withdraw from the Agreement, notice of intent to withdraw must be provided at least six months prior to the end of the fiscal year, in order to provide the remaining parties with an opportunity to make any necessary budget adjustments.

This Agreement shall take effect after appropriate action by ordinance, resolution or otherwise pursuant to the law of the governing body of each participating political subdivision.

[SIGNATURE PAGE TO FOLLOW]

IN WITNESS WHEREOF, the City of Alexandria and NVRC have caused this document to be executed as of the date of the last signature shown:

CITY OF ALEXANDRIA, VIRGINIA

By: _____
Mark Jinks, City Manager

Date: 5-15-18

Approved as to Form:

By: _____ Asst. City Atty.
James L. Banks, Jr., City Attorney

Date: 5/7/2018

NORTHERN VIRGINIA REGIONAL COMMISSION

By: _____

Title: Exec. Direct

Date: 5/17/18

City of Alexandria

Municipal Separate Storm Sewer System (MS4) Program Plan

Appendix B – MCM #2: Public Involvement and Participation

What can we help you find?

Stormwater Management

Login

The Stormwater Management Program helps protect water quality in the City. The program has three focus areas: Stormwater Quality; Flooding and Drainage Issues; and Public Infrastructure Maintenance and Operations. Residents also partner with the City to protect water quality and decrease the impact of flooding. Working together we can manage stormwater more effectively to protect our local water resources and our community.

Page updated on December 11, 2023 at 8:47 AM

Page Menu

Translate

What is Stormwater?

Stormwater runoff occurs when rain or melting snow flows across land and impervious surfaces like roofs, driveways, parking lots, streets, and other hard surfaces. Because these impervious surfaces don't allow stormwater to soak into the ground, the runoff can cause flooding. As it flows across the ground, stormwater runoff may pick up pollutants like grease, oil, pet waste, fertilizer, metals, and other pollutants before entering the City's storm drain system. Stormwater is not treated, so the City's storm drains lead directly to local waterways, such as Taylor Run, Four Mile Run, Strawberry Run, Timber Branch, Hooffs Run, Holmes Run, Backlick Run, Cameron Run, and ultimately, the Potomac River and the Chesapeake Bay. Unless stormwater is first treated, the pollution picked up by the stormwater runoff enters our waterways. Stormwater pollution and flooding harms our environment, pets and wildlife, and can damage property.



Flood Action Alexandria

Flood Action Alexandria is an initiative to address flooding issues that arise in our community. Minimizing flooding is a shared public-private responsibility, and the City is committed to working with its residents and businesses to mitigate the impacts of flooding and build community resiliency.

</floodaction>



Stormwater Utility Fee

The Fee provides a dedication source of funding for the stormwater management program. Click here to learn more about the fee, credits, and how to appeal the SWU fee.

</stormwaterutility>



Stormwater Quality

Stormwater carries pollutants from hard surfaces to our local waterways, and can contribute to poor water quality. Learn more about stormwater quality, what stormwater BMPs are, and what the City is doing to protect our local streams, the Potomac River, and the Chesapeake Bay.

</stormwater-management/stormwater-quality>



Stormwater Stewardship

Our everyday activities can impact stormwater quality in positive or negative ways. It's up to all of us to do our parts. Learn what you can do to get involved and help out around your home, yard, or business to help improve water quality in our local streams, the Potomac River, and the Chesapeake

</stormwater-management/what-you-can-do-to-protect-water-quality>



Illicit Discharges

Did you know that only rain should enter the storm system? Learn more about what illicit discharges are, why only rain and snow melt



Public Infrastructure Maintenance and Operations

Maintaining the storm system is a big job. Learn about what it takes to operate, maintain, and repair over 210 miles of streets, 185 miles

should enter the storm sewer system, and what to do if you see a weird color in a stream.

</stormwater-management/illicit-discharges>

of storm sewer pipes, 13,500 storm sewer structures, and hundreds of stormwater BMPs.

</publicworks>



Flooding </taxonomy_redirect/216>

Sewers </taxonomy_redirect/267>

Stormwater </taxonomy_redirect/274>

Water </taxonomy_redirect/292>

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301 King Street
Alexandria, VA 22314

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City of Alexandria

Municipal Separate Storm Sewer System (MS4) Program Plan

Appendix C – MCM #3: Illicit Discharge Detection and Elimination

City of Alexandria, Virginia
Illicit Discharge Detection and Elimination Program
Policies and Procedures

May 9, 20214
Revised: April 28, 2019
Revised: September 22, 2022
Revised: April 12, 2024

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Appendix I – Civil Penalties Notice of Violation

A. Introduction and Purpose

The purpose of the City of Alexandria, Virginia Illicit Discharge Detection and Elimination (IDDE) Program is to protect the public health, safety and welfare by reducing the discharge of pollutants from the City's Municipal Separate Storm Sewer System (MS4), to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act and its attendant regulations.

This document serves as guidance for staff in the investigation and effective elimination of illicit discharges into the MS4 and local waterways. These written procedures are designed to detect, identify, and address unauthorized nonstormwater discharges, including illegal dumping, to the small MS4 to effectively eliminate the unauthorized discharge. Execution of this program and the procedures found in this document is the primary responsibility of the Department of Transportation and Environmental Services (T&ES) Stormwater Management Division (SWM).

As required by the City's 2023 – 2028 MS4 general permit, the City will maintain, implement and enforce IDDE written procedures to include:

1. A description of legal authorities, policies, standard operating procedures or other legal mechanisms available to the permittee to eliminate identified sources of ongoing illicit discharges, including procedures for using legal enforcement authorities.
2. Dry weather screening protocols to detect, identify, and eliminate illicit discharges to the MS4. The protocol shall include:
    a) A prioritized schedule of field screening activities and rationale for prioritization determined by the permittee based on such criteria as age of the infrastructure, land use, historical illegal discharges, dumping, or cross connections;
    b) If the total number of MS4 outfalls is equal to or less than 50, a schedule to screen all outfalls annually;
    c) If the total number of MS4 outfalls is greater than 50, a schedule to screen a minimum of 50 outfalls annually such that no more than 50% are screened in the previous 12-month period. The 50% criteria is not applicable if all outfalls have been screened in the previous three years;
    d) The permittee may adopt a risk-based approach to dry weather screening identifying observation points based upon illicit discharge risks upstream of an outfall. Observation points may include points of interconnection, manholes, points of discharge, conveyances, or inlets suspected to have a high likelihood of receiving illicit discharges;
    e) Each observation point screened may be counted as one outfall screening activity equivalent and counted towards the requirements of Part I E 3 c (2) (b) or (2) (c); however, at least 50% of the minimum annual screening events must include outfall screening;
    f) Illicit discharges reported by the public and subsequent investigations may not be counted as screening events; however once the resolution of the investigation and the date the investigation was closed has been documented, an observation point may be established for future screening events; and

g) A checklist or mechanism to track the following information for dry weather screening events:

(i) The unique identifier for the outfall or observation point;

(ii) Time since the last precipitation event;

(iii) The estimated quantity of the last precipitation event;

(iv) Site descriptions (e.g., conveyance type and dominant watershed land uses);

(v) Observed indicators of possible illicit discharge events, such as floatables, deposits, stains, and vegetative conditions (e.g., dying or dead vegetation, excessive vegetative growth);

(vi) Whether or not a discharge was observed;

(vii) If a discharge was observed, the estimated discharge rate and visual characteristics of the discharge (e.g., odor, color, clarity) and the physical condition of the outfall; and

(viii) For observation points, the location, downstream outfall unique identifier, and risk factors or rationale for establishing the observation point

3. A timeframe upon which to conduct an investigation to identify and locate the source of any observed unauthorized nonstormwater discharge. Priority of investigations shall be given to discharges of sanitary sewage and those believed to be a risk to human health and public safety. Discharges authorized under a separate VPDES or state permit require no further action under this permit.
4. Methodologies to determine the source of all illicit discharges. If the permittee is unable to identify the source of an illicit discharge within six months of beginning the investigation then the permittee shall document that the source remains unidentified. If the observed discharge is intermittent, the permittee shall document that attempts to observe the discharge flowing were unsuccessful.
5. Methodologies for conducting a follow-up investigation for illicit discharges that are continuous or that permittees expect to occur more frequently than a one-time discharge to verify that the discharge has been eliminated except as provided for in Part I E 3 c (4);
6. A mechanism to track all illicit discharge investigations to document the following:
   a) The dates that the illicit discharge was initially observed, reported, or both;
   b) The results of the investigation, including the source, if identified;
   c) Any follow-up to the investigation;
   d) Resolution of the investigation; and
   e) The date that the investigation was closed.

The protocols for outfall dry weather screening are found in Section C. City staff will also respond to illicit discharge complaints reported to the City. All investigations will follow the procedures outlined in the Section D of this document.

The following sections outline the City's IDDE Program and how the requirements of the 2023 – 2028 MS4 permit will be addressed. All investigations will be performed in accordance with

all state, federal, and local laws and regulations.

B. Legal Authority

Legal authority regulating the discharge of materials into the stormwater system is provided by the Virginia Statewide Fire Prevention Code and the City of Alexandria, Virginia, Code of Ordinances. Applicable excerpts from these codes are presented below.

1. The Virginia Statewide Fire Prevention Code (2012)

Section 5003.3 Release of hazardous materials.

Hazardous materials in any quantity shall not be released into a sewer, storm drain, ditch, drainage canal, creek stream, river, lake, or tidal waterway or on the ground, sidewalk, street, highway or into the atmosphere.

Exceptions:

1. The release or emission of hazardous materials is allowed when in compliance with federal, state, or local governmental agencies, regulations, or permits.
2. The release of pesticides is allowed when used in accordance with registered label directions.
3. The release of fertilizer and soil amendments is allowed when used in accordance with manufacturer's specifications.

2. City of Alexandria, Virginia Code of Ordinances

Sec. 11-13-2 Illegal dumping prohibited.

a) It shall be unlawful for any person to dump any waste on any property, in any waters or in any sanitary sewer or stormwater system, except as authorized by law or by applicable permit. It shall be the burden of the alleged violator to show proof of any applicable permits.

b) In the event waste is dumped from a motor vehicle or water craft in violation of this section, the owner of such motor vehicle or water craft shall be presumed to be the person ejecting such waste, and such owner shall have the burden of coming forward with evidence to rebut the presumption.

c) It shall be unlawful for any person to throw, drain, or otherwise discharge, cause, or allow others under its control to throw, drain or otherwise discharge into the stormwater system any substance, whether liquid or solid, other than stormwater with the exception of the following:

    1. Water line flushing;
    2. Landscape irrigation;
    3. Diverted stream flows;
    4. Rising groundwaters;
    5. Uncontaminated groundwater infiltration;
    6. Uncontaminated pumped groundwater;

7. Discharges from potable water sources, foundation drains, irrigation waters, springs, or water from crawl spaces or footing drains;
8. Lawn watering;
9. Individual residential car washing;
10. Flows from riparian habitats and wetlands;
11. Dechlorinated swimming pool discharges;
12. Street washwater;
13. Discharges from firefighting activities; and
14. Discharges for which a valid Virginia Pollutant Discharge Elimination System (VPDES) or National Pollutant Discharge Elimination System (NPDES) permit has been issued.

d) If any of the foregoing exceptions are identified as significant sources of pollutants, and thus cause a negative impact on the quality of the waters of the Commonwealth of Virginia, such situation or occurrence shall be deemed unlawful.

C. Dry Weather Field Screening

1. Prioritization

Several different criteria will be used to create a prioritized list of outfalls for dry weather field screening. The first criteria to be utilized is the historical illicit discharge information. Outfalls where illicit discharges were confirmed during the previous permit year (initiated either through dry weather field screening or by a complaint) will be prioritized and included on the list for dry weather screening for the current reporting year.

Additionally, a desktop exercise using zoning and development data, land use data, storm drain system information, aerial photography and other pertinent information will be conducted no less than once every five years to identify prioritized areas. For example, these areas may include locations with a high percentage or commercial businesses. A list of these outfalls will be developed and categorized as meriting priority investigation due to the higher potential to have illicit discharges.

The City may also use a risk-based approach to dry weather screening and identify observation points based on illicit discharge risk upstream of an outfall. These observation points may include (a) points of interconnection; (b) manholes; (c) points of discharge; (d) conveyances; and/or (e) inlets suspected to have a high likelihood of receiving illicit discharges. These screened observation points shall count towards dry weather field screening activities as outlined in the MS4 Phase II General Permit Part I.E.3.c.

Finally, outfalls that discharge directly to a receiving water with a nutrient or bacteria related TMDL with designated waste load allocation (WLA) will receive prioritization. The list of stream segments within the City that fall into this category are presented in the table below.

Stream	Report Title	Upstream Limit	Downstream Limit
Four Mile Run	*Fecal Coliform TMDL Development for Four Mile Run, Virginia*	City limits	Between confluence with Long Branch and Mount Vernon Avenue
Tidal Four Mile Run	*Bacteria TMDL for the Tidal Four Mile Run Watershed*	Rivermile 1.46 (between confluence with Long Branch and Mount Vernon Avenue)	Confluence with the Potomac River
Hunting Creek, Cameron Run, and Holmes Run	*Bacteria TMDLs for the Hunting Creek, Cameron Run, and Holmes Run Watersheds*	Hunting Creek – Telegraph Road Bridge Cameron Run – Confluence with Backlick Run Holmes Run – Mouth of Lake Barcroft	Hunting Creek – Mouth of embayment (Jones Point) Cameron Run - Telegraph Road Bridge Holmes Run – Confluence with Backlick Run

As required by Part I.E.3.c of the permit, a minimum of 50 outfalls will be inspected annually such that no more than 50% are screened in the previous 12-month period. The 50% criterion is not applicable if all outfalls have been screened in the previous three years.

Annually, the list of 50 outfalls to be screened may be developed using the following prioritization methodology:

1. Outfalls that had confirmed illicit discharges the previous permit year (no more than 20 outfalls)
2. Outfalls that are in the high priority areas
3. Observation points upstream of outfall based on risk
4. Outfalls that discharge directly into a receiving water with a nutrient or bacteria related TMDL with WLA

After the list is developed, it will be checked to confirm that not more than 50% are screened in the previous 12-month period were also screened during the last permit cycle.

2. Screening Procedures

The purpose of field screening is to conduct field investigative work and involves rapid field screening of prioritized outfalls followed by indicator monitoring at suspect outfalls to characterize flow types and trace sources.

a. Equipment

Staff shall be equipped with basic field mapping, outfall field screening forms (hard copy or electronic), and necessary equipment during field screening investigations. A blank outfall field screening form can be found in Appendix A and a checklist of field screening equipment can be found in Appendix B.

b. Field Screening Investigation

As described above, field screening must be completed for at least 50 outfalls annually. Field screenings will be conducted using the City's outfall field screening form and procedures outlined in this document. Dry weather field screening shall only be conducted after 48 hours following a measurable storm event (more than 0.1 inch). The field screening form is presented in sections below along with corresponding descriptions.

Each outfall investigation must include:

1) Completed outfall field screening form
2) Digital picture(s)

Outfall Field Screening Form

Section 1: Background Data

Facility ID:		Outfall Location:
Watershed / HUC:		Local Subwatershed:
Today's date:		Military Time:
Screening performed by:		Photo #(s):
Weather, Temp.(°F):	Time since last precipitation:	Amount:
Local Land Use (Check all that apply): ☐ Ultra-Urban Residential ☐ Commercial ☐ Industrial ☐ Suburban Residential ☐ Open Space / Park		

Section 1: Background Data

This section is used to indicate background information for each outfall. Each outfall has a unique identifier that will be used for the facility ID. A picture of each outfall must be taken and the photo number recorded. If the database is being used, the photo can be uploaded directly into the database

and the number does not need to be recorded. Rainfall data will be taken from NOAA's National Climatic Data Center using the station: **WASHINGTON REAGAN NATIONAL AIRPORT, VA US, GHCND:USW00013743.** http://www.ncdc.noaa.gov/ This data will include the time (in hours or days) since the last precipitation event. Note that dry weather investigations shall only be conducted after 48 hours following a measurable (more than 0.1 inch).

Section 2: Outfall Description

MATERIAL	OUTFALL SHAPE	NUMBER PIPES	OUTFALL DIAMETER	SUBMERGED
☐ RCP ☐ CMP ☐ Concrete ☐ DIP ☐ PVC ☐ Steel ☐ Clay Tile (CT) ☐ Brick (BRK)	☐ Circular ☐ Elliptical ☐ Box ☐ Flared End	☐ Single ☐ Double ☐ Triple	☐ 12" ☐ 50" ☐ 15" ☐ 54" ☐ 18" ☐ 60" ☐ 20" ☐ 72" ☐ 24" ☐ Other ☐ 36" ☐ 40" ☐ 42" ☐ 48"	In Water: ☐ No ☐ Partially ☐ Fully In Sediment: ☐ No ☐ Partially ☐ Half Full ☐ Over Half ☐ Fully

Section 2: Outfall Description

This section is used to record basic information about each outfall including material, shape, size, and submergence. If flow is present, continue to Section 3 to record data. If no flow is present, skip to Section 5.

Section 3: Quantitative Indicators for Flowing Outfalls: Field measurements? ☐ YES ☐ NO ***(If No, Skip to Section 4)***

Estimated Discharge Rate				
A: Width of Flow	**B: Approx. Avg. Depth**	**A x B = C: Area**	**Length of flow/ Time = D**	**C x D = E. Est. Flow Rate**

PARAMETER	RESULT (UNIT)	Equip. Used	ACTION LEVEL
Temperature	°F		☐ Yes ☐ No
pH	Unitless		☐ Yes ☐ No
Conductivity	mS/cm		☐ Yes ☐ No
Ammonia	ppm		☐ Yes ☐ No
Chlorine	ppm		☐ Yes ☐ No

Section 3: Quantitative Indicators for Flowing Outfalls

This section is used to record data for flowing outfalls. The estimated discharge rate is computed based on velocity and cross-sectional area. First, the width of flow (in feet) and approximate average depth (in feet) is measured. The cross-sectional flow area is computed by multiplying the width of flow by the approximate average depth of flow. Next, staff shall measure and mark off a fixed flow length (in feet) and drop a leaf or other lightweight material into the discharge. The time (in seconds) it takes the material to travel across the predefined length is recorded. The velocity of flow is computed as the length of the flow path divided by the travel time. Lastly, cross-sectional flow area (in square feet) is multiplied by flow velocity (feet/second) to calculate the estimated flow rate (in cubic feet/second).

The indicator parameters of temperature, pH, ammonia, conductivity, and chlorine are initially tested by using field sampling equipment including test strips and probes. If any of these parameters exceed the action level as specified in Appendix C**,** this is to be noted on the field screening form.

Section 4: Physical Indicators for Flowing Outfalls Only

Are Physical Indicators Present? ☐ Yes ☐ No ***(If No, Skip to Section 5)***

PHYSICAL INDICATOR	FLOW INDICATOR DESCRIPTION	FLOW INDICATOR RELATIVE SEVERITY INDEX (1-3)		
Odor	☐ Sewage ☐ Rancid ☐ Petroleum ☐ Sulfide/Rotten Egg	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ White/Cloudy	☐ 1 – Faint	☐ 2 – Clearly visible	☐ 3 – Clearly visible in outfall flow
Surface/Floatables	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum / Oil Sheen ☐ Other	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indication of origin	☐ 3 – Some; origin clear /obvious

Section 4: Physical Indicators for Flowing Outfalls Only

This section is used to record physical indicator data for outfalls that are flowing.

A. Odor- an indication of any smells from the discharge and/or outfall.
    1. A score of 1 is assigned when the odor is faint or when the field crew cannot agree on its presence or origin.
    2. A score of 2 is assigned when the odor is moderate within the discharge and/or outfall.

3. A score of 3 is assigned when the odor is noticeable from a distance.

B. Color- the color of the discharge when a sample is taken in a clear sample bottle and held up to the light.
   1. A score of 1 is assigned when the color in the sample bottle is faint.
   2. A score of 2 is assigned when the color in the sample bottle is highly visible.
   3. A score of 3 is assigned when the color is visible in the outfall discharge.

C. Floatables- the presence of floatable materials in the outfall discharge (not including trash).
   1. A score of 1 is assigned when there are a few floatables with no known origin.
   2. A score of 2 is assigned when there are moderate floatables with indications of an origin.
   3. A score of 3 is assigned when there are a large number of floatables or the origin is obvious. Sewage is always designated a 3.

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No ***(If No, Skip to Section 6)***

INDICATOR	DESCRIPTION	INDICATOR	DESCRIPTION
Outfall Damage	☐ Spalling, Cracking or Chipping ☐ Corrosion	Pipe benthic growth	☐ Brown ☐ Orange ☐ Green ☐ Black
Deposits/Stains	☐ Oily ☐ Flow Line ☐ Paint		

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

This section describes physical indicators around all outfalls that can be indicators of past illicit discharges. Breakage in the outfall, deposits or stains along the outfall, an overgrowth of vegetation or inhibition of vegetation, poor pool quality, and benthic growth in the pipe are all potential indicators of past, transitory, or intermittent illicit discharges.

Section 6: Overall Outfall Illicit Discharge Characterization

☐ None ☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 6: Overall Outfall Illicit Discharge Characterization

This section is an overall characterization of the severity of the illicit discharge, if present. The provided rating system and descriptions below are intended to provide general guidance and consistency; however, the field inspector may override the rating system as necessary.

1. Unlikely shows no signs of an illicit discharge. No further action is necessary.
2. Potential has two or more indicators present. Follow-up on this outfall is moderate priority.
3. Suspect has at least one indicator with a rank 3 severity. This outfall is a likely illicit discharge and follow-up is high priority.
4. Obvious has an obvious illicit discharge based on quantitative and/or physical indicators.

Section 7: Follow Up Needed? ☐ Yes ☐ No

1.Return for In-depth sampling?	☐ Yes	☐ No	
2.Return to Re-inspect for Flow?	☐ Yes	☐ No	
3.Grab sample collected?	☐ Yes	☐ No	***If yes*, Sample ID:**
4.If yes, collected from:	☐ Flow	☐ Pool	

Section 7: Follow Up Needed?

This section documents the need and type of follow up actions to the performed. See Section D for information regarding follow-up timelines and procedures. After completion of the outfall field screening, staff should also report any non-tidal submerged outfalls, outfalls that are blocked with sediment or plant material, majorly damaged outfalls, or other outfall repair needed using Cityworks so that they can be addressed by T&ES Public Work Services or others.

If the electronic database is not used in the field, data from the screening form must be entered into the City's database for record keeping and future analysis.

3. Documentation

In accordance with the MS4 Permit, the total number of outfalls screened during the reporting period as part of the dry weather screening program will be reported. In addition, the outfall field screening forms will be kept electronically on the City's server for no less than five years.

D. Illicit Discharge Investigations

1. Investigation Causes

Illicit discharge investigations are performed when:

1. An illicit discharge complaint or report has been received by the City, or
2. An illicit discharge is found during annual field screening of outfalls.

Every effort will be made to coordinate efforts between the Fire Marshal's Office and T&ES-SWM. If the situation warrants it and when possible, staff from both departments should be present during illicit discharge investigations. In cases of highly visible suspected illicit discharges, the Fire Marshal will issue an emergency notification through the Environmental Industrial Unit (EIU) to alert applicable City staff of the situation. Whenever hazardous materials are suspected, notification will be made immediately to the Fire Department. In an event an IDDE is reported "after hours" (defined as for weekdays, 4 p.m. to 7 a.m., weekends and holidays), the City will follow Emergency Standby Procedures, which indicates that if the event is thought to be hazardous or cause wildlife death to contact 911; otherwise to call the Fire Marshall's Dispatch Center.

Illicit discharges may be from common household, commercial, or industrial sources. In addition, construction sites with insufficient practices to control stormwater and water main breaks are potential sources of illicit discharges of sediment. Discharges authorized under a separate VPDES or state permit require no further action.

2. Investigation Timeframes

Priority of investigations shall be given to discharges of sanitary sewage and those believed to be a risk to human health and public safety.

Timeframes for investigations will be as follows. Timeframes may be extended if a qualifying rain event occurs:

1. Illicit discharge complaints will be investigated within one business day of T&ES-SWM receipt.
2. Potential illicit discharges, as categorized and identified during outfall screening, will be investigated within seven business days. Staff will return during different day and time intervals to determine if it is an intermittent discharge or set up a caulk dam to trap the discharge. Staff will perform a minimum of three visits over a span of 30 business days if the source of the discharge cannot be determined.
3. Suspect illicit discharges, as categorized and identified during outfall screening, will be investigated within one business day. Staff will return during different day and time intervals or set up a caulk dam to trap the discharge. Staff will perform a minimum of three visits over a span of 30 business days if the source of the discharge cannot be determined.
4. Obvious discharges, as categorized and found during outfall screenings, will be investigated immediately. Staff will perform a minimum of three visits over a span of 30

business days if the source of the discharge cannot be determined. Illicit discharges reported by the public will most likely fall into this category.

5. Illicit discharges that are continuous or expected to occur more frequently than a one-time discharge will include follow-up investigations a minimum of three times over a 12-month period to verify that the discharge has been eliminated. The procedures related to the investigation of these types of discharges are found below.

3. Investigation Procedure

An illicit discharge investigation may result in an easily identifiable source or may be complex and require tracking through the storm drain system and other resource extensive methods. Investigations should utilize the instructions in this document, storm sewer mapping, and may also require coordination with staff from Fairfax County and Arlington County, depending on the tracking of the potential illicit discharge.

a. Dry Weather Discharge Investigations

If dry weather screening identifies a flowing outfall, the procedures outlined in Section C.2 should be followed and corresponding information documented. Tests conducted and samples taken as part of these investigations shall follow the protocols below. These protocols in conjunction with the flow chart method (Appendix D) and the documented benchmark concentrations, shall be utilized to determine the most likely type of discharge.

Preliminary Sampling and Testing

Protocols are as follows:

1. All preliminary testing is conducted in the field.
2. Determination of parameters tested will be based upon suspected discharge.
3. Make sure testing probes and sample bottles have been properly cleaned, stored, and calibrated if required.
4. During sampling, use all applicable personal protective equipment (PPE).
5. During sample collection, do not disturb any sediments or benthic growth that may contaminate or skew results.
6. Rinse sample collection device three times with sample water before collecting the sample.
7. Fill sample bottle to top without touching inside of bottle lid or rim.
8. Initiate specific test procedures immediately.
9. Compare sample test results to benchmark concentration levels as set by state and federal standards.
    a. Use action levels found in Appendix C
    b. If industrial sources are present, additionally use industrial benchmarks from Appendix E.
    c. If testing results exceed benchmark concentrations then the action level has been reached, staff will then begin tracking the source of the illicit discharge.

10. Label any waste bottles immediately with all chemicals used for testing and dispose of properly.

Contract Laboratory Services

If the type of discharge cannot be determined after the preliminary field sampling and testing, a laboratory sample may be taken from the flow in accordance with the laboratory sampling protocol located in Appendix F. This sample may be sent to a contract lab to help determine the type of discharge.

If the discharge is determined to be a sanitary sewer overflow, the overflows will be reported as described in the City's Sanitary Sewer Overflow Response Plan Procedure TES-Maint-2012-08 which can be found in Appendix G.

Storm Drain Network Investigation and Tracking

Depending on the type of discharge suspected, it may be necessary to track the discharge through the storm drain network to determine its source. When performing storm drain network investigations, staff strategically inspects manholes, inlets, and channels within the storm drain network system to look for visual indicators and/or measure chemical/physical indicators to isolate discharges to a specific segment of the network. A key component of this investigation is the use of the City's mapped storm drain system. Also, in accordance with the MS4 permit, the City has delineated drainage areas for each outfall. Once the pipe segment has been identified additional investigations are used to isolate the source of the discharge.

Staff must first decide which method to use to conduct the network investigation.

1. Work progressively up the trunk -this method is used in small drainage area investigations.
    a. Begin with the manhole closest to the outfall (or illicit discharge location) and inspect for the illicit discharge.
    b. Move progressively up the largest diameter pipe flowing to the outfall (the trunk) inspecting for discharges at each manhole or inlet until no discharge is present.
    c. Isolate the discharge between two drainage structures.
    d. Begin appropriate investigation.
2. Split the storm drain network-this method is used in large or complex drainage areas.
    a. Review the map of the storm drain network leading to the suspect outfall.
    b. Identify the major branches that lead to the largest diameter pipe flowing to the trunk.
    c. Identify manholes and/or inlets to inspect at the farthest downstream node of each contributing branch and one immediately upstream.
    d. Working up the network, investigate manholes and/or inlets on each contributing branch and trunk, until the source is narrowed to a specific section of the trunk or contributing branch.
    e. Once the discharge is narrowed to a specific section of trunk, begin appropriate investigation.

f. If narrowed to a contributing branch, move up or split the branch until a specific pipe segment is isolated, and begin appropriate investigation.

3. Move down the storm drain network-this method is used in very large drainage areas with many potential sources of illicit discharge.
    a. Begin by inspecting manholes and/or inlets at the head of the storm drain network.
    b. Verify that each upstream branch has no contributing illicit discharges before moving down the pipe to a junction manhole or inlet.
    c. If a discharge is found, perform appropriate investigation to determine the source of the discharge.
    d. Verify the discharge has be fixed or removed before moving down the pipe.

Drainage Area Investigations

Drainage area investigations are used when an illicit discharge has distinct indicator characteristics that allow staff to quickly ascertain the specific industrial or commercial source of the discharge. Drainage area investigations are not to be used on suspected sewage discharges.

When performing drainage area investigations:

1. Review current GIS data for the drainage area.
2. Review current permit data for the drainage area.
3. Determine potential discharges within the drainage area.
4. Perform other types of investigations when necessary.

Dye Testing

If the illicit discharge is suspected to be from the sanitary sewer, dye testing may be conducted by introducing non-toxic dye into toilets, sinks, shop drains and other plumbing fixtures. Before beginning testing, staff should:

1. Review storm drain and sanitary sewer maps to determine lateral sewer connections and how they can be accessed;
2. Notify property owners and gain access to the property;
    a. For commercial and industrial properties, staff will carry identification to document their legal authority to enter.
    b. For residential properties, staff should coordinate with the owner or resident to ensure access to the property.
3. Notify emergency personnel of the days and times dye testing is being performed.
4. Verify all necessary equipment is available for use**.**

The following guidelines should be used for dye testing:

1. Choose the most appropriate color and type of dye for the facility. When testing multiple fixtures, it is advisable to use two different color dyes and alternate between them.

2. Select the fixtures to test.
    a. In industrial facilities, check most floor drains.
    b. For plumbing fixtures, check a representative fixture (i.e. a bathroom sink).
    c. If working with multiple floors, start at the basement and work up.
    d. Make sure to flush with plenty of water to ensure the dye moves through the system.
3. Choose the closest sanitary sewer manhole to make observations (typically a sewer lateral). If not possible, choose a downstream manhole.
4. When the dye is introduced, the staff member placing the dye calls the monitoring staff member at the manhole to inform them that the dye has been placed.
5. When the dye is observed, the staff member observing calls the staff member placing the dye to verify that the dye has entered the sanitary sewer system.
6. If dye is not observed (typically within one hour);
    a. Check storm drains for the presence of dye;
    b. Check for the presence of a septic system;
    c. The sewer line may be clogged or leaking.

In some cases, dye may also be used for testing connections that do not involve sanitary discharges or pipes. The general procedures outlined above should also be followed in these instances.

CCTV Video Testing

Closed circuit television video testing may be performed by T&ES Public Works Services staff in cases where the discharge cannot be determined by other types of investigations or in cases where other testing is not practical (large residential neighborhoods).

b. Complaint Driven Investigations

If a report or complaint is received through the City's various mechanisms, typically the investigation differs slightly from the dry weather investigations.

Staff shall first do a visual inspection using Section 4 of the Outfall Screening Form. In cases where the type and source can be determined through visual investigations, no further screening is necessary, and staff may proceed to enforcement (see Section E), as applicable. For example, a report of brown water confirmed through a visual inspection may be the result of a documented watermain break, which would explain the discoloration. Therefore, staff would only need to document the report and investigation - no corresponding enforcement would be necessary. If the discharge is determined to be an intermittent discharge, staff may use a caulk dam and/or check the suspect discharge area during varying day and time intervals.

If the type and source of the suspected discharge is not determined through visual inspection, staff may use a combination of methods to determine the source of the discharge. These are described in Section D.3.a and are listed below in typical order of implementation (though the order and methods implemented are at the discretion of the staff completing the investigation).

1. Storm drain network investigation and tracking
2. Drainage area investigation
3. Preliminary sampling and testing
4. Contract laboratory sampling
5. Dye testing
6. CCTV video testing.

Suspected sanitary sewer overflows shall be investigated before any other suspected illicit discharge and be reported as described in the City's Sanitary Sewer Overflow Response Plan Procedure TES-Maint-2012-08 which can be found in Appendix G.

4. Cases of Undetermined Sources

If within six months of beginning an investigation, the source cannot be identified:

1. The City will document all steps of the investigation and document that the source remains unidentified.
2. If the discharge is intermittent, the City will document a minimum of three separate investigations within 30 business days that were made to attempt to observe flowing discharge and that these investigations were unsuccessful.

5. Documentation

In accordance with the MS4 Permit, illicit discharge investigations will document the following:

1. Whether the discharge was discovered by the permittee during dry weather screening, reported by the public, or other method (describe);
2. The dates that the illicit discharge was initially observed, reported, or both;
3. The results of the investigation, including the source, if identified;
4. Any follow-up activities to the investigation;
5. Resolution of the investigation; and
6. The date that the investigation was closed.

E. Enforcement for Illicit Discharges

The ultimate goal of the program is to eliminate illicit discharges to the separate storm sewer system. If a responsible party is identified, compliance may be accomplished through various methods such as discussion with the responsible party and impromptu education performed by staff. Awareness is a key tool that may be used to prevent future illicit discharges. However, in cases where there is a responsible party and the situation warrants, criminal or civil enforcement action may be necessary.

1. Determination of Responsibility

The person initiating the discharge shall be responsible for all associated response and materials to remediate the discharge. If a responsible party cannot be immediately located or determined, the owner of the property may be deemed responsible for the discharge and costs of associated response and materials.

2. Enforcement

The City enforces the prohibition of illicit discharges through two types of penalties – criminal and civil. The type of enforcement action depends on the type of material dumped and/or the intent of the individual at fault. The types of penalties and violations can be found in City Code Sec. 11-13-8 Violations.

a. Enforcement through Criminal Penalties

Criminal penalties are considered a Class 1 misdemeanor and can be issued for:

1. Dumping hazardous, household hazardous, bulk or industrial waste; or
2. Dumping of any other waste with intentional disregard for the water quality of the waters of the Commonwealth of Virginia.

Violation of a criminal offense is considered a Class 1 misdemeanor. Criminal penalties are typically issued through the Fire Marshal and prosecuted through the Commonwealth Attorney. The violation form is found in Appendix H. In Virginia, the authorized punishments for conviction of a Class 1 misdemeanor are confinement in jail for not more than twelve months and a fine of not more than $2,500, either or both (Code of Virginia 18.2-11).

If three citations for the same or similar violation within a 24-month period are issued, it will be presumed that the provisions of this section are knowingly and willfully being violated. As a result, the burden of proof shall lie with the defendant to rebut such presumption. Each day of violation shall constitute a separate offense.

b. Enforcement through Civil Penalties

If the violation does not constitute a criminal penalty as described above, any other violation of the code of Environmental Offenses is a civil penalty and is punishable as a Class 4 civil violation. Any City law enforcement officer, duly designated sworn special police officer, the

director of transportation and environmental services or designee, the director of public health or designee, the director of code administration or designee, or the chief fire marshal or any deputies has the authority to issue civil penalties.

Below are the steps for issuing a civil penalty:

1. After performing an illicit discharge investigation and determining the responsible party, a civil penalty may be issued as warranted.
2. A "Notice of Violation and Order to Correct" form found in Appendix I must be completed to issue a civil penalty. The form includes the following information:
    a. Name of violator – Name of individual and/or entity in violation;
    b. Nature of violation – The section of City Code that has been violated and a short, written description of the specific facts that led to the issuance of the civil penalty;
    c. Location of violation – Physical address where violation occurred;
    d. Date and time of violation – The time and date the civil penalty is issued;
    e. Penalty amount –Amount of penalty; and
    f. Signature of City employee – Signature of the issuing officer/staff.
3. A warning may be issued for nonhazardous waste discharges that did not enter the storm drain in situations where the responsible party has agreed to or has already begun the cleanup and recovery of the discharge.
4. Notes shall be taken before, during, and after any interaction.
5. The "Notice of Violation and Order to Correct" form will be given directly to the violator whenever possible. In the absence of the violator, the notice can also be served via certified mail with a return receipt or posted at the location of the violation. The form will be noted with "refused to sign" if violator refuses to sign form.
6. Both hard and electronic copies of any issued notice of violation forms and any photos that may have been taken at the site of the violation will be recorded and saved.
7. Copies of civil penalties with associated fines shall be sent to the City Attorney's office and to the Department of Finance via email or interoffice mail for enforcement.

Punishments for a Class 4 civil violations are fines as presented below and found under City Code Section 1-1-11 Civil Violations.

1. First offense = $100
2. Second offense (with same operative facts) = $250
3. Third offense (with same operative facts) = $500 and may be considered criminal and will be handled by the fire marshal's office.

3. Abatement

a. Responsibility for Abatement

Abatement and remediation of the illicit discharge and all associated damages will be performed by the responsible party. This may be in addition to any penalty imposed for criminal and civil violations. Each day that the violation and damage is not corrected/remedied, serves as a separate offense. In cases where a civil penalty or criminal summons has been issued but the responsible party fails to clean up the site as required, the court may order the required cleanup of the area. Additionally, the responsible party may be court ordered to perform public service relating to the correction or remediation of a polluted area. A list of contractors and environmental cleaning companies may be supplied to private property owners.

The City may perform abatement of illicit discharges in the following circumstances:

1. The responsible party fails to perform the required cleanup after being issued a civil penalty or criminal summons; or
2. The responsible party cannot be identified.

In cases where the responsible party is unknown or when deemed necessary by the Fire Marshal or the T&ES-SWM staff, cleanup may be initiated by the City using an authorized individual or firm. When the responsible party is known or determined at a later date, costs associated with such cleanup are borne by the party responsible for the discharge.

b. Abatement Time Frame and Verification

The time frame allowed for abatement and remediation of the discharge will be determined by the type of abatement, the equipment and resources needed, and the complexity of the incident. Upon completion of remediation of the discharge, the responsible party must submit documentation to T&ES-SWM and Office of the Fire Marshal verifying that the discharge has been abated and that any required repairs have been completed. City staff will confirm removal and cleanup of the illicit discharge on site.

4. Documentation

A copy of the Notice of Violation and Order to Correct form issued to violators shall be maintained by the City. Once the violations have been addressed, the documentation will be updated to reflect the resolution. For each notice, the documentation shall specify:

1. The nature of the violation;
2. The date the violation was observed and reported;
3. The results of the investigation;
4. The follow up to the investigation;
5. The resolution of the investigation; and
6. The date that the investigation was closed.

Appendices

Appendix A - Outfall Field Screening Form

City of Alexandria, Virginia
Outfall Field Screening

Section 1: Background Data

Facility ID:	Outfall Location:	
Watershed / HUC:	Local Subwatershed:	
Today's date:	Military Time:	
Screening performed by:	Photo #(s):	
Weather, Temp.(°F):	Time since last precipitation:	Amount:
Local Land Use (Check all that apply): ☐ Ultra-Urban Residential ☐ Commercial ☐ Industrial ☐ Suburban Residential ☐ Open Space / Park		

Section 2: Outfall Description

MATERIAL	OUTFALL SHAPE	NUMBER PIPES	OUTFALL DIAMETER	SUBMERGED
☐ RCP ☐ CMP ☐ Concrete ☐ DIP ☐ PVC ☐ Steel ☐ Clay Tile (CT) ☐ Brick (BRK)	☐ Circular ☐ Elliptical ☐ Box ☐ Flared End	☐ Single ☐ Double ☐ Triple	☐ 12" ☐ 50" ☐ 15" ☐ 54" ☐ 18" ☐ 60" ☐ 20" ☐ 72" ☐ 24" ☐ Other ☐ 36" ☐ 40" ☐ 42" ☐ 48"	In Water: ☐ No ☐ Partially ☐ Fully In Sediment: ☐ No ☐ Partially ☐ Half Full ☐ Over Half ☐ Fully

Observed Dry Weather Flow	☐ Yes	☐ No	***(If No, Skip to Section 5)***
Flow Description (If present)	☐ Trickle	☐ Moderate	☐ Substantial

Section 3: Quantitative Indicators for Flowing Outfalls: Field measurements? ☐ YES ☐ NO ***(If No, Skip to Section 4)***

Estimated Discharge Rate				
A: Width of Flow	**B: Approx. Avg. Depth**	**A x B = C: Area**	**Length of flow/ Time = D**	**C x D = E. Est. Flow Rate**

PARAMETER	RESULT (UNIT)	Equip. Used	ACTION LEVEL	ACTION NEEDED
Temperature	°F		Nontidal waters >90°F	☐ Yes ☐ No
pH	Unitless		< 6.0 or > 9.0	☐ Yes ☐ No
Conductivity	mS/cm		> 0.40 mS/cm	☐ Yes ☐ No
Ammonia	ppm		> 3 mg N/L	☐ Yes ☐ No
Chlorine	ppm		>17 ug/L	☐ Yes ☐ No

Section 4: Physical Indicators for Flowing Outfalls Only

Are Physical Indicators Present in the flow? ☐ Yes ☐ No ***(If No, Skip to Section 5)***

PHYSICAL INDICATOR	FLOW INDICATOR DESCRIPTION	FLOW INDICATOR RELATIVE SEVERITY INDEX (1-3)		
Odor	☐ Sewage ☐ Rancid ☐ Petroleum ☐ Sulfide/Rotten Egg	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ White/Cloudy	☐ 1 – Faint	☐ 2 – Clearly visible	☐ 3 – Clearly visible in outfall flow
Surface/Floatables	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum / Oil Sheen ☐ Other	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indication of origin	☐ 3 – Some; origin clear /obvious

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No ***(If No, Skip to Section 6)***

INDICATOR	DESCRIPTION	INDICATOR	DESCRIPTION
Outfall Damage	☐ Spalling, Cracking or Chipping ☐ Corrosion	Pipe benthic growth	☐ Brown ☐ Orange ☐ Green ☐ Black
Deposits/Stains	☐ Oily ☐ Flow Line ☐ Paint		

Section 6: Overall Outfall Illicit Discharge Characterization

☐ None ☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Follow Up Needed? ☐ Yes ☐ No

1.Return for In-depth sampling?	☐ Yes	☐ No	
2.Return to Re-inspect for Flow?	☐ Yes	☐ No	
3.Grab sample collected?	☐ Yes	☐ No	***If yes*, Sample ID:**
4.If yes, collected from:	☐ Flow	☐ Pool	

Section 8: Comments

Appendix B - Field Screening Equipment List

_____ Field Map(s)
_____ Digital Camera
_____ Cell phone or radio
_____ Emergency contact list
_____ Clipboard and pencil or water proof pens
_____ Field Screening Sheets
_____ First Aid Kit
_____ Flash Light
_____ Surgical Gloves
_____ Waders and/or Snake proof boots
_____ Safety Vest
_____ Insect repellant
_____ Machete/clippers (where needed)
_____ Sanitary wipes
_____ Backpack
_____ Clear sample bottles
_____ Test strips
_____ YSI Meter
_____ Safety goggles
_____ Dipper

If laboratory sample is taken:
_____ Cooler with ice
_____ Permanent marker
_____ Labeling tape
_____ One liter plastic sampling bottles or bottles provided by laboratory for samples
_____ Chain of custody sheet

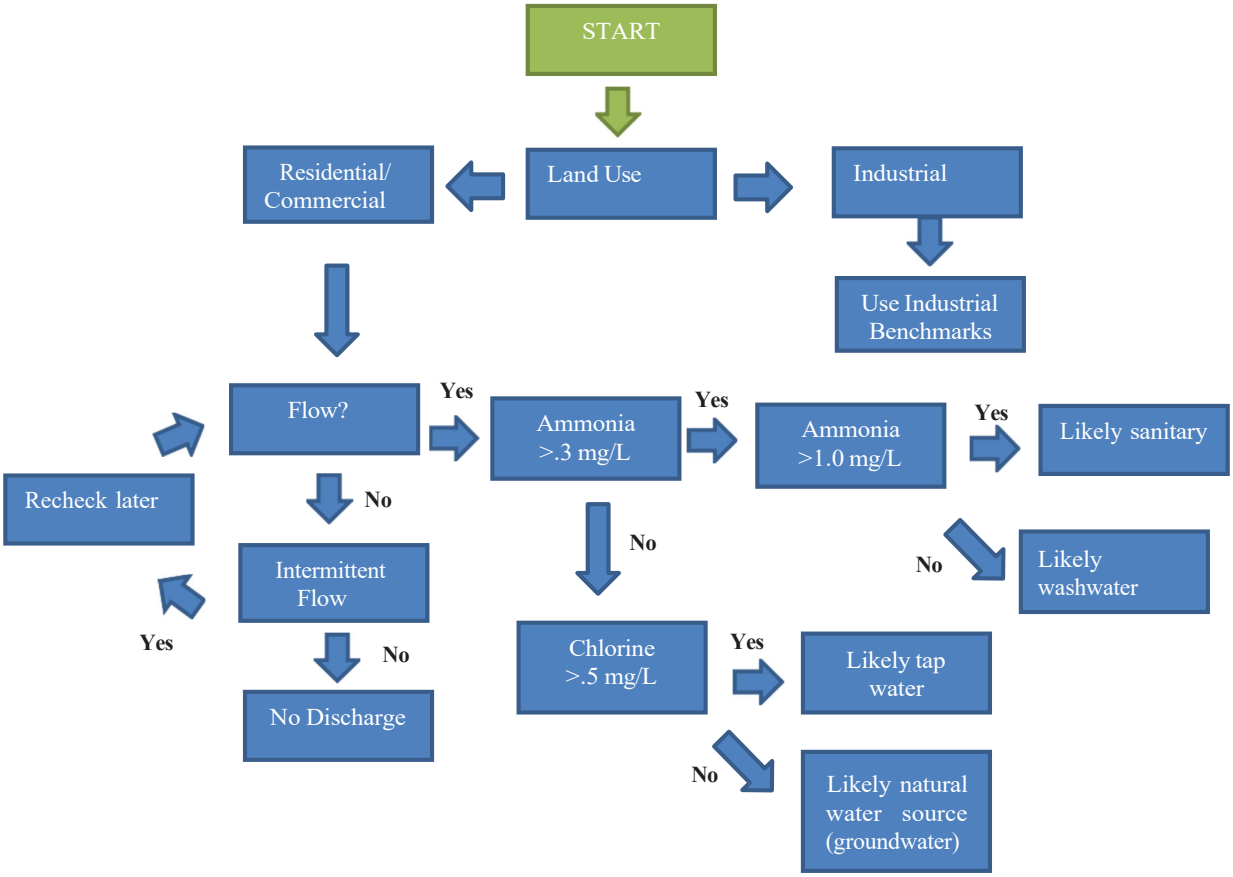
Appendix C - Field Screening Action Levels

Dissolved Oxygen:	< 4.0 mg/L ***
pH:	< 6.0 or > 9.0 ***
Temperature:	Nontidal waters >32°C***
Conductivity	> 400 uS/cm *
Ammonia	> 3 mg N/L***
Chlorine	>17 ug/L***

* No Federal EPA or State DEQ standard.

*** See 9VAC25-260-50

Appendix D - Flow Chart Method



Appendix E - Industrial Benchmarks

Indicator Parameter	Benchmark Concentration
Ammonia	> 50 mg/L
Color	> 500 units
Conductivity	>2,000 µS/cm
Hardness	> 2,000 mg/L as CaCO3
pH	<5

Appendix F - Contract Lab Sampling Procedures

Lab Sample Collection

1. Indicator samples are stored in a polyethylene plastic sample bottle that is opaque or clear unless otherwise directed by the contracting laboratory.
2. During sample collection, wear surgical gloves. Wash hands when sampling is complete.
3. Use a dipper or bailer for sample collection; make sure not to disturb any sediments or benthic growth in the pipe or conveyance system as the sample is taken.
4. Rinse all sampling bottles, dippers, and bailers used for sample collection three times with sample water before collecting the sample to be analyzed.
5. Fill sample bottle to top without touching inside of bottle lid or rim.
6. Add any necessary preservatives at the time of sample collection.
7. Label the bottle immediately.
8. Store samples at 4ºC (40ºF). Keep samples on ice in a cooler if necessary.
9. Return samples to the contracting laboratory within 24 hours, or time required for appropriate sample.
10. Complete the chain of custody as required by the contracting laboratory.

Appendix G - Sanitary Sewer Overflow Reporting Procedure

TITLE	Sanitary Sewer Overflow Response Plan
PROCEDURE #	TES-Maint-2012-08

SECTION 1: PURPOSE

1.1 The purpose of the City of Alexandria Sanitary Sewer Overflow Response Plan (SORP) standard operating procedure is to minimize the impact of sanitary sewer overflows (SSO's) to the public and the environment. The City of Alexandria will ensure that sanitary sewer overflows are responded to in a timely manner to expedite the necessary steps to relieve the overflow. Relieving the sewage blockage and spill containment is the City's highest priority, taking in to consideration public health concerns. This response plan will be the guideline for the standard operating procedures in the event of a sanitary sewer overflow. The response plan will be reviewed periodically to ensure that all corrective measures are being taken and to determine whether periodic staff training (including refresher and/or new employee training) may be warranted.

1.2 The plan includes the following elements:

a. Section 2: Response to Notification of Spills: The City of Alexandria has adopted service call/overflow response procedures requiring immediate response to minimize or eliminate an overflow.

b. Section 3: Initial Spill Response: This section includes standard operating procedures that ensure the notification of first responders during normal business hours and after business hours, spill assessment and volume estimation for notification and reporting purposes.

c. Section 4: Service Restoration & Containment: Procedures to ensure containment, termination, maximum recovery and cleanup of spilled sewage.

d. Section 5: Notification: Standard practices the City uses to secure the area surrounding a spill, post warning signs as necessary and provide notification to affected City departments/divisions, other impacted agencies and the public.

e. Section 6: Recordkeeping and Reporting: Practices, including procedures that link field records to the City's maintenance management system, and procedures for reporting spills, as required, to appropriate regulatory agencies.

SECTION 2: RESPONSE TO NOTIFICATION OF SPILL

a) The City of Alexandria has adopted service call/emergency response procedures and after-hours processes for calls requiring immediate response to minimize or eliminate an overflow (See Attachments). The City provides (or contracts with an emergency response contractor that provides) all necessary spill response supplies. These supplies are available for use at any time. The SOP is to aid staff in prompt and responsible SSO response.

b) When a notification of an SSO is received, it should be clearly communicated who will respond, the estimated time of arrival, and what areas will need to be accessed. The information provided by the caller should be verified before dispatching a field crew. This includes verifying the address and nearest cross street and making sure it is part of the City's conveyance system. If not, provide the caller with the phone number of the responsible agency and follow up by calling the agency and providing the details of the call.

Public Observation

c) Public observation is the most common way that the City is notified of blockages and spills. Contact information for reporting sewer spills and backups are in the phone book, City website and in many pieces of literature provided by the City. The main telephone number is (703) 746-4488; this line includes an option for 24-hour call response.

d) When a report of a sewer spill or backup is made during normal business hours, City call center staff receives the call, takes the information from the caller, and completes a Cityworks service request. For emergency sewer backups, spills or blockages, the call center staff verbally communicates (does not leave a voicemail) appropriate information to the Sewers Superintendent or designee along with any information collected from other field reports. The Superintendent then notifies the City's Sewer Inspector and sewer response team, which responds to the incident as soon as possible.

Staff Observation

e) City staff and contractors perform periodic maintenance work on its sewer system facilities. Any problems noted with the sewer system facilities are reported to the Superintendent who, in turn, responds to emergency situations.

SECTION 3: INITIAL SPILL RESPONSE

3.1 All sewer system calls require a response to the reported location of the event in an attempt to minimize or eliminate an overflow. The first responder (Sewer Inspector during normal business hours or City Standby staff during after-hours) must respond to the reporting party or site of the problem and initiate response activities within 60 minutes after initial reporting of the spill to the City. If a responder cannot be at the spill location within 60 minutes after the spill, then the responder must notify the Sewers Superintendent who will dispatch other available staff or emergency contractors.

3.2 The first responder should determine appropriate response measures based on the circumstances and information provided by the caller (e.g. weather and traffic conditions, small backup vs. sewage flowing on the ground, etc.). If additional help is needed, contact other employees, contractors, and/or equipment suppliers. Based on available information, the first responder should determine if a combination sewer cleaning truck and/or a spill response vehicle is needed.

3.3 Upon arrival at the site, the first responder should:

- Note arrival time at spill site.
- Verify the existence of a sewer system spill or backup.
- Field verify the address and nearest cross street, making sure it is part of the City's sewer/conveyance system.
- Identify and clearly assess the affected area and extent of spill. If the spill is small (i.e. less than 50 gallons) an eyeball estimate may be made. If the spill appears large (i.e. greater than 50 gallons), staff should work with a Sewer Inspector or Sewer Superintendent to measure the volume. The shape, dimensions, and the depth of the contained wastewater are needed. The shape and dimensions are used to calculate the area of the spills and the depth is used to calculate the volume. In the event of a significant spill, the City Engineering Department or Office of Environmental Quality may be required to compute the spill volume using the duration or flowrate methods.
    - *To determine the volume of a large spill (i.e. larger than 50 gallons) refer to thefollowing process:*
        - Step 1 Sketch the shape of the contained sewage (see figure above).
        - Step 2 Measure or pace off the dimensions.
        - Step 3 Measure the depth at several locations and select an average.
        - Step 4 Convert the dimensions, including depth, to feet.
        - Step 5 Calculate the area in square feet using the following formulas: Rectangle: Area = length (feet) x width (feet); Circle: Area = diameter (feet) x diameter (feet) x 0.785 or Triangle: Area = base (feet) x height (feet) x 0.5
        - Step 6 Multiply the area (square feet) times the depth (in feet) to obtain the volume in cubic feet.
        - Step 7 Multiply the volume in cubic feet by 7.5 to convert it to gallons.
- Comply with all safety precautions (traffic, confined space, etc).
- Contact caller, if time permits.
- Notify the Sewer Superintendent and Maintenance Division Chief if:
    - The spill appears to be large, in a sensitive area, or there is doubt regarding the extent, impact, or how to proceed; or
    - Additional help is needed for line cleaning or repair, containment, recovery, lab analysis, and/or site cleanup
- Begin completion of the Form 0- SSO Overflow Reporting Form

SECTION 4: SERVICE RESTORATION AND CONTAINMENT

Initial Assessment

4.1 Upon arrival at the location of a spill into a house or a building, the first responder should evaluate and determine if the spill was caused by a blockage in the lateral or in a City-owned sewer main, caused either by a backup in the sewer main line or nearby operations and maintenance activities.

- If a blockage is found in a property owner's lateral, it should be clearly communicated that it is not the City's responsibility to work on a private lateral.
- If a backup in the main line is found to have caused the SSO in a house or building, the first responder should relieve the blockage in the main line and provide the resident with information on claims.

Service Restoration

4.2 The first responder should attempt to remove the blockage from the system and restore flow to the area. Using the appropriate cleaning tools, the field crew should set up downstream of the blockage and flush/hydroclean the sewer upstream from a clear manhole. The flows should be observed to ensure that the blockage does not recur downstream.

4.3 If the blockage is not relieved within the first few attempts (20 minutes), it is crucial that bypass procedures are followed immediately:

4.3.1 Locate the nearest downstream manhole that can accept the additional flow.

4.3.2 Set up a 3-inch pump for smaller collection lines, and the 6-inch pump for larger transmission lines, this should be used as a guideline, be advised that larger pumps may be needed. The pump discharge hose should be secured or placed far enough into the manhole that it will not come out during pumping. The pump and pump hose should be protected from traffic by barricades. If additional pumps are needed, they shall be rented from: Flippo Construction Company, 703.370.8778.

Containment & Clean Up

4.4 The first responder should attempt to contain as much of the spilled sewage as possible using the following steps:

- Determine the immediate destination of the overflowing sewage
- Plug storm drains using available equipment and materials to contain the spill, wherever appropriate. If spilled sewage has made contact with the storm drainage system, attempt to contain the spilled sewage by plugging downstream storm drainage facilities
    - Arrange for removal of spilled sewage or debris from storm drainage system through use of vacuum truck and/or bypass pumping
- Contain/direct the spilled sewage using dike/dam or sandbags

- Pump around the blockage/pipe failure/pump station or vacuum flow from upstream of the blockage and dispose of downstream of the blockage to prevent further overflow.

SSOs on Private Properties

4.5 When an SSO occurs inside of a house or building and is due to a City line backup, the first responder should instruct the property owner should be instructed to follow these guidelines:

- Keep all family members and pets away from the affected area.
- Place towels, rags, blankets, etc. between areas that have been affected and areas that have not been affected.
- Do not remove any contaminated items.
- Turn off the HVAC system.
- Move any uncontaminated property away from the overflow area.

The homeowner is responsible for clearing any blockage in the home's plumbing system or private lateral and for any resulting flood damage to the structure. The homeowner is also responsible for damage that happens because a lateral was not properly installed. Spills inside houses or buildings should be cleaned up by a professional cleaning company. Contact information for professional cleaning companies can be found in the "Water Damage Restoration" section of the Yellow Pages.

If the sewage backup is located inside a building or on private property and the backup was caused by a blockage in the public sewer main, the City may be responsible for cleanup and restoration. If this is the case, the City may arrange for a water damage restoration company. Claims by homeowners, if applicable, should be submitted based on information in Section 5.4 of this document.

SSOs on External/Hard Surfaced Areas

4.6 When an SSO occurs in an external location and is due to a City main, staff will make every effort to restore the environment to the condition that existed before the SSO occurred by using the procedures outlined below.

- Collect all signs of sewage solids and sewage-related material either by hand, vacuum or with the use of rakes and brooms and discharge it back into the sanitary sewer system.
- Take reasonable steps to contain and vacuum up the wastewater.
- Disinfect all areas that were contaminated from the overflow using the disinfectant solution of household bleach diluted 10:1 with water. Apply minimal amounts of the disinfectant solution using a hand sprayer. Document the volume and application method of disinfectant that was employed.
- Allow area to dry. Repeat the process if additional cleaning is required.

SSOs on External/Landscaped and Unimproved Natural Vegetation

4.7 When an SSO occurs in an external location such as a natural area and is due to a City main, staff will make every effort to restore the environment to the condition that existed before the SSO occurred by using the procedures outlined below.

- Collect all signs of sewage solids and sewage-related material either by hand, vacuum or with the use of rakes and brooms and discharge it back into the sanitary sewer system.
- Allow the area to dry. Repeat the process if additional cleaning is required.
- Recover any sewage within storm drains, channels, curb, gutters, and culverts.
- Clear surrounding area of paper, solids, and any other signs of a SSO.
- City forces will replace vegetation, sidewalks, asphalt, fencing or any other items that were damaged as a result of the SSO or the crews working to restore service.

Clean Up and Disinfection

4.8 Clean up and disinfection procedures should be implemented to reduce the potential for human health issues and adverse environmental impacts that are associated with an SSO event. The procedures described are for dry weather conditions and should be modified as required for wet weather conditions. Where clean-up is beyond the capabilities of City staff, a cleanup contractor will be used.

SECTION 5: NOTIFICATION

SSOs that do not Reach Public Waters

5.1 For spills that are contained and do not release unrecovered sewage into a storm drain, stream or a surface water body, notification to the public shall be accomplished through the use of signs at the location of the spill. The signs shall be left in place for a term of five business days.

5.1.1 City T&ES staff, Maintenance Division Chief (15t) or Sewer Superintendent (2"), shall notify the City Fire Department's Environmental Investigations Unit (EIU) emergency notification email list of all SSOs in order to provide notification to public safety and Office of Environmental Quality staff. All notices to the EIU shall reference the location of the SSO, the date and time discharge was discovered, volume, action being taken, whether it has reached the storm system and/or surface waters, and the appropriate Cityworks service request number.

Spills that Reach Public Waters - City OEQ Requirements

5.2 The Deputy Director of the T&ES Office of Environmental Quality (or designee) shall be notified if an SSO has reached the storm sewer system and/or a surface water. OEQ staff will determine if further investigation of the discharge site and potentially affected areas is required. OEQ will assist in verifying the extent of the contamination in the field. OEQ will be responsible for reporting to the state as required (see Section 6.3). Information in

the required reports will be largely based on Form 0 - SSO Overflow Reporting Form referenced in Section 3.3, Cityworks, and/or discussions with knowledgeable staff.

The City of Alexandria Health Department has the authority to close and re-open water bodies for public water contact. The water bodies affected are determined by the following parameters and best professional judgment:

- The volume of sewage discharged;
- Parameters affecting flow of sewage to the water bodies;
- Direction of current;
- Tides;
- Past experience in the area; and/or
- Any other pertinent information.

Point of Contact

5.3 Working with the Office of Communications and Public Information, and the T&ES Public Information Officer, the T&ES Maintenance Division Chief shall be responsible for coordinating public notification, if necessary, for SSOs not reaching waters of the state; and the Deputy Director of T&ES, Office of Environmental Quality (or designee), in coordination with T&ES Maintenance Staff, shall be responsible for public notification, if necessary, for SSOs that may be reasonably expected to reach surface waters.

5.4 If the 550 has occurred in a building or residential property and is attributable to a blockage in a City main, the responder or the City Sewer Inspector shall:

- Gather information and fill out a Sewer Backup Summary Report.
- Notify the Maintenance Division Chief of the incident.
- Wait for restoration firm to arrive (if required).
- Forward incident reports and related documents to Maintenance Division Chief.
- For potential claims, contact the City's office of Risk Management and provide contact information to the resident.

SECTION 6: RECORDKEEPING & REPORTING

Internal SSO Documentation

6.1 The first responder will complete a Cityworks work order and a Field Report/Daily Sheet form. The first responder will follow the procedures and complete the Sewer Backup Summary Report if an SSO has occurred in a residence or building. The Maintenance Division Chief will prepare a file for each individual SSO. The file should include the following information:

- Initial service call information with a completed Cityworks service request
- City of Alexandria service request call field report/daily sheet form

- Copies of the City of Alexandria service request and work order forms, which should reference a volume estimate within the notes
- Closed-Circuit Television (CCTV) inspection (this is optional for SSOs that are not blockage related)
- Water quality sampling and test results, if applicable

External SSO Documentation

6.2 The City maintains SSO records for five years from the date of the SSO. All records shall be made available for review upon request. Records shall be retained for all SSOs, including but not limited to the following when applicable:

- Copy of Cityworks service requests and work orders;
- All original recordings for continuous monitoring instrumentation;
- Service call records and complaint logs of calls received by the City;
- SSO calls and SSO records;
- Steps that have been and will be taken to prevent the SSO from recurring and a schedule to implement those steps;
- Work orders, work completed, and any other maintenance records from the previous five years which are associated with responses and investigations of system problems related to SSOs;
- A list and description of complaints from customers or others from the previous five years; and
- Documentation of performance and implementation measures for the previous five years.

Reports to the State for Unauthorized Discharges

6.3 Discharges of sewage from an SSO that may reasonably be expected to enter surface waters shall be reported to the Virginia Department of Environmental Quality (VDEQ) immediately upon discovery of the discharge, but in no case later than within 24 hours after discovery. OEQ will utilize VDEQ's Pollution Response Program (PREP) online reporting to accomplish the 24 hour reporting. A written report of the unauthorized discharge shall be submitted by OEQ to VDEQ and the Virginia Department of Conservation and Recreation (DCR) within five days of the discovery of the discharge. OEQ will make the 24 hour notice and be responsible for final delivery of the five-day report. The written report shall contain the following, as noted on Form 0:

1. A description of the nature and location of the discharge;
2. The cause of the discharge;
3. The date on which the discharge occurred;
4. The length of time that the discharge continued;

5. The volume of the discharge;
6. If the discharge is continuing, how long it is expected to continue;
7. If the discharge is continuing, what the expected total volume of the discharge will be; and
8. Any steps planned or taken to reduce, eliminate and prevent a recurrence of the present discharge or any future discharges not authorized by this permit.

Appendix H – Fire Marshal Notice of Violation Form

ALEXANDRIA FIRE DEPARTMENT – FIRE PREVENTION & LIFE SAFETY
OFFICE OF THE FIRE MARSHAL

NOTICE TO CORRECT: ☐	NOTICE OF VIOLATION: ☐			OTHER: ☐
LOCATION OF INSPECTION:	BOX:	CENSUS:	DATE:	CASE#:
RECEIVED BY:	PERSON RESPONSIBLE FOR PROPERTY:	ADDRESS:		DAY PHONE:
COMPLAINANT:	ADDRESS:	WORK PHONE:		HOME PHONE:
COMPLAINT ☐ PROACTIVE ☐	DETAILS OF COMPLAINT:			
COMPLAINANT TO BE CONTACTED WITH INSPECTION RESULTS: YES:___ NO:___ DATE CONTACTED:				
FINAL DISPOSITION: ABATED: ☐ UNFOUNDED: ☐ APPROVED: ☐ DENIED: ☐ REVOKED: ☐ APPEARS TO COMPLY: ☐		ISSUING FM: CONTACT NUMBER:		

CODE SECTION	DESCRIPTION

NOTE: VIOLATIONS MUST BE CORRECTED PRIOR TO:_____. FAILURE TO COMPLY WITH THIS ORDER MAY SUBJECT YOU TO PENALTIES AS PRESCRIBED BY LAW. IF YOU WANT TO APPEAL THIS NOTICE YOU MAY DO SO IN ACCORDANCE WITH SECTION 112.5 OF THE STATEWIDE FIRE PREVENTION CODE OR 106.5 OF THE VIRGINIA MAINTENANCE CODE.

FIRE MARSHAL _____ DATE _____ RECEIVED BY _____

Appendix I - Civil Penalties Notice of Violation

NOTICE OF VIOLATION AND ORDER TO CORRECT

YOU ARE CHARGED WITH VIOLATING THE CODE OF THE CITY OF ALEXANDRIA, VIRGINIA

_____
Date of Violation Time AM/PM

Location of Violation: _____
_____
_____

Description of Violation:
_____
_____

Violation Section

☐ Illegal Dumping Sec. 11-13-2

☐ Unlawful accumulation or storage of waste Sec. 11-13-3

☐ Failure to keep property clean from waste Sec.11-13-4

☐ Failure to remove materials from vehicle accident Sec.11-13-5

☐ Other _____
_____
_____

Order To Correct:
You are hereby ordered to correct the violation:

☐ Immediately

☐ Within _____ days

Type of Notice and Civil Penalty:

_____ Warning (No Penalty)

_____ 1st Violation ($100)

_____ 2nd Violation ($250)

_____ 3rd or subsequent violation within 24 months ($500)

NOTICE SERVED TO:

_____
Name (Last) (First) (Middle)

PROPERTY OWNER: _____ Yes _____ No _____ NA

OPERATOR /DRIVER: _____ Yes _____ No _____ NA

_____
Company Name (if applicable) Position

_____
Home/ Business Address

_____
City / County / Town State Zip Code

_____
License / Permit Number Type State

IMPORTANT INFORMATION FOR VIOLATOR

UNLESS THE WARNING ONLY (NO PENALTY) LINE IS CHECKED, YOU ARE REQUIRED TO RESPOND TO THIS NOTICE OF VIOLATION WITHIN 15 DAYS OF THE "DATE OF NOTICE" WRITTEN IN THE UPPER RIGHT CORNER OF THIS NOTICE OF VIOLATION. FAILURE TO RESPOND WILL RESULT IN THE FILING OF CIVIL LAWSUIT IN COURT TO ENFORCE THE PENALTY IMPOSED FOR THE VIOLATION DESCRIBED IN THIS NOTICE.

FAILURE TO CORRECT THE VIOLATION WITHIN THE STATED TIME MAY RESULT IN THE ISSUANCE OF A CRIMINAL WARRANT OR SUMMONS.

ON THE BACK OF THE VIOLATORS COPT YOU WILL FIND INSTRUCTIONS TELLING YOU HOW TO RESPOND TO THIS NOTICE OF VIOLATION.

Ticket No._____

CERTIFICATION OF ISSUING AGENT

DATE OF NOTICE: _____

I HEREBY CERTIFY that I am an employee of the City of Alexandria or the Commonwealth of Virginia. That I personally observed or witnessed the violation noted above, and that on the Date of Notice, a copy of this Notice of Violation and Order to Correct was

☐ hand delivered to _____
_____ (Name);

☐ mailed to_____
_____ (Address);
_____

☐ posted at the location of the violation.

_____
Signature

_____
Print Name Title

_____ Violator's Copy

_____ Department of Finance copy (Box 12)

_____ City Attorney's office copy (Box 5)

_____ T&ES copy

I ACKNOWLEDGE RECEIPT OF THIS NOTICE OF VIOLATION

_____
Signature Date

How to Respond to this Notice of Violation

If the "Civil Penalty" line on the front of this Notice of Violation contains a dollar figure, a civil penalty has been imposed. In that case, you must, within 15 days of the "Date of Notice" shown on the front of this Notice, take the steps listed in either Part A or Part B, below:

PART A

Pay penalty and waive your right to a hearing:

- In the "Certification" section check either "Admit Violation" or "No Contest", and sign on the "Signature" line.

  By checking "Admit Violation", you agree that the violation listed on the front of this Notice occurred at the date, time and place stated. You agree, further, to abate the violation as required by state law.

  By checking "No Contest", you decline to challenge the violation although you do not agree that the violation occurred.

- **Payment by check:** Make out a personal check or obtain a money order, certified check or cashier's check, payable to "City of Alexandria", in the amount stated on the "Civil Penalty" line on the front of this Notice. On the front of the check or money order, print the Notice number (found in the upper right corner on the front of this Notice.)

  Send by mail or hand-deliver the check or money order, **together with this completed Notice**, to the Treasury Office, City Hall, Room 1510, 301 King Street, Alexandria, VA 22314. Office hours are weekdays, 8 a.m. to 5 p.m.

- **Payment by cash:** Hand-deliver the amount stated on the "Civil Penalty" line on the front of this Notice, **together with this completed Notice**, to the Treasury Office, City Hall, Room 1510, 301 King Street, Alexandria, VA 22314. Office hours are weekdays, 8 a.m. to 5 p.m. **Do not send cash through the mail.**

PART B

To contest penalty and obtain a court hearing at which you may present evidence showing that the violation noted on the front of this Notice did not take place:

- In the "Certification" section, below, check the "Contest Violation" line.
- Mail or hand-deliver this notice to the Office of the City Attorney, City Hall, Room 1300, 301 King Street, Alexandria, VA 22314. Office hours are weekdays, 8 a.m. to 5 p.m.

  After the City Attorney's receipt of the Notice, a date will be set for trial in the Alexandria General District Court. You will be notified of the trial date.

CERTIFICATION

You must complete and sign this certification:

☐ Admit Violation

☐ No contest

☐ Contest violation

Name (print) _____

Street Address _____

City/county _____ State____ Zip _____

Signature _____

Date _____

City of Alexandria

MS4 Outfalls and Points of Discharge

PL 25

PL 26

PL 28

000464IO 000466IO 000459IO 000422IO 000445IO 000639IO 000641IO 000646IO 000606IO 000359IO 000449IO 000652IO 000011IO 000081IO 000468IO 000433IO 000353IO 000113IO 000115IO 000020IO 000602IO 000439IO 000583IO 000644IO 000138IO 000144IO 000145IO 000603IO 000645IO 000424IO 000438IO 000109IO 000387IO 000394IO 000604IO 000038IO 000498IO 000374IO 000192IO 000201IO 000409IO 000591IO 000327IO 000325IO 000504IO 000196IO 000200IO 000648IO 000398IO 000195IO 000326IO 000544IO 000473IO 000330IO 000077IO 000522IO 000526IO 000588IO 000647IO 000185IO 000474IO 000590IO 000183IO 000076IO 000530IO 000288IO 000273IO 000101IO 000647IO 000275IO 000104IO 000533IO 000536IO 000620IO 000629IO 000166IO 000100IO 000476IO 000094IO 000278IO 000060IO 000651IO 000286IO 000162IO 000121IO 000177IO 000481IO 000348IO 000158IO 000159IO 000048IO 000550IO 000592IO 000610IO 000128IO 000548IO 000608IO 000613IO 000632IO 000649IO 000489IO 000577IO 000242IO 000622IO 000249IO 000251IO 000624IO 000487IO 000628IO 000232IO 000240IO 000611IO 000345IO 000580IO 000575IO 000623IO 000496IO 000635IO 000224IO 000332IO 000313IO 000495IO 000347IO 000638IO 000637IO 000494IO 000631IO

Legend

Outfall Types

- Outfall
- Outfall - Pond
- Point of Discharge
- City Boundary Line

HUC

- PL25
- PL26
- PL28

N

0 0.25 0.5 1 Miles

City of Alexandria
Outfall and Point of Discharge Table

Outfall ID	Estimated MS4 Acreage Served (acres)	Receiving Water	Ultimate Receiving Water	Ultimate Receiving Water Impairment*	TMDLs	Type	HUC	Latitude Decimal Degrees	Longitude Decimal Degrees
000001IO	7.89	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11886440.46	6984163.82
000002IO	13.11	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887433.77	6985111.699
000003IO	7.70	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11886723.66	6983909.517
000004IO	6.82	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11886768.19	6983959.464
000005IO	9.26	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11886527.7	6983494.552
000008IO	5.16	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11885959.42	6984253.376
000010IO	28.90	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11884893.22	6983957.149
000015IO	260.86	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11886772.62	6985948.308
000016IO	10.53	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887114.73	6985732.021
000017IO	6.29	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887237.89	6985607.025
000041IO	31.67	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888852.69	6981534.963
000042IO	0.61	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888839.71	6981576.72
000043IO	2.93	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888978.05	6981101.434
000044IO	22.51	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11889063.01	6981533.091
000045IO	6.09	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888946.51	6980279.499
000048IO	26.41	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11889082.33	6980591.082
000050IO	13.52	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888159.24	6983592.744
000051IO	6.27	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888369.04	6983123.82
000052IO	2.35	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888399.7	6982932.266
000053IO	0.71	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888415.94	6982864.731
000054IO	0.94	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888419.47	6982706.854
000055IO	21.02	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888460.54	6982655.803
000056IO	17.93	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888447.75	6982658.441
000057IO	2.06	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888681.1	6982256.677
000058IO	2.47	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888674.7	6982076.896
000059IO	4.38	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888760.68	6981795.462
000060IO	4.15	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888738.67	6982030.953
000061IO	0.96	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888613.22	6982314.863
000062IO	3.21	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888098.71	6983638.702
000063IO	0.13	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888118.97	6983622.493
000064IO	3.77	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888245.47	6983276.601
000065IO	1.32	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888285.14	6983309.497
000067IO	1.74	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888375.89	6982913.114
000068IO	3.26	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887349.24	6983366.923
000069IO	0.74	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887298.84	6983388.581
000070IO	2.71	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887704.72	6982949.739
000074IO	83.60	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11885800.97	6984307.115
000075IO	0.06	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11885834.11	6984309.427
000076IO	3.17	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887379.89	6984905.205
000077IO	3.78	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887269.74	6985371.613
000100IO	3.27	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887473.68	6983140.415
000101IO	2.47	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887067.13	6983467.829
000105IO	2.88	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11871772.65	6988871.466
000106IO	1.34	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872351.47	6988913.388

*Impairment information is based on the 2022 305(b)/303(d) Water Quality Assessment Integrated Report (Part I.E.3.a.(2)(f)).

City of Alexandria
Outfall and Point of Discharge Table

Outfall ID	Estimated MS4 Acreage Served (acres)	Receiving Water	Ultimate Receiving Water	Ultimate Receiving Water Impairment*	TMDLs	Type	HUC	Latitude Decimal Degrees	Longitude Decimal Degrees
000107IO	0.54	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11871868.81	6988632.407
000108IO	0.18	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11871717.05	6988957.849
000109IO	21.82	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11871709.92	6988392.875
000111IO	6.81	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872121.4	6987563.654
000112IO	12.47	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873633.7	6989781.374
000116IO	24.22	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11875459.07	6989850.611
000137IO	2.90	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11875428.37	6989580.595
000138IO	54.02	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873477.22	6989249.213
000139IO	13.28	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11876210.96	6989363.584
000140IO	36.50	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876260.94	6988957.362
000141IO	7.02	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876271.96	6988924.012
000144IO	39.79	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875529	6989042.071
000145IO	23.06	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11876612.34	6989189.499
000148IO	2.62	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11878443.82	6980994.703
000149IO	174.66	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11878439.43	6981085.436
000150IO	1.08	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11878394.06	6981111.526
000160IO	10.72	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11878082.06	6981564.146
000167IO	19.08	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11877911.78	6981936.063
000168IO	6.11	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11877136.98	6982486.439
000187IO	33.71	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872480.58	6986519.899
000188IO	0.14	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872719.14	6986432.001
000189IO	53.32	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872727.84	6986390.825
000190IO	0.20	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872609.86	6986480.859
000191IO	18.63	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872162.41	6987222.227
000192IO	3.49	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872157.94	6987385.018
000193IO	9.44	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872820.91	6986465.417
000194IO	5.16	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872716.75	6986195.981
000196IO	26.43	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873082.39	6986343.762
000199IO	19.72	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11874431.35	6986442.873
000205IO	2.79	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11874958.15	6983625.44
000206IO	17.30	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11874658.4	6983959.895
000207IO	37.93	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873856.13	6984375.101
000208IO	1.33	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873960.35	6984405.523
000209IO	15.08	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11874220.58	6984243.16
000210IO	2.83	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11874028.17	6984111.987
000211IO	54.30	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11874299.01	6983950.406
000261IO	25.97	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875441.23	6983386.159
000262IO	139.25	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875796.74	6983158.759
000263IO	10.01	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876249.98	6983015.281
000264IO	119.20	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876474.07	6982840.734
000266IO	31.26	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876489.67	6983233.711
000267IO	0.29	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876482.58	6983243.472
000268IO	85.06	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876603.31	6983160.824
000269IO	43.19	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875185.9	6983294.572

*Impairment information is based on the 2022 305(b)/303(d) Water Quality Assessment Integrated Report (Part I.E.3.a.(2)(f)).

City of Alexandria
Outfall and Point of Discharge Table

Outfall ID	Estimated MS4 Acreage Served (acres)	Receiving Water	Ultimate Receiving Water	Ultimate Receiving Water Impairment*	TMDLs	Type	HUC	Latitude Decimal Degrees	Longitude Decimal Degrees
000270IO	8.66	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875394.33	6983279.187
000271IO	7.08	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11874773.85	6983567.035
000274IO	0.95	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875664.7	6983084.295
000275IO	0.89	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875749.91	6983031.874
000276IO	5.38	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876040.87	6982862.205
000277IO	17.22	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876358.23	6982198.8
000278IO	3.14	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876731.02	6982030.494
000299IO	1.45	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11892314.2	6976838.147
000300IO	2.08	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11892091.22	6977100.812
000301IO	0.03	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11892488.42	6976728.197
000302IO	7.41	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11892373.97	6976944.812
000303IO	0.10	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11891237.48	6977672.186
000305IO	0.19	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11891328.29	6977688.155
000306IO	24.47	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11891627.92	6977488.735
000307IO	2.03	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11891596.3	6977417.922
000308IO	1.80	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893291.47	6977448.84
000309IO	0.00	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893279.27	6976636.308
000311IO	0.00	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893358.07	6977170.991
000312IO	0.00	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893321.63	6976970.877
000313IO	0.00	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893377.67	6977385.415
000314IO	0.00	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893216.82	6976125.102
000315IO	0.88	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11892427.5	6976535.047
000329IO	13.88	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873089.95	6985731.367
000330IO	45.37	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873471.42	6985145.152
000332IO	3.19	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11889021.66	6977964.611
000333IO	2.47	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888756.38	6978667.449
000339IO	31.53	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893835.8	6979007.152
000340IO	1.10	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893771.36	6978878.931
000341IO	9.18	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893770.71	6978765.68
000342IO	22.90	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893687.46	6978645.541
000343IO	1.16	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11891144.8	6977778.141
000345IO	3.97	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893347.93	6977952.632
000477IO	6.17	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899425.95	6980856.343
000499IO	115.43	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887957.9	6987122.845
000500IO	13.08	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887977.39	6987119.421
000501IO	0.02	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887985.29	6987106.255
000503IO	0.16	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887961.33	6987104.763
000509IO	0.07	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888189.54	6986745.918
000510IO	14.54	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888289.4	6986308.817
000511IO	6.78	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888524.98	6985738.758
000512IO	1.76	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888635.96	6985228.64
000513IO	4.14	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888607.65	6985390.952
000514IO and 000516IO	1.94	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888733.03	6985216.088

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City of Alexandria
Outfall and Point of Discharge Table

Outfall ID	Estimated MS4 Acreage Served (acres)	Receiving Water	Ultimate Receiving Water	Ultimate Receiving Water Impairment*	TMDLs	Type	HUC	Latitude Decimal Degrees	Longitude Decimal Degrees
000517IO	1.80	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888852.75	6985058.527
000518IO	13.55	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11889036.06	6984809.284
000519IO	3.38	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11889194.24	6984492.096
000520IO	2.29	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11889264.36	6984339.698
000521IO	10.49	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888973.7	6984889.746
000522IO	3.85	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888592.34	6985576.612
000527IO	35.68	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11889265.48	6984379.21
000528IO	4.07	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11890503.11	6983766.34
000529IO	0.22	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887734.92	6984458.919
000530IO	5.78	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887900.99	6984281.077
000535IO	2.15	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11890630.67	6983613.107
000536IO	1.78	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11890625.82	6983589.708
000575IO	61.89	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11890841.65	6977825.425
000153IO	0.09	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11878002.88	6981297.641
000154IO	2.22	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11878024.15	6980434.469
000155IO	2.41	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11877378.05	6980380.58
000156IO	83.18	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11877308.78	6980532.431
000158IO	45.24	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11877375.12	6980585.74
000162IO	48.37	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11877978.71	6981527.501
000213IO	13.49	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873099.89	6978734.989
000214IO	0.22	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873553.67	6979339.892
000216IO	36.07	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11871219.53	6978269.913
000218IO	0.53	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872192.49	6978410.296
000219IO	0.32	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872310.74	6978543.623
000220IO	0.31	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872625.8	6978511.084
000279IO	21.82	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873428.97	6979692.276
000608IO and 000609IO	152.21	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11871233.5	6979481.27
000580IO	5.39	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11870862.82	6977900.473
000146IO	143.54	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11880028.61	6980493.867
000147IO	9.96	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11878503.95	6980523.88
000159IO	23.57	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11879694.56	6980577.07
000098IO	77.58	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11886181.22	6981682.23
000099IO	4.21	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11886160.13	6981666.553
000151IO	0.00	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11879169.15	6979988.369
000171IO	1.13	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11886177.99	6981349.272
000175IO	5.45	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11885280.29	6979647.181
000177IO	9.62	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11886138.29	6981566.832
000222IO	13.74	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875007.37	6978513.511
000223IO	4.80	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875712.95	6978751.43
000225IO	28.11	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876049.89	6978885.445
000230IO	10.54	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876542.26	6979011.289
000232IO	18.68	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11874274.07	6978307.225
000233IO	15.55	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11877981.82	6979339.378

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City of Alexandria
Outfall and Point of Discharge Table

Outfall ID	Estimated MS4 Acreage Served (acres)	Receiving Water	Ultimate Receiving Water	Ultimate Receiving Water Impairment*	TMDLs	Type	HUC	Latitude Decimal Degrees	Longitude Decimal Degrees
000234IO	0.29	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11880444.26	6979011.491
000235IO	2.06	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11880161.03	6978883.289
000236IO	2.68	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11880066.59	6978921.541
000237IO	5.60	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11879597.06	6979186.565
000239IO	18.36	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11879399.17	6979351.053
000242IO	15.37	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11877266.2	6979195.948
000243IO	0.61	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11880835.6	6978979.844
000244IO	0.55	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11881283.49	6978950.336
000245IO	14.37	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11881322.96	6979451.111
000247IO	1.61	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11883173.19	6978796.949
000248IO	3.90	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11882964.55	6978815.446
000249IO	1.14	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11881661.07	6978924.296
000250IO	1.65	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11882117.72	6978880.28
000251IO	4.70	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11883525.38	6978752.362
000257IO	0.02	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11885199.34	6978557.125
000258IO	9.15	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11885013.64	6978565.314
000259IO	2.07	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11884485.44	6978625.494
000260IO	0.73	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11885358.9	6978545.929
000611IO and 000612IO	183.43	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11886156.54	6978395.62
000614IO and 000615IO	22.16	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11885351.2	6979617.37
000613IO	50.79	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11884484.87	6979664.457
000023IO	21.09	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall - Pond	PL25	11881862.88	6989104.991
000024IO	1.83	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall - Pond	PL25	11881871.58	6989023.44
000025IO	27.84	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall - Pond	PL25	11881734.63	6988996.356
000294IO	28.57	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11879517.26	6989272.799
000295IO and 000603IO	165.48	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11879527.29	6989274.32
000414IO	0.44	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11892303.12	6993182.401
000415IO	5.16	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11892632.15	6993149.696
000416IO	12.84	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11893091.67	6992445.754
000417IO	129.85	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11891391.27	6993589.596
000418IO	0.87	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11891536.69	6993657.921
000419IO	0.89	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11891232.3	6993525.851
000420IO	2.37	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11890977.69	6993440.809
000422IO	44.02	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11892133.87	6993252.545
000423IO	0.93	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11893066.17	6991568.178
000424IO	49.26	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11890056.31	6989201.547
000426IO	14.14	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11893722.17	6992206.379
000427IO	1.93	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11893389.3	6991573.821
000428IO	4.76	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11893386.94	6991574.315
000429IO, 000605IO, 000606IO	283.02	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11893493.05	6991573.139

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Outfall ID	Estimated MS4 Acreage Served (acres)	Receiving Water	Ultimate Receiving Water	Ultimate Receiving Water Impairment*	TMDLs	Type	HUC	Latitude Decimal Degrees	Longitude Decimal Degrees
000430IO	0.58	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11893527.94	6991655.21
000431IO and 000432IO	175.22	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11892922.94	6991532.446
000450IO	8.16	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11895169.35	6992340.963
000451IO	5.87	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11895361.1	6992393.396
000452IO and 000600IO	18.22	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11894838.04	6992290.594
000454IO	130.45	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11887681.57	6993316.229
000456IO	55.69	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11890367.89	6993456.194
000457IO	0.11	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11889812.16	6993494.613
000458IO	0.47	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11889878.84	6993519.764
000459IO	0.57	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11889767.66	6993458.942
000460IO	1.74	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11889087.66	6993356.607
000461IO	2.05	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11888131.58	6993375.136
000462IO	3.33	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11888229.8	6993334.763
000463IO	18.86	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11888959.42	6993335.478
000464IO	0.51	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11887016.52	6993114.02
000465IO	51.04	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11887236.44	6993171.464
000466IO	0.70	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11887363.62	6993154.696
000079IO	0.23	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11878392.77	6991456.818
000011IO	3.70	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11878084.23	6991300.581
000084IO	34.44	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11877732.58	6990995.936
000087IO	28.12	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11877733.56	6990992.406
000353IO	0.00	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897269.55	6991045.02
000361IO	210.26	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11896259.78	6992413.289
000379IO	0.00	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11898226.43	6989274.819
000381IO	0.00	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11898173.26	6989458.104
000382IO	0.00	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11898387.87	6989880.871
000396IO	0.01	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897918.7	6986205.557
000397IO	0.00	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897899.31	6986492.831
000398IO	0.00	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897905	6986765.268
000402IO	0.00	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897936.5	6987212.757
000403IO	0.00	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897929.62	6987038.286
000404IO	0.75	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897735.5	6987146.48
000405IO	46.32	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897635.48	6987281.737
000406IO	4.50	Potomac River	Potomac River	Yes	PCBs	Outfall - Pond	PL28	11897538.98	6987335.751
000407IO	45.04	Potomac River	Potomac River	Yes	PCBs	Outfall - Pond	PL28	11897493.34	6987153.774
000447IO	0.00	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11896671.66	6992411.516
000448IO	0.00	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897034.41	6991838.966
000469IO	6.73	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899598.7	6982537.477
000470IO	7.17	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899274.57	6982030.579
000471IO	14.14	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899346.02	6983582.765
000472IO	3.32	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11898724.86	6985681.776
000473IO	0.14	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11898729.15	6985674.047

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City of Alexandria
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Outfall ID	Estimated MS4 Acreage Served (acres)	Receiving Water	Ultimate Receiving Water	Ultimate Receiving Water Impairment*	TMDLs	Type	HUC	Latitude Decimal Degrees	Longitude Decimal Degrees
000475IO	0.26	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899632.92	6982943.543
000476IO	0.73	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899447.45	6982756.021
000478IO	0.54	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899164.11	6981353.557
000479IO	8.44	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899211.91	6980033.524
000480IO	3.50	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899106.9	6981429.171
000481IO	3.24	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899090.24	6981596.498
000482IO	1.16	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899118.54	6977767.156
000483IO	3.70	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899107	6977958.021
000484IO	4.21	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899161.83	6978365.66
000485IO	0.09	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899176.78	6978428.621
000486IO	5.22	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899253.3	6978787.148
000487IO	17.16	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899201.25	6979183.219
000489IO	8.53	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899232.88	6979594.487
000491IO	6.02	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899003.88	6976613.722
000493IO	1.46	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11898260.33	6976296.936
000494IO	2.06	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11898120.95	6975913.388
000495IO	16.77	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11898622.46	6977129.506
000495IO and 000496IO	5.25	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11898722.45	6977560.075
000092IO	96.39	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11883287.15	6982366.915
000093IO	7.97	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11883326.8	6982117.109
000094IO	17.66	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11883116.46	6982186.014
000095IO	2.77	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11883467.54	6981784.938
000104IO	39.49	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11883709.61	6982971.088
000119IO	56.24	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11882579.12	6980036.325
000120IO	3.64	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11882545.18	6980074.069
000124IO	2.60	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11883256.09	6981387.195
000127IO	5.10	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11883313.69	6981285.708
000128IO	1.17	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11881967.95	6980192.612
000130IO	7.41	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11881517.46	6980244.8
000133IO	9.57	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11880744.71	6980158.563
000134IO	23.40	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11881196.01	6980229.609
000135IO	8.69	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11881936.87	6980148.008
000610IO	3.93	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11880163.71	6980062.784
000586IO	1.44	Potomac River	Potomac River	Yes	PCBs	Outfall - Pond	PL28	11895991.98	6985357.602
000588IO	30.32	Potomac River	Potomac River	Yes	PCBs	Outfall - Pond	PL28	11896057.16	6985376.432
000589IO	35.57	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897592.62	6988200.249
000591IO	19.13	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897701.93	6987397.715
000592IO	5.47	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899348.09	6980443.038
000121IO	13.49	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11883394.31	6981652.8
000621IO and 000622IO	1247.79	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893852.18	6979004.593
000624IO	10.25	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11883917.66	6978699.662
000628IO	94.16	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872259.35	6978466.72

*Impairment information is based on the 2022 305(b)/303(d) Water Quality Assessment Integrated Report (Part I.E.3.a.(2)(f)).

City of Alexandria
Outfall and Point of Discharge Table

Outfall ID	Estimated MS4 Acreage Served (acres)	Receiving Water	Ultimate Receiving Water	Ultimate Receiving Water Impairment*	TMDLs	Type	HUC	Latitude Decimal Degrees	Longitude Decimal Degrees
000642IO	47.22	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall - Pond	PL25	11880117.33	6990035.114
000647IO	51.29	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873876.92	6984802.006
000647IO	51.29	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11890149.55	6983954.071
000660IO	0.02	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873868.37	6984516.587
000661IO	52.35	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873534	6979431.994
000662IO	7.11	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873518.87	6979455.317
000668IO	4.62	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11889255.88	6981334.995
000668IO	4.62	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888200.33	6986790.098
000669IO	48.69	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11891191.4	6977728.452
000670IO	0.31	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888943.74	6979086.277
000675IO	0.00	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876609.36	6982136.583
000676IO	0.00	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876545.07	6982158.99

*Impairment information is based on the 2022 305(b)/303(d) Water Quality Assessment Integrated Report (Part I.E.3.a.(2)(f)).

City of Alexandria

Department of Transportation and Environmental Services
Office of Environmental Quality
301 King Street
City Hall, Room 3000
Alexandria, VA 22314
www.alexandriava.gov/Environment

July 15, 2009

Gayle England
Stormwater Specialist
Department of Environmental Services
Arlington County, Virginia

DELIVERED VIA EMAIL: Gengland@arlingtonva.us

Subject: Notice of Potentially Interconnected Municipal Separate Storm Sewer System (MS4)

Attention: MS4 Permit Manager

The City of Alexandria operates as a Phase II MS4 community with coverage under the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (No. VAR 040057).

Pursuant to Section II.B.3.g of this permit, the City must "Notify, in writing, any downstream regulated MS4 to which the small regulated MS4 is physically interconnected of the small regulated MS4's connection to that system." This letter is to notify you of the potential for interconnections between the City's MS4 and the permitted stormwater system operated by Arlington County. Currently, we have not identified any points where the City's MS4 discharges stormwater into Arlington's regulated MS4; however, it is likely that interconnections exist.

As mentioned in our previous email correspondences and pursuant to Section II.B.3.b, the City is currently working on a mapping effort that will verify the "location of all known outfalls …including those physically interconnected to a regulated MS4…" City GIS Staff will be contacting you very soon to share information in order to identify and map any interconnections that may exist between our regulated stormwater systems. The City is scheduled to provide this map with its Annual Report due no later than October 1, 2010 to DCR.

Best Regards,

Jesse E. Maines
Water Quality Compliance Specialist
703-746-4071
Jesse.maines@alexandriva.gov

Cc: Mary Beth Fletcher, GIS Mapping Center Bureau Chief, mfletcher@arlingtonva.us

City of Alexandria

Department of Transportation and Environmental Services
Office of Environmental Quality
301 King Street
City Hall, Room 3000
Alexandria, VA 22314
www.alexandriava.gov/Environment

July 15, 2009

Roy T. Mills
Location and Design Division
State Stormwater Program Administrator
Virginia Department of Transportation

DELIVERED VIA EMAIL: Roy.Mills@VDOT.Virginia.gov

Subject: Notice of Potentially Interconnected Municipal Separate Storm Sewer System (MS4)

Attention: MS4 Permit Manager

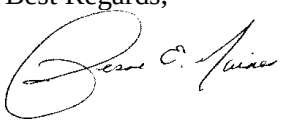
The City of Alexandria operates as a Phase II MS4 community with coverage under the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (No. VAR 040057).

Pursuant to Section II.B.3.g of this permit, the City must "Notify, in writing, any downstream regulated MS4 to which the small regulated MS4 is physically interconnected of the small regulated MS4's connection to that system." This letter is to notify you of the potential for interconnections between the City's MS4 and the permitted stormwater system operated by the Virginia Department of Transportation (VDOT). Currently, we have not identified any points where the City's MS4 discharges stormwater into VDOT's regulated MS4; however, it is likely that interconnections exist.

As mentioned in my July 15, 2010 email and pursuant to Section II.B.3.b, the City is currently working on a mapping effort that will verify the "location of all known outfalls …including those physically interconnected to a regulated MS4…" We would like to work together and share information so that each party may have adequate information to identify any interconnections that may exist between our regulated stormwater systems. The City is scheduled to provide this map with its Annual Report due no later than October 1, 2010 to DCR.

Please contact me at your earliest convenience to work together on the mapping effort.

Best Regards,



Jesse E. Maines
Water Quality Compliance Specialist
703-746-4071
Jesse.maines@alexandriva.gov

Cc: Morris Z. Walton via email – Morris.Walton@VDOT.Virginia.gov

City of Alexandria

Department of Transportation and Environmental Services
Office of Environmental Quality
301 King Street
City Hall, Room 3000
Alexandria, VA 22314
www.alexandriava.gov/Environment

July 15, 2009

Kate Bennett, MS4 Permit Coordinator
Fairfax County Stormwater Planning Division
10255 Fairfax County Parkway
Fairfax, Virginia 22035

DELIVERED VIA EMAIL:

Subject: Notice of Potentially Interconnected Municipal Separate Storm Sewer System (MS4)

Attention: MS4 Permit Manager

The City of Alexandria operates as a Phase II MS4 community with coverage under the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (No. VAR 040057).

Pursuant to Section II.B.3.g of this permit, the City must "Notify, in writing, any downstream regulated MS4 to which the small regulated MS4 is physically interconnected of the small regulated MS4's connection to that system." This letter is to notify you of the potential for interconnections between the City's MS4 and the permitted stormwater system operated by Arlington County. Currently, we have not identified any points where the City's MS4 discharges stormwater into Arlington's regulated MS4; however, it is likely that interconnections exist.

As mentioned in our previous email correspondences and pursuant to Section II.B.3.b, the City is currently working on a mapping effort that will verify the "location of all known outfalls …including those physically interconnected to a regulated MS4…" City GIS Staff will be contacting you very soon to share information in order to identify and map any interconnections that may exist between our regulated stormwater systems. The City is scheduled to provide this map with its Annual Report due no later than October 1, 2010 to DCR.

Best Regards,

Jesse E. Maines
Water Quality Compliance Specialist
703-746-4071
Jesse.maines@alexandriva.gov

Cc: Mary Beth Fletcher, GIS Mapping Center Bureau Chief, mfletcher@arlingtonva.us

City of Alexandria

Department of Transportation and Environmental Services
Stormwater Management Division
2900-B Business Center Drive
Alexandria, VA 22314

May 24, 2018

Brenda Wasler
Environmental Protection Specialist
National Park Service
George Washington Memorial Parkway
700 George Washington Memorial Parkway
McLean, VA 22101

DELIVERED VIA EMAIL: brenda_wasler@nps.gov

Subject: Notice of Interconnected Municipal Separate Storm Sewer System (MS4)

Attention: MS4 Permit Manager

The City of Alexandria operates as a Phase II MS4 community with coverage under the Virginia Stormwater Management Program (VSMP) General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (No. VAR 040057).

Pursuant to Section II.B.3.a of this permit, the City shall "notify in writing the downstream MS4 of any known physical interconnection." This letter is to notify you of the interconnection between the City's MS4 and the permitted stormwater system operated by the National Park Service, George Washington Memorial Parkway.

Thank you for providing your MS4 boundaries in April 2018. We confirmed that the City does operate outfalls that discharge into Jones Point Park in the southeast portion of the City and into the area east of the George Washington Memorial Parkway in the northeast portion of the City. We will review and update the City's MS4 boundaries as needed to ensure consistency between the data sets. After this is completed, the City's boundaries will be sent for your reference.

Sincerely,

Jesse E. Maines
Division Chief
Transportation and Environmental Services
Stormwater Management Division
Jesse.maines@alexandriva.gov

Cc: Hannah Dean via email – Hannah_Dean@nps.gov

Jessica Lassetter

From: Jessica Lassetter
Sent: Thursday, July 30, 2020 9:42 AM
To: 'Jason Papacosma (Jpapacosma@arlingtonva.us)'
Subject: City of Alexandria Physical Interconnection
Attachments: Arlington County 071509.pdf

Hi Jason –

I hope you are doing well.

The City of provided a letter on July 15, 2009, to Ms. Gayle England, to satisfy the requirements indicated in the MS4 General Permit pertaining to physical interconnections (see attached). This letter referenced a regional stormwater flow map which was produced in September 2010 and included in the City's 2010-2011 MS4 Annual Report. This letter also satisfies the requirements outlined in the 2018-2023 MS4 General Permit, Part I. E.3.a.(5).

Please maintain this email and attached document in your MS4 program files and let me know if you have any questions.

Thank you,

Jessica

Jessica E. B. Lassetter
Senior Environmental Specialist/CE III
City of Alexandria, Virginia
T&ES Stormwater Management
Office: 703.746.4127
Cell: 703.915.5695
alexandriava.gov

Jessica Lassetter

From: Jessica Lassetter
Sent: Thursday, July 30, 2020 9:41 AM
To: Ambrose, Heather
Subject: City of Alexandria Physical Interconnection
Attachments: Fairfax County 071509.pdf

Hi Heather –

I hope you are doing well.

The City of provided a letter on July 15, 2009, to Ms. Kate Bennett, MS4 Permit Coordinator, Fairfax County Stormwater Planning Division, to satisfy the requirements indicated in the MS4 General Permit pertaining to physical interconnections (see attached). This letter referenced a regional stormwater flow map which was produced in September 2010 and included in the City's 2010-2011 MS4 Annual Report. This letter also satisfies the requirements outlined in the 2018-2023 MS4 General Permit, Part I. E.3.a.(5).

Please maintain this email and attached document in your MS4 program files and let me know if you have any questions.

Thank you,

Jessica

Jessica E. B. Lassetter
Senior Environmental Specialist/CE III
City of Alexandria, Virginia
T&ES Stormwater Management
Office: 703.746.4127
Cell: 703.915.5695
alexandriava.gov

Jessica Lassetter

From: Jessica Lassetter
Sent: Thursday, July 30, 2020 9:45 AM
To: robert_mocko@nps.gov
Subject: City of Alexandria Physical Interconnection
Attachments: GW Parkway.pdf

Mr. Mocko,

The City of provided a letter on May 24, 2018, to Ms. Brenda Wasler, to satisfy the requirements indicated in the MS4 General Permit pertaining to physical interconnections (see attached).

Please maintain this email and attached document in your MS4 program files and let me know if you have any questions.

Thank you,

Jessica

Jessica E. B. Lassetter
Senior Environmental Specialist/CE III
City of Alexandria, Virginia
T&ES Stormwater Management
Office: 703.746.4127
Cell: 703.915.5695
alexandriava.gov

Jessica Lassetter

From: Jessica Lassetter
Sent: Thursday, July 30, 2020 3:56 PM
To: alex.foraste@vdot.virginia.gov
Subject: City of Alexandria Physical Interconnection
Attachments: VDOT 071509.pdf

Hi Alex,

The City of provided a letter on July 15, 2009, to Mr. Roy Mills, to satisfy the requirements indicated in the MS4 General Permit pertaining to physical interconnections (see attached). This letter referenced a regional stormwater flow map which was produced in September 2010 and included in the City's 2010-2011 MS4 Annual Report. This letter also satisfies the requirements outlined in the 2018-2023 MS4 General Permit, Part I. E.3.a.(5).

Please maintain this email and attached document in your MS4 program files and let me know if you have any questions.

Thank you,

Jessica

Jessica E. B. Lassetter
Senior Environmental Specialist/CE III
City of Alexandria, Virginia
T&ES Stormwater Management
Office: 703.746.4127
Cell: 703.915.5695
alexandriava.gov

City of Alexandria

Municipal Separate Storm Sewer System (MS4) Program Plan

Appendix D - MCM #4: Construction Site Runoff Control

City of Alexandria

301 King St., Room 2400
Alexandria, VA 22314

Docket - Final

Saturday, April 13, 2024

9:30 AM

City Council Public Hearing

The April 13, 2024 Public Hearing Meeting of the Alexandria City Council is being held in the Council Chamber (301 King Street, Alexandria, Virginia, 22314) and electronically. Members of City Council and staff are participating either in-person or from a remote location through video conference call on Zoom webinar. The meeting can be accessed by government channel 70, streaming on the City's website, and via Zoom by the following link:

Webinar ID: 925 8951 5073
Webinar Passcode: 559945
Dial-in number: 301-715-8592
Registration : https://zoom.us/webinar/register/WN_HNaL3WUuTe6t5k925n8alg

If you use the Zoom webinar application, please be sure you have updated the application to the latest version for the best results. If you are unable to access the Zoom webinar, please use the Dial-In number to access the meeting.

*****PLEASE LOG-IN EARLY IF POSSIBLE*****

Links:
Meeting Agenda and Live Webcast
The meeting will be webcast live and video and audio recordings will be available a few days after the meeting.

Zoom Registration Form
If you wish to use Zoom to watch the meeting or to address Council, you must register first. Those wishing to address Council should also submit a Speaker's Form using the link below.

Speaker's Form
https://survey.alexandriava.gov/s3/2020-VIRTUAL-City-Council-Speakers-Form

Submission of written statements is encouraged. Please sign up after the docket is created and posted and you are able to verify the meeting date on the City's website. If you have prepared statement or a written comments for the record you may email it to the City Clerk at CouncilComment@alexandriava.gov.

Public Comment will be received at this meeting.

****
Individuals requiring translation services should contact the City Clerk and Clerk of Council at gloria.sitton@alexandriava.gov or at 703.746.4550. We request that you provide a 48-hour notice so that the proper arrangements may be made. Please specify the language for translation when you make the request.

Las personas que requieran servicios de traducción deben comunicarse con el Secretario de la Ciudad y el Secretario del Consejo en gloria.sitton@alexandriava.gov o al 703.746.4550. Le solicitamos que proporcione un aviso de 48 horas para que se puedan hacer los arreglos necesarios. Por favor, especifique el idioma de traducción cuando realice la solicitud.

*****TAKE NOTICE: City Council will take a lunch break in the middle of the docket at a reasonable time when the agenda allows for a break.*****

I. OPENING

1. Calling the Roll.

2. Approval of the Electronic Participation Resolution by City Council - Councilmember Bagley

24-2048 Approval of the Electronic Participation Resolution [ROLL-CALL VOTE]

Attachments: 24-2048_Electronic Participation Resolution - Bagley/Aguirre
24-2048_Signed Resolution

3. Public Discussion Period

24-2091 After Item

Attachments: 24-2091_After Item

[This period is a public comment period on items not listed on the agenda. The first 15 speakers will speak at the beginning of the meeting. Any remaining speakers will be heard at the conclusion of the docketed items.]

II. ACTION ITEMS

Planning Commission

Consent Calendar (4)

4. 24-2043 Special Use Permit #2023-00106
406 East. Glebe Road
Public Hearing and consideration of a Special Use Permit for an automobile sales area; zoned: CDD#24/Coordinated Development District #24.
Applicant: Petru Stratan
Planning Commission Action: Recommended Approval 7-0

Attachments: SUP2023-00106_Staff Report
SUP#2023-00106 Presentation

III. Roll-Call Consent Calendar (5-7)

5. 24-1920 Public Hearing, Second Reading and Final Passage of an Ordinance to amend and reordain ARTICLES II (DEFINITIONS), III (RESIDENTIAL ZONE REGULATIONS), IV (COMMERCIAL, OFFICE AND INDUSTRIAL ZONES), V (MIXED USE ZONES), VI (SPECIAL AND OVERLAY ZONES), VII (SUPPLEMENTAL ZONE REGULATIONS), Section 8-200 of ARTICLE VIII (OFF-STREET PARKING AND LOADING), and ARTICLE XI (DEVELOPMENT APPROVALS AND PROCEDURES) of the City of Alexandria Zoning Ordinance, in accordance with the text amendment heretofore approved by city council as Text Amendment No. 2024-00002 (Implementation Ordinance for Text Amendment No. 2024-00002 related to minor updates to various provisions of the zoning ordinance approved by City Council on March 16, 2024). [ROLL-CALL VOTE]

Attachments: 24-1920_cover
24-1920_ordinance

6. 24-1922 Public Hearing, Second Reading and Final Passage of an Ordinance to amend and reordain Article XIII (ENVIRONMENTAL MANAGEMENT) of the City of Alexandria Zoning Ordinance, in accordance with the text amendment heretofore approved by city council as Text Amendment No. 2024-00003 (Implementation Ordinance for Text Amendment No. 2024-00003 related to stormwater and erosion and sediment control approved by City Council on March 16, 2024). [ROLL-CALL VOTE]

Attachments: 24-1922_cover
24-1922_ordinance

7. 24-2004 Public Hearing, Second Reading and Final Passage of an Ordinance to amend and reordain Section 5-4-1 (DEFINITIONS) and Section 5-4-7 (MINIMUM CRITERIA; CITY HANDBOOK) Chapter 4 (EROSION AND SEDIMENT CONTROL) of Title 5 (TRANSPORTATION AND ENVIRONMENTAL SERVICES), of the Code of the City of Alexandria, Virginia, 1981, as amended. [ROLL-CALL VOTE]

Attachments: 24-2004_Attachment 1_Cover_Erosion and Sediment Control Ordinance
24-2004_Attachment 2_Ordinance_Erosion and Sediment Control
24-2004_Presentation

IV. OTHER BUSINESS

Reports and Recommendations from the City Manager

8. 24-1953 Public Hearing on the FY 2025 City Council Preliminary Add/Delete Proposals and the City Manager's Proposed Amendments to the FY 2025 Proposed Budget.

Budget Adoption is Scheduled for Wednesday, May 1, 2024 at 6:00 p.m.

Attachments: 24-1953_Attachment 1 - Summary of Add/Delete Proposals
24-1953 - Attachment 2 - Add Delete Proposals
24-1953_After Item

9. 24-1969 Public Hearing and Consideration of a Second Amendment to a Five-Year License Agreement dated November 1, 2022, between the City of Alexandria, Virginia and Crown Castle Fiber, LLC. to permit Crown Castle to construct and install an additional enterprise fiber route of approximately 600 feet in the City of Alexandria, Virginia's Public Rights-of-Ways.

Attachments: 24-1969_Attachment 1_Amendment 2 to Crown Castle License Agreement
24-1969_Attachment 2_Current License Agreement between City of Alexandria

V. Public Hearing Matters

Planning Commission (continued)

10. 24-2044 CASE BAR#2024-00017 OHAD
Public Hearing and consideration of an Appeal of the Board of Architectural Review's February 21, 2024, decision to deny a Certificate of Appropriateness at 613 S Royal Street Old and Historic Alexandria District.

APPLICANT: Elizabeth Blaise Hazelwood
APPELLANT: Elizabeth Blaise Hazelwood

Attachments: BAR2024-00017 Staff Report
BAR2024-00017 Appeal Presentation

11. 24-2042 Master Plan Amendment #2023-00007
Text Amendment #2023-00006
Rezoning #2023-00005
Coordinated Development District Concept Plan #2023-00004
Development Special Use Permit #2023-10007 - Condo Flats
Development Special Use Permit #2023-10013 - Hotel
Development Special Use Permit #2023-10014 - Townhouses/Stacked Townhouses
Development Site Plan #2023-00013 - Infrastructure and public streets
Development Site Plan #2023-00014 - Public park
Coordinated Sign Special Use Permit #2023-00100
Subdivision #2023-00006
Vacation #2023-00005
Vulcan Site Redevelopment - 701 S Van Dorn Street and 698 Burnside Place
Initiation of and Public Hearing and consideration of requests for: (A) amendments to the Eisenhower West Small Area Plan chapter of the Master Plan to amend the building heights diagram to change the height limit for the southern portion of the property from Medium-High to Medium to allow for lower

minimum building heights (B) a Text Amendment to the Zoning Ordinance to amend provisions of Section 5-602 to include hotel and townhouses as permitted uses within CDD#26 with a CDD Special Use Permit; (C) an amendment to the official zoning map to change the zoning district of 701 S Van Dorn Street and 698 Burnside Place from I/Industrial to CDD #26/Coordinated Development District #26; (D) a Coordinated Development District Concept Plan Conceptual Design Plan Amendment to include the project site in CDD #26; (E) a Development Special Use Permit with Site Plan to construct six multi-unit residential buildings with 208 total units with a Special Use Permit to reduce the off-street parking requirement; (F) a Development Special Use Permit with Site Plan and modifications to construct a 256-room hotel with ground floor retail; (G) a Development Special Use Permit with Site Plan to construct 31 townhouse and 88 stacked townhouse (multi-unit residential) units with a Special Use Permit to reduce the off-street parking requirement for the stacked townhouses; (H) a Development Site Plan to construct three new streets and associated infrastructure; (I) a Development Site Plan to construct a public park; (J) a Coordinated Sign Special Use Permit for the hotel signage; (K) a Subdivision to create the new internal blocks and dedicate right-of-way; and (L) to vacate a portion of the public right of way located at Courtney Ave and S Van Dorn Street, zoned: I/Industrial.
Applicants: City of Alexandria (Text Amendment); Lennar Corporation and Potomac Land Group II, LLC, represented by Kenneth Wire, attorney.
Planning Commission Action: Recommended Approval 7-0

Attachments: Vulcan Redevelopment Staff Report
Vulcan Site Redevelopment Presentation
24-2042_After Item

VI. Ordinances and Resolutions

12. 24-2005 Public Hearing and Second Reading of an Ordinance to increase the Ambulance Service Charges by amending Article J (SERVICE CHARGES FOR CITY AMBULANCE AND HAZARDOUS MATERIALS INCIDENT RESPONSE SERVICES) to Chapter 2 (TAXATION) of Title 3 (FINANCE, TAXATION AND PROCUREMENT).

Attachments: 24-2005_Attachment 1_Ambulance Billing Ordinance - Cover
24-2005_Attachment 2_Ambulance Billing Ordinance

13. 24-1967 Public Hearing and Second Reading of an Ordinance to Increase the Late Payment Penalty on Personal Property Taxes from 10% if Paid No More Than 30 Days Late, up to 25% if Paid More than 30 days Past the Due Date.

Attachments: 24-1967_Attachment 1_Personal Property Penalty Ordinance Cover
24-1967_Attachment 2_ Personal Property Penalty Ordinance

14. 24-1968 Public Hearing and Second Reading of an Ordinance to amend and reordain Section 5-6-233 (STORMWATER UTILITY FEE) of Chapter 6 (WATER AND SEWER)

of Article C (STORMWATER UTILITY) of Title 5 (TRANSPORTATION AND ENVIRONMENTAL SERVICES), of the Code of the City of Alexandria, Virginia, 1981, as amended.

Attachments: 24-1968_Attachment 1_Utility Ordinance Cover

24-1968_Attachment 2_ Utility Ordinance

VII. Closed Session (if needed)

VIII. ADJOURN.

*****

This docket is subject to change.

*****

Limited Full-text copies of ordinances, resolutions, and agenda items are available in the Office of the City Clerk and Clerk of Council. Meeting materials are also available on-line at alexandriava.gov/council.

*****

Individuals with disabilities who require assistance or special arrangements to participate in the City Council meeting may call the City Clerk and Clerk of Council's Office at 703-746-4550 (TTY/TDD 838-5056). We request that you provide a 48-hour notice to that the proper arrangements may be made.
City meetings are closed-captioned for the hearing impaired.

*****

If the Mayor finds and declares that weather or other conditions are such that it is hazardous for members to attend the meeting, this meeting will be continued to the following Saturday.

*****

Introduction and first reading: 4/2/24
Public hearing: 4/13/24
Second reading and enactment: 4/13/24

INFORMATION ON PROPOSED ORDINANCE

Title

AN ORDINANCE to amend and reordain Article XIII (ENVIRONMENTAL MANAGEMENT) of the City of Alexandria Zoning Ordinance, in accordance with the text amendment heretofore approved by city council as Text Amendment No. 2024-00003

Summary

The proposed ordinance accomplishes the final adoption of Text Amendment No. 2024-00003 to adopt revisions to the environmental management provisions of the Zoning Ordinance to reflect updated language due to the Commonwealth's consolidation efforts that combine the Commonwealth's Erosion and Sedimentation Control and Stormwater Management Program regulations. The amendments will merge existing Virginia Administrative Code regulations related to stormwater and erosion and sediment control into a single regulatory chapter.

Sponsor

Transportation & Environmental Services

Staff

William J. Skrabak, Deputy Director
Jesse E. Maines, Division Chief
Christina Zechman Brown, Deputy City Attorney
Lindsay Dubin, Assistant City Attorney
Gavin Pellitteri, Stormwater Principal Planner

Authority

§§ 62.1-44.15:24 - 62.1-44.15:50, Code of Virginia

Estimated Costs of Implementation

None

Attachments in Addition to Proposed Ordinance and its Attachments (if any)

None

ORDINANCE NO. _____

AN ORDINANCE to amend and reordain Article XIII (ENVIRONMENTAL MANAGEMENT) of the City of Alexandria Zoning Ordinance, in accordance with the text amendment heretofore approved by city council as Text Amendment No. 2024-00003.

WHEREAS, the City Council finds and determines that:

1. In Text Amendment No. 2024-00003, the Planning Commission, having found that the public necessity, convenience, general welfare and good zoning practice so require, recommended approval to the City Council on March 5, 2024 of a text amendment to the Zoning Ordinance to adopt revisions to environmental management provisions to reflect updated language due to the Commonwealth's consolidation efforts that combine the Commonwealth's Erosion and Sedimentation Control and Stormwater Management Program regulations, which recommendation was approved by the City Council at public hearing on March 16, 2024;

2. The City Council in adopting this ordinance expressly adopts, ratifies, affirms and concurs in the finding and action of the Planning Commission above stated;

3. All requirements of law precedent to the adoption of this ordinance have been complied with; now, therefore,

THE CITY COUNCIL OF ALEXANDRIA HEREBY ORDAINS:

Section 1. That Article XIII of the Zoning Ordinance be, and the same hereby is, amended by deleting the language shown in strikethrough and inserting new language shown in underline, as follows:

13-102 - Authority.

This Article XIII is issued under the authority of Section 62.1-44.15:73 of the Code of Virginia (the Chesapeake Bay Preservation Act), 62.1-44.15:24 et seq. of the Code of Virginia ~~(the Virginia Stormwater Management Act)~~ (the Virginia Erosion and Stormwater Management Act) and attendant regulations as adopted by the Virginia State Water Control Board. Code of Virginia Section 62.1-44.15:27 specifically requires the City to adopt a ~~Virginia Stormwater Management Program~~ Virginia Erosion and Stormwater Management Program. Authority to protect water quality is also provided by Section 15.2-2283 of the Code of Virginia.

13-103 - Definitions.

The following words and terms used in this Article XIII have the following meanings, unless the context clearly indicates otherwise.

***

(M) Floodway. All lands as defined in subsection 6-303(~~K~~O) of this ordinance.

(N) General permit. The state permit titled General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Construction Activities found in 9VAC25-880 et seq. of the ~~Virginia Stormwater Management Regulations~~ Virginia Erosion and Stormwater Management Regulations authorizing a category of discharges under the federal Clean Water Act and the ~~Virginia Stormwater Management Act~~ Virginia Erosion and Stormwater Management Act within a geographical area of the Commonwealth of Virginia.

***

(EE) Public road. For the purpose of this Article XIII, public road means a publicly owned road designed and constructed in accordance with water quality protection criteria at least as stringent as requirements applicable to the Virginia Department of Transportation, including regulations promulgated pursuant to (i) ~~the Erosion and Sediment Control Law (Section 64.1-44.15:51 et seq. of the Code of Virginia) and (ii) the Virginia Stormwater Management Act (Section 64.1-44.15:24 et seq. of the Code of Virginia)~~ the Virginia Erosion and Stormwater Management Act (Section 62.1-44.15:51 et seq. of the Code of Virginia). This definition includes those roads where the Virginia Department of Transportation exercises direct supervision over the design or construction activities, or both, and cases where roads are constructed or maintained, or both, by the City of Alexandria.

***

(GG) Regulations. ~~The Virginia Stormwater Management Program (VSMP) Permit Regulations, 9VAC- 25-870, as amended.~~ The Virginia Erosion and Stormwater Management Program (VESMP) Permit Regulations, 9VAC25-875, as amended.

***

(NN) State permit. An approval to conduct a land-disturbing activity issued by the Virginia State Water Control Board in the form of a state stormwater individual permit or coverage issued under a state general permit or an approval issued by the Virginia State Water Control Board for stormwater discharges from an MS4. Under these state permits, the state imposes and enforces requirements pursuant to the federal Clean Water Act, the ~~Virginia Stormwater Management Act~~ Virginia Erosion and Stormwater Management Act, and their attendant regulations.

***

(BBB) ~~Virginia Stormwater Management Act. Article 2.3~~ Virginia Erosion and Stormwater Management Act (§ 62.1-44.15:24 et seq.) of Chapter 3.1 of Title 62.1 of the Code of Virginia.

(CCC) Virginia Stormwater BMP Clearinghouse website. A website that contains detailed design standards and specifications for control measures that may be used in Virginia to comply with the requirements of the ~~Virginia Stormwater Management Act~~ Virginia Erosion and Stormwater Management Act and regulations.

(DDD) ~~Virginia Stormwater Management Program (VSMP)~~ Virginia Erosion and Stormwater Management Program (VESMP). A program approved by the Virginia State Water Control Board that has been established by a ~~locality to manage the quality and quantity of runoff resulting from land-disturbing activities and shall include such items as local ordinances, rules, permits, requirements, annual standards and specifications, policies and guidelines, technical materials, and requirements for plan review, inspection and enforcement, where authorized in this article, and evaluation consistent with the requirements of this article and associated regulations~~ VESMP authority for the effective control of soil erosion and sediment deposition and the management of the quality and quantity of runoff resulting from land-disturbing activities to prevent the unreasonable degradation of properties, stream channels, waters, and other natural resources. The program shall include such items as local ordinances, rules, requirements for permits and land-disturbance approvals, policies and guidelines, technical materials, and requirements for plan review, inspection, and enforcement consistent with the requirements of the Virginia Erosion and Stormwater Management Act.

(EEE) ~~VSMP~~ VESMP authority. An authority approved by the Virginia State Water Control Board to operate a ~~VSMP~~ VESMP. For the purposes of this article, the city is the ~~VSMP~~ VESMP authority.

(FFF) ~~VSMP~~ VESMP authority permit. An approval to conduct a land-disturbing activity issued by the city for the initiation of a land-disturbing activity after evidence of general permit coverage has been provided where applicable. In the City of Alexandria a ~~VSMP~~ VESMP authority permit is not a separate permit. Rather, the issuance of a building, land use, or other land development permit is contingent on a proposed land-disturbing activity meeting all ~~VSMP~~ VESMP authority permit requirements in ~~9VAC-25-870~~ 9VAC25-875 and the requirements of this article.

***

13-104 - Administration.

***

(D) Establishment of fees. The director of T&ES shall by general rule approved by city council establish a schedule of fees required for each application under this Article XIII to be paid at the time an application is submitted. The schedule of fees shall include those authorized by ~~9VAC25-870-700~~ 9VAC25-875-1290 et seq. The schedule of fees is set per approved council docket.

***

13-109 - General performance requirements for CBPAs.

The director of T&ES shall approve development, redevelopment, uses, or land-disturbing activities in the CBPA only if it is found that the activity is in compliance with this Article XIII and that the applicant has demonstrated, by a preponderance of the evidence, that the proposed development, redevelopment, use, or land-disturbing activity meets or exceeds the following standards.

***

(E) All development, redevelopment, and uses disturbing greater than 2,500 square feet shall meet the following storm water quality management performance requirements. For purposes of this section, the following shall be used to define the site area for determining water quality requirements: for projects disturbing less than 50 percent of the tax parcel (or if multiple parcels are involved, the land subject to the application), the disturbed area shall be used as the site area; for projects disturbing greater than or equal to 50 percent of the tax parcel (or if multiple parcels are involved, the land subject to the application), the entire tax parcel shall be used as the site area.

***

(2) Single-unit residences separately built and disturbing less than one acre and not part of a larger common plan of development or sale, including additions or modifications to existing single-unit detached residential structures are exempt from subsections (4) and (5) below. The Alexandria water quality volume default requirement in subsection (6) still applies. "Single unit residences separately built" shall mean "single family detached residential structures" as used in § 62.1-44.15:34 C. 3.

(3) In order to protect the quality of state waters located within the City of Alexandria and to control the discharge of stormwater pollutants from regulated activities, the following minimum design criteria and statewide standards for stormwater management, per ~~9VAC25-870-63~~ 9VAC25-875-580 shall be applied.

(4) New development. The total phosphorus load of new development projects shall ~~not exceed 0.41 pounds per acre per year~~ comply with the water quality design criteria requirements in 9VAC25-875-580, as calculated pursuant to this section.

(5) Development of prior developed lands:

***

(d) In lieu of subsection (c), the total phosphorus load of a linear development project as defined in ~~9VAC25-870-10~~ 9VAC25-875-580 occurring on prior developed

lands shall be reduced 20 percent below the predevelopment total phosphorus load.

***

(7) Compliance with subsections (4) and (5) above shall be determined using the runoff reduction method and through the use of stormwater BMPs established in ~~9VAC25-870-65~~ 9VAC25-875-590 or found at the Virginia BMP Clearinghouse website, except as may be limited in accordance with policies established by the director of T&ES in accordance with subsection 13-104(C).

(8) Compliance with subsections (4) and (5) may be achieved by the applicant in accordance with off-site compliance options in ~~9VAC25-870-69~~ 9VAC25-875-610 under the following circumstances:

a. Less than five acres of land will be disturbed;

(b) The post-construction phosphorus control requirement is less than ten pounds per year; or

(c) At least 75 percent of the required phosphorus nutrient reductions are achieved on-site. If at least 75 percent of the require phosphorus nutrient reductions cannot be met on-site, and the operator can demonstrate to the satisfaction of the director of T&ES that (i) alternative site designs have been considered that may accommodate on-site best management practices, (ii) on-site best management practices have been considered in alternative site designs to the maximum extent practicable, (iii) appropriate on-site best management practices will be implemented, and (iv) full compliance with post-development nonpoint nutrient runoff compliance requirements cannot practicably be met on-site, then the required phosphorus nutrient reductions may be achieved, in whole or in part, through the use of off-site compliance options.

***

(10) Notwithstanding those exemptions granted under section 13-123, all such land-disturbing activities shall be subject to the design storm and hydrologic methods set out in ~~9VAC25-870-72~~ 9VAC25-875-620, linear development controls in ~~9VAC25-870-76~~ 9VAC25-875-640, and criteria associated with stormwater impoundment structures in ~~9VAC25-870-85~~ 9VAC25-875-650.

***

13-110 - Alexandria water quality improvement fund and alternative stormwater management equivalency options.

***

(D) In determining whether to allow equivalent stormwater options, as well as the appropriate combination of on-site and off-site controls, the director of T&ES shall take into consideration the following:

***

(7) Whether there are opportunities to implement the ~~Water Quality Management Supplement~~ Chesapeake Bay Preservation Plan to the city master plan and the city's ~~Virginia Stormwater Management Permit (VSMP)~~ Virginia Erosion and Stormwater Management Permit (VESMP) for its municipally owned separate storm sewer system discharges as issued by the Department of Environmental Quality; and

***

(9) Single-unit residential development projects that are exempt from the water quality requirements of section 13-123(A) are considered eligible to contribute to the Alexandria water quality improvement fund in section 13-110(A)(2) to meet the Alexandria water quality volume default requirement in section 13-107(E)(3) with no further consideration of items (1) through (8) above. For purposes of this section "single unit residential development" means a "single-family detached residential structure" as used in § 62.1-44.15:34 C.3.

***

13-113 - Stormwater pollution prevention plan.

(A) The stormwater pollution prevention plan (SWPPP) shall include the content specified in ~~9VAC25-870-54~~ 9VAC25-875-500, which includes but is not limited to, an approved erosion and sediment control plan, an approved stormwater management plan, a pollution prevention plan for regulated land-disturbing activities, and a description of any additional control measures necessary to address a TMDL. The SWPPP must also comply with the requirements and general information set forth in 9VAC25-880-70 Section II of the general VPDES permit for discharges of stormwater from construction activities (construction general permit).

***

13-116 - Pollution prevention plan.

(A) The pollution prevention plan is required by ~~9VAC25-870-56~~ 9VAC25-875-500 and shall be developed, implemented, and updated as necessary, and must detail the design, installation, implementation, and maintenance of effective pollution prevention measures to minimize the discharge of pollutants. At a minimum, such measures must be designed, installed, implemented, and maintained to:

(1) Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;

(2) Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to precipitation and to stormwater; and

(3) Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.

***

13-119 - Exceptions.

(B) For exceptions to the provisions of sections 13-109 and 13-124 other than those detailed in section 13-107, the director of T&ES shall review the request for an exception and the water quality impact assessment and may grant the exception with such conditions and safeguards as deemed necessary to further the purpose and intent of this Article XIII if the director of T&ES finds that the applicant has demonstrated by a preponderance of the evidence that:

***

(E) Under no circumstances shall the city allow the use of a BMP not found on the Virginia Stormwater BMP Clearinghouse website, or as applicable for projects subject to ~~9VAC25-870 Part II.C~~ 9VAC25-875-480. Notwithstanding, this shall not preclude the director of T&ES from placing reasonable limitations on a BMP on the Virginia Stormwater BMP Clearinghouse website.

(F) Exceptions to the requirements for phosphorus reductions required under section 13-109(E)(4) and (5) will not be allowed unless off-site options available through ~~9VAC25-870-69~~ 9VAC25-875-610 have been considered and found not available.

***

13-124 - Time limits on applicability of design criteria and grandfathering.

(A) The time limits on applicability of design criteria shall apply provided:

(1) Land-disturbing activities that obtain an initial state permit or commence land disturbance prior to July 1, 2014 shall be conducted in accordance with the technical criteria in ~~9VAC-25-870-93 through 9VAC25-870-99~~ 9VAC25-875-670 et seq. Such projects shall remain subject to these technical criteria for two additional state construction general permit cycles. After such time, portions of the project not under construction shall become subject to any new technical criteria adopted by the board.

***

(B) Grandfathering provisions established in ~~9VAC25-870-48~~ 9VAC25-875-490 shall apply to this article as applicable. Any land-disturbing activity shall be considered grandfathered by the ~~VSMP~~ VESMP authority and shall be subject to the technical criteria of ~~9VAC25-870-93 through 9VAC25-870-99~~ Article 4 (9VAC25-875-670 et seq) of Part V of the Regulations, provided:

(1) A proffered or conditional zoning plan, zoning with a plan of development, preliminary or final subdivision plat, preliminary or final site plan, or any document determined by the locality to be equivalent thereto (i) was approved by the locality prior to July 1, 2012, (ii) provided a layout as defined in ~~9VAC25-870-10~~ 9VAC25-875-670, (iii) will comply with the technical criteria of ~~9VAC25-870-93 through 99~~ 9VAC25-875-670 (iv) has not been subsequently modified or amended in a manner resulting in an increase in the amount of phosphorus leaving each point of discharge, and such that there is no increase in the volume or rate of runoff;

***

(C) Locality, state and federal projects shall be considered grandfathered and shall be subject to the technical criteria in ~~9VAC25-870-93 through 9VAC25-870-99~~ 9VAC25-875-490 provided:

(D) Land-disturbing activities grandfathered under subsections (A) and (B) of this section shall remain subject to ~~9VAC25-870-93 through 99~~ Article 4 of Part V of the Regulations, 9VAC25-875-670 et seq. technical criteria for one additional state permit cycle. After such time, portions of the project not under construction shall become subject to any new technical criteria adopted by the board.

(E) In cases where governmental bonding or public debt financing has been issued for a project prior to July 1, 2012, such project shall be subject to the technical criteria of ~~9VAC25-870-93 through 99~~ Article 4 of Part V of the Regulations, 9VAC25-875-670.

***

13-126 - Penalties.

(A) Under the authority of ~~9VAC25-870-116~~ 9VAC25-875-150 the director of T&ES shall have the following authority to enforce provisions of this Article XIII required or authorized under Section 62.1-44.15:24 et seq. of the Code of Virginia (the ~~Virginia Stormwater Management Act~~ Virginia Erosion and Stormwater Management Act) and its attendant regulations:

(1) If the director determines that there is a failure to comply with the ~~VSMP~~ VESMP authority permit conditions or determines there is an unauthorized discharge, notice shall

be served upon the permittee or person responsible for carrying out the permit conditions by any of the following: verbal warnings and inspection reports, notices of corrective action, consent special orders, and notices to comply. Written notices shall be served by registered or certified mail to the address specified in the permit application or by delivery at the site of the development activities to the agent or employee supervising such activities.

***

(xi) Discharges not in compliance with the requirements of ~~4FAC50-60-1170~~ 9VAC25-880-70 of the general permit.

Section 2. That the director of planning and zoning be, and hereby is, directed to record the foregoing text amendment.

Section 3. That Article XIII, as amended pursuant to Section 1 of this ordinance, be, and the same hereby is, reordained as part of the City of Alexandria Zoning Ordinance.

Section 4. That this ordinance shall become effective on July 1, 2024, and shall apply to all applications for land use, land development or subdivision approval provided for under the City of Alexandria Zoning Ordinance which may be filed after such date, and shall apply to all other facts and circumstances subject to the provisions of the City of Alexandria Zoning Ordinance, except as may be provided in Article XII of the Zoning Ordinance.

JUSTIN WILSON
Mayor

Introduction: 4/2/24
First Reading: 4/2/24
Publication:
Public Hearing: 4/13/24
Second Reading: 4/13/24
Final Passage: 4/13/24

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 1105, Richmond, Virginia 23218
www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

December 22, 2014

Rashad M. Young, City Manager
City of Alexandria
301 King Street, Room 3500
Alexandria, Virginia 22314

Dear Mr. Young:

In accordance with §62.1-44.15:27 G of the Virginia Stormwater Management Act (Act), Department of Environmental Quality (DEQ) has completed the review of the City of Alexandria's final Virginia Stormwater Management Program (VSMP) application package submitted on November 4, 2014. Based on this review, DEQ has determined that the City of Alexandria's VSMP is consistent with the Act, the VSMP regulation and the General VPDES Permit for Discharges of Stormwater from Construction Activities.

In light of this determination, DEQ approves the City of Alexandria's VSMP and the City is authorized to operate a VSMP as of July 1, 2014. Please note that this approval is based on the content of the application package. Any changes made to the documents in the package after the approval date, including changes to the adopted ordinance, may necessitate DEQ evaluation as part of its compliance review of your approved VSMP.

Thank you for your cooperation in developing a VSMP. We look forward to continuing to assist the City with the implementation of its VSMP.

Sincerely,

David K. Paylor

cc: Melanie Davenport, Director, Water Division
Frederick Cunningham, Director, Office of Water Permits
Joan Salvati, Manager, Local Government Stormwater Programs

City of Alexandria, Virginia

Policies and Procedures for Construction Site Runoff Control Inspections

06/05/2014
Updated 3/8/2019

ECO-CITY ALEXANDRIA

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Purpose

The purpose of this document is to provide policies and procedures for the inspection of construction sites for stormwater runoff control.

Constructions sites will be inspected for compliance with erosion and sedimentation control and for compliance with the site's VPDES Stormwater Construction General Permit as applicable.

Legal Authority

Commonwealth of Virginia

Legal Authority to enforce stormwater runoff controls on construction sites is granted to the City by the Code of Virginia. Specifically, authority is granted by the Stormwater Management Act, Title 62.1, Chapter 3.1, Article 2.3 of the Code of Virginia; the Virginia Stormwater Management Program (VSMP) Regulation, Chapter 870 of the Virginia Administrative Code; and by chapter 880 the General VPDES Permit for Discharges of Stormwater From Construction Activities, Chapter 880 of the Virginia Administrative Code.

City of Alexandria

The City of Alexandria Erosion and Sedimentation Control Ordinance is located in Title 5 Chapter 4 of the Alexandria, Virginia code of Ordinances.

The Environmental Management Ordinance, Article XIII of the City of Alexandria Zoning Ordinance contains those provisions of the City Code related to the VPDES Construction General Permit.

City Procedures for Erosion and Sedimentation Control Inspections

Inspection Schedule

All permitted projects will be inspected as follows:

A. During or immediately following initial installation of erosion and sediment controls;
B. At least once in every two week period;
C. Within 48 hours following any runoff producing storm event; and
D. At the completion of the project prior to the release of any performance bonds.

Inspection Procedure

City inspections will be performed according to the following procedures:

1. Inspections will be performed to inspect for compliance with the approved erosion and sedimentation control plan. City staff will attempt to inform the construction site operator and/or permittee prior to the inspection.
2. Inspections will be documented on the inspection forms found in appendix 1 of this document.
3. After the inspection has been completed, a hard copy of the documentation will be saved along with any pictures.
4. After an inspection, a report will be generated for the permittee.
5. For those sites failing inspection, a notice to comply and a copy of the inspection report will be sent to the permittee. This notice can be hand delivered or sent to the permittee by certified mail. The notice to comply will specify the measures needed to bring the site into compliance with the approved erosion and sedimentation control plan and the timeframe allowed for compliance. The notice to comply can be found in Appendix 1 of this document.
6. The time allowed for compliance will be determined by the inspector and will be based on the severity of the violation. No timeframe to comply will exceed 30 days.
7. After the timeframe to complete the required measures has expired, the City inspector will reinspect the site for compliance with the notice to comply.
8. All enforcement action notification will follow the procedures outlined in this document.

Documentation

The inspection records shall include at a minimum:

1. The date of inspection,
2. The result of the inspection,
3. Any deficiencies,
4. The timeframe allowed for compliance with any noted deficiencies.

All records must be kept on file for a minimum of five years.

Enforcement of Erosion and Sedimentation Control Violations

In cases where noncompliance is causing or is imminent danger of causing harmful erosion of lands or sediment deposition in the waters of the commonwealth, drainage system discharging to such waters, or lower lying property or were land disturbing activities have commenced without an approved plan, a stop work order may be issued whether or not the permittee has been issued a notice to comply.

For all other violations, enforcement action for failure to comply with an approved erosion and sedimentation control plan or for performing land disturbing activities without an approved plan will follow these steps:

1. After a notice to comply has been issued, the inspector will reinspect the site for compliance with the notice to comply.
2. If the site fails to meet all of the measures outlined in the notice to comply, the inspector may issue a written stop work order.
3. The permittee will be given a timeframe to complete the measures needed to bring the site into compliance with the notice to comply and the approved sedimentation and erosion control plan. The timeframe allowed will be determined by the inspector and will be based upon the severity of the violation.
4. During the time period the stop work order is active, no construction or other work on the site can take place other than corrective measures.
5. Once the time allowed to bring the site into compliance has expired, the site may be referred to the Director of Transportation and Environmental Services, his or her designee; the City Attorney's Office; or both.
6. The City may then execute a letter of intent to use the performance security for site correction and/or refer the project to the City Attorney's Office to issue a Notice of Violation with associated civil penalties. A letter of intent can be found in appendix 2 of this document. A notice of violation can be found in appendix 3 of this document.
    a. Letter of Intent. If referred to the Director of Transportation and Environmental Services, the director will send the permittee a letter of intent to utilize the performance bond or cash escrow to apply the corrective measures to the site. The letter will specify a timeframe for compliance. If no action is taken in the time specified, the Director shall have the deficiencies corrected charge to and pay for all related expenses from the performance bond or escrow account. If the cost of correction exceeds the amount of the held security, the Director may collect the difference from the permittee.
    b. Penalties for noncompliance. Any person who violates these regulations shall be subject to a civil penalty. Each day the violation continues shall constitute a separate offense.
        i. First time offenders shall be subject to a civil penalty not to exceed five hundred dollars ($500.00) per day of continuing violation.
        ii. Each subsequent violation for the same section or provision shall be subject to a civil penalty not to exceed one thousand dollars ($1000.00) per day of continuing violation.

iii. No civil penalty arising from the same operative set of facts shall give rise to levying of a civil penalty more than once in any 10 day period or exceeding a total of $3,000.

City Procedures for VPDES Stormwater Construction General Permit Inspections

Inspection Schedule

All permitted projects will be inspected as follows:

A. Periodically, and/or
B. In response to complaints.

Inspection Procedure

City inspections will be performed according to the following procedures:

1. Inspections will be performed to inspect for compliance with the approved erosion and sedimentation control plan and Stormwater Pollution Prevention Plan (SWPPP). City staff will attempt to inform the construction site operator and/or permittee prior to the inspection.
2. Inspections will be documented on the inspection forms found in appendix 1 of this document.
3. After the inspection has been completed, a hard copy of the documentation will be saved along with any pictures.
4. After an inspection, a report will be generated for the permittee.
5. For those sites failing inspection, a notice to comply and a copy of the inspection report will be sent to the permittee. This notice can be hand delivered or sent to the permittee by certified mail. The notice to comply will specify the measures needed to bring the site into compliance with the approved VPDES Stormwater Construction General Permit and the timeframe allowed for compliance.
6. The time allowed for compliance will be determined by the inspector and will be based on the severity of the violation. No timeframe to comply will exceed 30 days.
7. After the timeframe to complete the required measures has expired, the City inspector will reinspect the site for compliance with the notice to comply.
8. All further enforcement action notification will follow the procedures outlined in this document.

Documentation

The inspection records shall include at a minimum:

1. The date of inspection,
2. The result of the inspection,
3. Any deficiencies,
4. The timeframe allowed for compliance with any noted deficiencies.

All records must be kept on file for a minimum of five years.

Enforcement of VPDES Stormwater Construction General Permit Violations

In cases where noncompliance is grossly affecting or presents an imminent and substantial danger of causing harmful erosion of lands or sediment deposition in waters within the watersheds of the Commonwealth or otherwise substantially impacting water quality, the Director of T&ES may issue, without advance notice or hearing, an emergency order directing such person to cease immediately all land-disturbing activities on the site.

For all other violations, enforcement action for failure to comply with an approved VPDES Construction General Permit or for performing land disturbing activities without an approved permit will follow these steps:

1. After a notice to comply has been issued, the inspector will reinspect the site for compliance with the notice to comply.
2. If the site fails to meet all of the measures outlined in the notice to comply, the inspector may issue a written stop work order. A stop work order can be found in appendix 1 of this document.
3. The permittee will be given a timeframe to complete the measures needed to bring the site into compliance with the notice to comply and the approved VPDES Construction General Permit. The timeframe allowed will be determined by the inspector and will be based upon the severity of the violation.
4. During the time period the stop work order is active, no construction or other work on the site can take place other than corrective measures.
5. Once the time allowed to bring the site into compliance has expired, a notice of violation may be issued and the site referred to the City Attorney's Office. A notice of violation can be found in appendix 4 of this document.
6. Any violation of the VPDES Construction General Permit or failure to operate without a permit is subject to a civil penalty not to exceed $32,500 per day per violation with each day of violation as a separate offense. The City Attorney's Office will pursue collection of the civil penalty through prosecution in the appropriate court.

Appendix 1-Inspection Form, Notice to Comply, and Stop Work Order

REASON FOR INSPECTION
- ☐ PERIODIC
- ☐ BIWEEKLY
- ☐ RAINFALL EVENT

Transportation and Environmental Services
Development and Right of Way
301 King St. Room 4130
Alexandria, VA 22314
703-746-4090

CONSTRUCTION GENERAL PERMIT INSPECTION REPORT

Date: _____ CGP Number: _____

Project name: _____

Location: _____

Inspector name: _____ Weather conditions: _____

Date of last precipitation: _____ Precipitation Amount: _____(data from Reagan National Airport)

STAGE OF CONSTRUCTION

☐Pre-construction conference ☐Rough Grading ☐Building Construction
☐Final Grading ☐Final Stabilization ☐Notice of Termination
Other: _____

Enforcement/Follow-up Action:
☐Notice to comply ☐Stop work order ☐Re-inspection ☐N/A

ESC AND SWM CONTROL MEASURES

Properly Installed and Operational			Type of BMP or Activity	Location and Corrective Action Required	Date to complete
Yes	No	N/A			
☐	☐	☐	MS1-Temporary or permanent stabilization of exposed areas		
☐	☐	☐	MS2-Stabilization of stockpiles		
☐	☐	☐	MS3-Adequate stabilization using vegetative cover		
☐	☐	☐	MS4-Installation and maintenance of perimeter sediment control		
☐	☐	☐	MS5-Stabilization of earthen structures		
☐	☐	☐	MS6-Installation of sediment basins and/or sediment traps		
☐	☐	☐	MS7-Stabilization of slopes		
☐	☐	☐	MS8-No concentrated runoff from slopes		
☐	☐	☐	MS9- Protection from slope water seepage		
☐	☐	☐	MS10-Adequate catch basin installation		
☐	☐	☐	MS11-Channel lining/outlet protection for stormwater conveyance channels		

☐	☐	☐	MS12-Measures used to minimize impacts for in-stream construction		
☐	☐	☐	MS13-Non-erodible material for temporary stream crossings		
☐	☐	☐	MS14-Applicable regulations for working in a watercourse have been met		
☐	☐	☐	MS15-Re-stabilization of in-stream construction		
☐	☐	☐	MS16-Underground utilities installed in accordance with applicable standards		
☐	☐	☐	MS17-Construction entrance/exit and prevention of offsite tracking		
☐	☐	☐	MS18-All temporary ESC controls removed when required		

POLLUTION PREVENTION MEASURES

BMP Implemented			Type of BMP or Activity	Corrective Action Required	Date to complete
Yes	No	N/A			
☐	☐	☐	Vehicle and equipment fueling, cleaning, storage, and maintenance areas free of spills, leaks, or deleterious material		
☐	☐	☐	Concrete washout clearly marked, being used, and emptied as required		
☐	☐	☐	Sensitive areas (RPAs, streams, mature trees) protected with barriers, flags, or similar		
☐	☐	☐	Additional measures to address a TMDL		
☐	☐	☐	Materials with potential to impact stormwater stored under cover		
☐	☐	☐	BMPs effective to prevent discharges from washout/cleanout of stucco, paint, form release oils, curing compounds or construction material		
☐	☐	☐	Covered dumpsters for trash and litter		

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

On site and available			SWPPP Element	Corrective Action Required	Date to complete
Yes	No	N/A			
☐	☐	☐	Notice of permit coverage posted at site entrance		
☐	☐	☐	Notice of the location of the SWPPP, contact, and information for public access posted at site entrance		
☐	☐	☐	SWPPP onsite, up to date, and modifications documented		
☐	☐	☐	Copy of signed registration statement		
☐	☐	☐	Copy of notice of coverage letter and copy of CGP		
☐	☐	☐	Name, phone number, and qualifications of qualified professional		

☐	☐	☐	Approved ESC plan on site		
☐	☐	☐	Approved SWM plan on site		
☐	☐	☐	Pollution prevention plan with pollution generating activities map		
☐	☐	☐	List of contractors and sub-contractors		
☐	☐	☐	Record of land disturbing activities		
☐	☐	☐	Record of corrective actions		
☐	☐	☐	Self-inspections performed every 4 days or 5 days and after a qualifying rain event		

STORMWATER MANAGEMENT FACILITY

Under construction			Construction Complete			Type of facility	Type of work being performed
Yes	No	N/A	Yes	No	N/A		
☐	☐	☐	☐	☐	☐		
☐	☐	☐	☐	☐	☐		
☐	☐	☐	☐	☐	☐		
☐	☐	☐	☐	☐	☐		
☐	☐	☐	☐	☐	☐		

Verbal/Written notification given to:

Inspector signature:

ADDITIONAL INFORMATION (Attach additional pages if needed)

Appendix 2-Letter of Intent

DATE

Owner Name
Owner Address

RE: Failure to comply with the approved erosion and sedimentation control plan
Site

Certified Mail #

LETTER OF INTENT

Dear NAME:

On DATE, the above reference site was issued a Notice to Comply from the City of Alexandria Office of Construction and Inspection for failure to comply with the site's approved erosion and sedimentation control plan. A stop work order was issued on DATE giving you X number of days to bring the site into compliance with the approved plan. As of today, the site remains out of compliance with the approved plan.

You have X days from the date of this letter to either bring the site into compliance or submit in writing a request for an extension. If the site is not brought into compliance or given an approved extension of time by DATE, the City will utilize your performance bond or cash escrow to apply the necessary corrective measures to the site. If the cost of correction exceeds the amount of the held security, the City may collect the difference from the permittee. Failure to complete corrective measures may also result in the issuance of a Notice of Violation and associated penalties of up to $1000 per day per violation.

Section 5-4 of the City of Alexandria Code of Ordinances requires applicable development to operate under an approved erosion and sedimentation control plan and to remain in compliance with that plan. Specifically, Sec. 5-4-4 of the City Code states:

a) It shall be unlawful for any person to construct, erect or alter any building or structure for which an approved erosion and sedimentation control plan is required by this chapter, except in accordance with the approved plan.
b) It shall be unlawful for any person to clear, grade, excavate, fill, remove topsoil from or change the contour of any land in the city for which an approved erosion and sedimentation control plan is required by this chapter except in accordance with the approved plan.
c) It shall be unlawful for any person to remove or destroy trees, shrubs, grass, weeds, vegetation, ground cover or other plant life on any land in the city for which an approved erosion and sedimentation control plan is required by this chapter except in accordance with the approved plan.

The following observations were made during the inspection and require compliance measures:

- Comments
-

Your time and cooperation are greatly appreciated and will help to achieve our goal of protecting our streams, rivers and the Chesapeake Bay. Please contact NAME in Development and Right of Way Services at PHONE, via email at EMAIL, if you have any questions, need additional information, or to submit the above requested information.

Thank you for your time and cooperation with regard to this matter.

Sincerely,

Deputy Director, Development and Right of Way Services

CC: , Inspector
, VSMP Administrator
, Deputy Director, Infrastructure and Environmental Quality
, Director, Transportation and Environmental Services

Appendix 3-Erosion and Sedimentation Notice of Violation

DATE

Owner Name
Owner Address

RE: Failure to comply with the approved erosion and sedimentation control plan
Site

NOTICE OF VIOLATION

Dear NAME:

On DATE, the above reference site was issued a Notice to Comply from the City of Alexandria Office of Construction and Inspection for failure to comply with the site's approved erosion and sedimentation control plan. A stop work order was issued on DATE giving you X number of days to bring the site into compliance with the approved plan. As of today, the site remains out of compliance with the approved plan.

Due to failure to respond to multiple notices by the City and/or to bring the site into compliance with the approved sedimentation and erosion control plan, you are hereby served a **NOTICE OF VIOLATION for violation of the City Code of Alexandria Title 5, Chapter 4-Erosion and Sedimentation Control.**

Section 5-4 of the City of Alexandria Code of Ordinances requires applicable development to operate under an approved erosion and sedimentation control plan and to remain in compliance with that plan. Specifically, Sec. 5-4-4 of the City Code states:

a) It shall be unlawful for any person to construct, erect or alter any building or structure for which an approved erosion and sedimentation control plan is required by this chapter, except in accordance with the approved plan.
b) It shall be unlawful for any person to clear, grade, excavate, fill, remove topsoil from or change the contour of any land in the city for which an approved erosion and sedimentation control plan is required by this chapter except in accordance with the approved plan.
c) It shall be unlawful for any person to remove or destroy trees, shrubs, grass, weeds, vegetation, ground cover or other plant life on any land in the city for which an approved erosion and sedimentation control plan is required by this chapter except in accordance with the approved plan.

You will be assessed a civil penalty of $500 per day per violation beginning DATE until the corrective actions below are completed.

The following items are required to bring your site into compliance:

- Comments

This office will pursue collection of the civil penalty through prosecution in the appropriate court. Additionally, the city may perform the necessary corrections and bill the property owner.

Your time and cooperation are greatly appreciated and will help to achieve our goal of protecting our streams, rivers and the Chesapeake Bay. Please contact NAME in Development and Right of Way Services directly at PHONE or via email at email, if you have any questions about the corrective measures. Please contact me with any questions about the scope and nature of the impending legal proceedings.

Please let me know if you have any questions.

Yours very truly,

Deputy City Attorney

CC: , Inspector
, VSMP Administrator
, Deputy Director, Infrastructure and Environmental Quality
, Deputy Director, Development and Right of Way
, Director, Transportation and Environmental Services

Appendix 4-VPDES Stormwater Construction General Permit Notice of Violation

DATE

Owner Name
Owner Address

RE: Failure to comply with the approved erosion and sedimentation control plan
Site

NOTICE OF VIOLATION

Dear NAME:

On DATE, the above reference site was issued a Notice to Comply from the City of Alexandria Office of Construction and Inspection for failure to comply with the site's approved VPDES Construction General Permit. A stop work order was issued on DATE giving you X number of days to bring the site into compliance with the approved plan. As of today, the site remains out of compliance with the approved plan.

Due to failure to respond to multiple notices by the City and/or to bring the site into compliance with the approved plan, you are hereby served a **NOTICE OF VIOLATION for violation of the City of Alexandria Zoning Ordinance, Article XIII-Environmental Management.**

Section 13-111 of the Ordinance requires applicable development to operate under an approved VPDES permit, an approved stormwater management plan, an approved erosion and sedimentation control plan and an approved stormwater pollution prevention plan and to remain in compliance with those plans. Specifically, Section 13-126 of the City Code states:

Any person who violates any provision of this article or who fails, neglects, or refuses to comply with any order of the director of T&ES, shall be subject to a civil penalty not to exceed $32,500.00 for each violation within the discretion of the court. Each day of violation of each requirement shall constitute a separate offense.

(a)Violations for which a penalty may be imposed under this subsection shall include but not be limited to the following:

i. No state permit registration;
ii. No SWPPP;
iii. Incomplete SWPPP;
iv. SWPPP not available for review;
v. No approved erosion and sediment control plan;
vi. Failure to install stormwater BMPs or erosion and sediment controls;
vii. Stormwater BMPs or erosion and sediment controls improperly installed or maintained;

viii. Operational deficiencies;
ix. Failure to conduct required inspections;
x. Incomplete, improper, or missed inspections; and
xi. Discharges not in compliance with the requirements of 4FAC50-60-1170 of the general permit.

You will be assessed a civil penalty of $500 per day per violation beginning DATE until the corrective actions below are completed.

The following items are required to bring your site into compliance:

- Comments

This office will pursue collection of the civil penalty through prosecution in the appropriate court. Additionally, the city may perform the necessary corrections and bill the property owner.

Your time and cooperation are greatly appreciated and will help to achieve our goal of protecting our streams, rivers and the Chesapeake Bay. Please contact NAME in Development and Right of Way Services directly at PHONE or via email at email if you have any questions about the corrective measures. Please contact me with any questions about the scope and nature of the impending legal proceedings.

Please let me know if you have any questions.

Yours very truly,

Deputy City Attorney

CC: , Inspector
, VSMP Administrator
, Deputy Director, Infrastructure and Environmental Quality
, Deputy Director, Development and Right of Way
, Director, Transportation and Environmental Services

DEVELOPMENT PRELIMINARY SITE PLAN CHECKLIST

Department of Planning and Zoning, 301 King Street, Room 2100
Alexandria, Virginia 22314 Phone: (703) 746-4666

DSUP/DSP #_____

Project Name (different from project address): _____

Project Address: _____

Applicant's Name:_____

Submission Deadline: Plan submissions received before 3:00 pm will be processed and routed to reviewers the same day. Plan submissions received after 3:00 pm will be processed and routed the next business day. **Submit to the Planning and Zoning Office to avoid processing delays.**

The following materials are required for a complete development preliminary plan submission:

☐ **Completed and Signed Development Special Use Permit or Development Site Plan Application**

☐ **Completed and Signed Preliminary Plan Checklist (this form)**

☐ **Filing Fee (DSUP and DSP).** Please see the fee schedule here.

☐ **Site Plans for Completeness Review of Preliminary Plan** (First Submission) 16 sets.
- ☐ 13 rolled sets in black & white
- ☐ 3 rolled sets in color labeled "color sets
- ☐ 17 copies of application, site plan checklist, & respone to City comments letter

☐ **Site Plans After Completeness Review of Preliminary Plan** (Second Submission) 17 sets.
- ☐ 14 rolled sets in black & white
- ☐ 3 rolled sets in color labeled "color sets"
- ☐ 21 copies of application, site plan checklist, & respone to City comments letter

Note: Thirteen half-sized sets of the preliminary plan will be requested once the proposal is scheduled for a Planning Commission hearing.

☐ **Electronic Copy.** For each submission, provide an electronic copy of **all submitted documents** on a CD disk or thumb drive in .pdf format. Please submit the PDF of the site plan as one single file (do not break out the individual pages).

☐ **Signature of professional certifying that the submission meets all requirements:**

I, _____(print name), hereby certify that the drawings and other materials that accompany this checklist have met the requirements of the checklist, and the accompanying electronic copy is an exact duplicate of the hard copy submission.

Signature _____ **Date** _____

General Process Information:
Preliminary site plans will be reviewed for completeness by City staff. Completeness review comments will be returned to the applicant in approximately 3 weeks from submission listing additional information required for the application to be deemed complete.

The applicant must revise the site plan to address all comments of the completeness review and resubmit to Planning and Zoning. This submission must include a total of 21 full-sized folded copies, each with a letter responding to each of the completeness comments and the specific location of the additions or corrections made to the plan. These plans are routed and reviewed to verify completeness. **If the plans are still not complete, the review of them will be suspended and the applicant will be notified of the information that is required.**

When the plan/application is deemed complete, a confirmation letter or e-mail will be sent to the applicant. Within 5 working days of receipt of the confirmation the applicant shall install a notice of the proposed development at the site. When an application is complete, it will receive technical review by City agencies. Three **(3)** weeks prior to the scheduled hearing date the applicant shall submit a sample materials board and/or color rendering.

FORMAT REQUIREMENTS FOR EACH SHEET:

- ☐ Print size of 24" x 36"
- ☐ Scale of no less than 1" : 40' with scale identified on each sheet – 1" : 20 or 1" : 30 preferred **Note: 1":25 is not an acceptable scale**
- ☐ City approval signature block in same place (lower right corner) on each sheet (see attachment for configuration and size of block)
- ☐ North point shown consistently in the same direction on all plan sheets with reference to source of meridian. North arrow pointing down is not acceptable
- ☐ Property lines with course and distance for each
- ☐ Name, address, signature and registration number of professional(s) preparing the plan on each sheet – all plans to be sealed by the appropriate professional
- ☐ Legend of symbols, patterns, and abbreviations used
- ☐ Date the plan was prepared/last revised

COVER SHEET:

- ☐ Name, address, telephone and email address of the developer and of the owner(s) of record
- ☐ A narrative description of the project
- ☐ Location map with the site shown in relation to the nearest intersection of two or more streets, and Parcel Number (includes tax reference number)
- ☐ Sheet Index
- ☐ Key to plan sheets if more than one sheet is needed to show the whole site
- ☐ Total area included in the site plan, total area of tax parcel, total existing and proposed impervious area on the tax parcel, and total area that will be disturbed during construction (all expressed in square feet and acres)
- ☐ A list of all special use permits, site plan approvals and zoning modifications or waivers being requested
- ☐ A list of all existing special use permits, site plans and proffers that apply to all or part of the site
- ☐ Building Code analysis

ZONING TABULATIONS (May be included on cover where sufficient space exists)- *For each element, list zoning ordinance requirement and number proposed on preliminary plan:*

***Note: If the proposed development includes multiple lots, the zoning tabulation information must be provided for each individual lot unless all the lots will be consolidated in conjunction with the proposal.**

- ☐ Zoning of the site (zoning proffers, if applicable)
- ☐ Existing uses on the site
- ☐ Proposed uses on the site
- ☐ Lot area minimum required by zone district
- ☐ Lot area (required and proposed)
- ☐ Number of dwelling units (list by number of bedrooms for multifamily)
- ☐ Units per acre for residential
- ☐ Gross square feet (GSF) of building area*****, total and listed by use, (with area devoted to parking included and listed separately)
- ☐ Net square feet (NSF) or Floor Area, total and listed by use
- ☐ Floor-area-ratios existing and proposed
- ☐ Open space (required and proposed)
- ☐ Open space total proposed and broken down by ground level space and usable space

proposed.

- ☐ Average finish grade for each building
- ☐ Height of each building above average finish grade
- ☐ Building setbacks (required and proposed) for each building
- ☐ Frontage with required and proposed listed separately
- ☐ Parking spaces (listed by compact, standard, handicapped size and total) required and proposed
- ☐ Parking spaces (listed by location of parking i.e. above grade and/or below grade)
- ☐ Loading spaces (required and proposed)
- ☐ Existing and proposed trip generation

***Note: The gross square footage of a building or buildings on a lot or tract of land (whether "main" or "accessory") is the sum of all gross horizontal areas under a roof or roofs. These areas shall be measured from the exterior faces of walls and from eaves of all roofs where they extend beyond the wall line, or from the center line of party walls.**

The net square footage OR Floor Area of a building or buildings on a lot or tract of land (whether "main" or "accessory") is the sum of all gross horizontal areas under a roof or roofs. These areas shall be measured from the exterior faces of walls and from the eaves of all roofs where they extend beyond the wall line or from the centerline of party walls and shall include all space with headroom of seven feet six inches or more, whether or not provided with a finished floor or ceiling. Excluded shall be elevator and stair bulkheads, accessory water tanks, cooling towers and similar construction not susceptible to storage or occupancy. Basements and subbasements shall be excluded from the floor area ratio computations, but for the purpose of computing off street parking requirements that portion of such areas as are occupied by permitted uses shall be subject to the provisions of Article VIII. (special restrictions apply in Eisenhower East and Landmark – Van Dorn)

CONTEXTUAL PLAN:

- ☐ Show the proposed project site(s) and adjacent areas affected by the project
  - ☐ Proposed project site appropriately labeled
  - ☐ Display a minimum of a quarter (1/4) mile in radius of proposed project
  - ☐ Existing property lines, buildings, streets, metro, transit stops and routes, and major thoroughfares, if any, appropriately labeled

MAP OF EXISTING SITE CONDITIONS - *Show location, dimensions, size, height, and elevations of:*

- ☐ Sidewalks, streets and their names (show full width, curblines and centerlines), alleys, existing easements (include emergency vehicle easements), covenants and reservations
- ☐ Show the full right-of-way width of all adjoining streets and include all information for both sides
- ☐ Roadway and lane widths and uses (right turn, left turn, etc.)
- ☐ Traffic and pedestrian controls including signs, markings and signals
- ☐ Existing transit/bus stops with route number identification adjacent to the property
- ☐ On-street parking locations and individual spaces when designated
- ☐ Driveways, entrances, exits, parking areas; show vehicle parking spaces by type (standard, compact and accessible) and indicate the number in each bay and total count. Dimensions shall exclude any obstructions such as columns or light poles
- ☐ Building setbacks, highway setback lines and zone transition lines
- ☐ Existing buildings and structures; show footprint and indicate height
- ☐ Property lines, including adjoining property lines; show course and distance of each site boundary line
- ☐ For adjoining properties, show current zoning and names and addresses of owners

(show zoning district boundary lines if multiple districts exist on the site or adjacent parcels)

- ☐ Transformers, valves, and other surface features of utility systems
- ☐ Storm and sanitary sewer systems, water mains, and other buried utilities; indicate size of lines and direction of flow for storm and sanitary lines; identify owner of each system
- ☐ Fire hydrants and fire department connections
- ☐ Major trees (6" or more in caliper) and shrubs (3' or more in height), located and identified by species, including street trees on public right-of-ways along property frontage. Also, locate and identify trees on adjacent properties with canopies that extend over the site. Identify species, size and locations of trees on opposite sides of fronting streets.
- ☐ Recreation areas, swimming pools and bike and walking trails on abutting streets or public access easements
- ☐ Watercourses, bodies of water, wetlands and limits of flood plains
- ☐ Resource Protection Areas (RPAs) as defined in Article XIII of the Zoning Ordinance
- ☐ Lighting on public rights-of-way adjacent to the site
- ☐ Significant site features
- ☐ Topography shown with 2' contours on the subject property and on adjacent parcels for sufficient distance to indicate the relationship of the site to off-site terrain
- ☐ Slopes, terraces and retaining walls, including elevations of level areas and tops and bottoms of walls and exterior stairways and ramps
- ☐ Indicate the following on the plan- underground storage tanks; areas located within 1,000 feet of a former sanitary landfill, dump or disposal area; areas with the potential of generating combustible gases.
- ☐ Location of buildings listed on the Alexandria List of 100-Year Old Buildings that occur on the site or on adjacent parcels
- ☐ A statement indicating whether or not the Site has areas of Marine Clay
- ☐ Indicate areas on plan and provide a statement describing any known or expected contamination or brief narrative of due diligence completed (site history) if none is expected

PRELIMINARY SITE PLAN - *Include existing features to be retained and show location, dimension, size, height and elevation of proposed:*

- ☐ Boundaries of zoning districts on the site and adjoining sites
- ☐ Sidewalks, streets, alleys with widths labeled, and elevations
- ☐ Show the full width and centerlines of all adjoining streets
- ☐ Existing and modified lane widths and uses (right turn, left turn, etc.)
- ☐ Existing and proposed traffic controls including signs, markings and signals
- ☐ Sidewalks, bike and walking trails on sites and on abutting streets or public property/easements, with widths of each
- ☐ Bicycle parking spaces provided per City Standards
- ☐ Bicycle and pedestrian paths per the Transportation Master Plan and 1998 *Bicycle Transportation and Multi-Use Trail Master Plan*, including existing and proposed routes
- ☐ Direction of traffic and volumes at all site entrances, exits and intersections
- ☐ Sight distance per AASHTO at all driveways and street intersections
- ☐ Curb radii at intersections and driveway entrances for public and private streets and alleys, and within parking lots; note AASHTO turning radii
- ☐ Existing and proposed on-street parking locations and individual spaces when required
- ☐ Driveways, entrances, exits, parking areas; show parking spaces by type (standard, compact and handicap) and indicate the number in each bay and the total count
- ☐ Locations of underground parking and indicate the footprint of related subsurface structures
- ☐ Garage layouts with columns shown and drive aisle and parking spaces dimensioned. Parking space widths and lengths do not include the column width. The use of “typical”

may be used provided it dimensions all types of spaces/aisles and is used in enough places that the review can be performed accurately.

- ☐ Vehicle turning movements for any parking lot or garage, entrances and drive aisles, accessible spaces with AASHTO standard vehicle
- ☐ Vehicle turning movements for loading zones with the largest vehicle that will access the site
- ☐ Slope of entrance ramp
- ☐ Locations of building entrances and exits
- ☐ Building setbacks, highway setback lines, zone transition lines and vision clearances
- ☐ Provide sections demonstrating compliance with the Section 6-403
- ☐ Show any transition zone setback, if applicable
- ☐ Easements, covenants and reservations including emergency vehicle easements (EVE) (existing and proposed)
- ☐ Property lines; show course and distance of each site boundary line
- ☐ Yard dimensions for setback requirements
- ☐ Buildings and structures, including optional decks and other projections such as canopies, bay projections, roof overhangs; or maximum building envelope (where approved as envelope) showing outside dimensions, including height, and first floor elevations
- ☐ Stoops, steps and staircases (with elevations)
- ☐ Distances between buildings and adjoining property lines
- ☐ Storage space for solid waste and recyclable material containers with trash truck turning movements and pick up locations
- ☐ Storm and sanitary sewer systems, including lateral lines, water mains and service lines, with size, direction of flow and owners indicated in plan view for both existing and proposed
- ☐ Gas mains and service lines; with size of line and owner of line indicated
- ☐ Fire hydrants, water mains and service lines; with size of line and owner of line indicated
- ☐ Electric, telephone, cable and all other utilities on the property; identify owners
- ☐ Transformers, ground level mechanical units, switchboxes, cable boxes, poles, telephone pedestals, and other surface features of utility systems and elevations
- ☐ Existing and proposed light poles and fixtures on-site and on adjoining rights-of-way
- ☐ Existing and proposed bus stop(s) and bus stop amenities
- ☐ Recreation areas, swimming pools. (Discharge from swimming pools shall be shown connected to the sanitary sewer in plan view.)
- ☐ Watercourses, bodies of water, wetlands and limits of flood plains
- ☐ Resource Protection Areas (RPAs) as defined in Article XIII of the Zoning Ordinance and developable area
- ☐ Significant site features
- ☐ Limits of Disturbance
- ☐ Proposed grading shown with 2' contours on the subject property and on adjacent parcels for sufficient distance to indicate the relationship of the site to off-site terrain
- ☐ Slopes, terraces and retaining walls, including elevations of level areas and tops and bottoms of walls and exterior stairways and ramps
- ☐ Identify all potential future deck locations

LANDSCAPE PLAN - *(Proposed landscape plan must comply with the " City of Alexandria Landscape Guidelines, 2007" published by the Department of Recreation, Parks and Cultural Activities, City of Alexandria)* http://alexandriava.gov/uploadedFiles/recreation/info/040907_land_guidelines.pdf

- ☐ Buildings, and other structures and all building entrances
- ☐ Streets, driveways, sidewalks, trails, intersections and all paved areas
- ☐ Utilities and utility easements, existing and proposed
- ☐ Locations of off-site and on-site lighting, including street lighting

- ☐ Existing vegetation to be removed; include locations, size and species of all trees 6" or greater in caliper
- ☐ Street trees and natural vegetation to be retained; include locations, approximate driplines, size and species of all trees 6" or greater in caliper
- ☐ Details of protection structures to be used for existing trees to be preserved
- ☐ Proposed street tree species, locations, and planting details
- ☐ Indicate the distances between street trees
- ☐ Location and dimensions of areas to be landscaped (including within public right-of-ways), specifying the location, names, caliper, and size of proposed individual trees, shrubs, and ground cover plants (indicate initial and final height for trees and shrubs, initial width for shrubs, and initial spread for groundcover plants)
- ☐ Tabulation of required, existing and proposed crown coverage **(Do not include street trees.)**
- ☐ Show existing and proposed trails, roadways and sidewalks
- ☐ Plans shall be sealed by a Certified/Registered Landscape Architect.

OPEN SPACE PLAN:

- ☐ Open space areas graphically showing the square footage and type (ground level or rooftop)

LIGHTING PLAN/SIGNAGE PLAN:

- ☐ Building and structures
- ☐ Location of all existing and proposed lights, including street lights and building lights.
- ☐ Type of fixture
- ☐ Show the locations and height of proposed signs and provide information needed to assess compliance with the sign ordinance and applicable special guidelines.

GIS - DIMENSION PLAN - *Include existing features to be retained and show location, dimension, size, height and elevation of:*

- ☐ Sidewalks, streets, alleys, driveways and parking lots; (edge of pavement or top of curb)
- ☐ Show the full right-of-way width and centerlines of all adjoining streets
- ☐ Buildings and structures, showing outside dimensions, including height
- ☐ Property lines
- ☐ Stoops, steps and staircases
- ☐ Locations of building entrances; identification of primary building entrance, secondary entrances and any mock entrances if applicable
- ☐ 3 x y coordinate pairs in state plane coordinates (NAD 83) conforming to 50 scale (1:600/1”=50’) National Map Accuracy Standards.

***Note: The Dimension Plan is used to update the City of Alexandria’s Geographic Information System and therefore should contain only the information specified above. Additionally, Alexandria GIS does not meet the threshold for accuracy, as listed for the coordinate data above and is therefore not suitable as source for obtaining this coordinate information.**

ELEVATIONS AND SECTIONS:

- ☐ Scaled architectural elevations of each building face, with materials labeled
- ☐ Scaled elevations showing landscaping plan or screening treatment along public rights-of-way
- ☐ Scaled sections through buildings
- ☐ Scaled sections showing grade changes in relationship to buildings and/or retaining walls
- ☐ Scaled sections showing average finished grade line and scaled heights, including penthouses
- ☐ A detailed graphic showing floor area analysis indicating areas that have been deducted for purposes of the FAR calculation. If the FAR deductions exceed 20% of the overall

building's square footage, written justification shall be submitted.

☐ Scaled floor plans

ENVIRONMENTAL QUALITY AND QUANTITY PLAN - Plans for collecting and depositing stormwater, including approximate pipe sizes, structures and stormwater quality facility best management practices (BMPs):

☐ Pre- and post-development, 1, 2 and 10 year stormwater computations as appropriate
☐ Drainage area map delineating area contributing stormwater onto the project
☐ Narrative describing how the project will comply with the stormwater quantity and quality requirements in Article XIII of the Zoning Ordinance, to include the Alexandria Water Quality Volume Default.
☐ Soil types (Hydrologic Soil Group A, B, C or D as defined by NRCS) and location thereof. Group D soils must be used for stormwater worksheets and computations unless a geotechnical investigation is provided that documents otherwise.
☐ Virginia Runoff Reduction Method (VRRM) worksheets must be completed to document compliance with water quality requirements in Sec. 13-109(E) (4) and (5).
☐ Layout of stormwater facility BMPs providing the location and type of facility(ies) being proposed.
☐ Use the VRRM in computing Channel Protection and Flood Protection Requirements.
☐ Drainage area map with scale and north arrow indicating the area draining to the selected water quality BMPs
☐ City standard Alexandria water quality volume default BMP data blocks (2)
☐ Geographic coordinates of the BMP(s) (NAD88)
☐ If an operator intends to address the water quality phosphorus requirements established in 9VAC25-870-63 and found in Sec. 13-109(E) (4) or (5)through purchasing offsite credits, where applicable, then a letter of availability from the offsite credit provider shall be included that documents the phosphorus and associated nitrogen credits are in place and achieving the required reduction.
☐ Preliminary calculations of sanitary flow generated from the site
☐ Narrative describing how the project will comply with the requirements of Memo to Industry 02-07 titled *New Sanitary Sewer Connection and Adequate Outfall Analysis*
☐ Environmental Site Assessment Notes per Sec. 13-112 Environmental Management Ordinance

***When subdivision of land is involved, include a* PRELIMINARY SUBDIVISION PLAT -** *(Refer to Section 11-1700 of the Alexandria Zoning Ordinance for additional requirements.)*

☐ Plat size shall not exceed 24" x 36"
☐ Scale no less than 100' to 1"
☐ Subdivision name
☐ Name, address of owner of record and the applicant
☐ Name, address, certificate number and seal of the surveyor or engineer
☐ Gross area in acres and total number of buildings, lots or sites involved
☐ Date, scale and north point with reference to source of meridian
☐ Zoning of the property
☐ A form or space, not less than two and one-quarter by three and one-half inches, on which approval by the commission may be shown
☐ Lot lines with the dimensions of the length and width of the lots
☐ In the case of resubdivisions, all lot lines or lot numbers that are proposed to go out of existence by reason of the resubdivision shall be shown by dotted lines and numbers
☐ Location of the property immediately adjoining the proposed subdivision and the names and addresses of all its owners
☐ Location and width of all proposed streets, alleys and public areas and their dimensions
☐ Points of connection with the city sewer system

- ☐ Location of all easements, reservations, and highway setbacks, as established by section 7-1006 of the zoning ordinance
- ☐ The width and name of adjacent existing streets, alleys, easements, public utilities, and railroads shown graphically
- ☐ Limits of floodplains and resource protection areas (RPAs)
- ☐ The location of metal monuments not less than one inch in diameter and 24 inches in length shown thus: O, and located in the ground at each intersection of streets and alleys with plat boundary lines, and at all points on street, alley, and boundary lines where there is a corner, change in direction, or curvature.
- ☐ Any deed restrictions shall be recorded with this plat, if applicable.
- ☐ A surveyor's or engineer's seal and certificate of survey in the following form, which may be modified to accommodate title information:

  "I hereby certify that I have carefully surveyed the property delineated by this plat, and that it is correct to the best of my knowledge and belief; that this is a subdivision of part (or all) of the land conveyed by _____ to _____ by deed dated _____ and recorded among the land records of _____ in Deed Book _____ at page _____ and is within those boundaries; and that all required monuments have been installed where indicated; except those that will be installed at a later date but before completion of the project.

  "Certified Surveyor or Engineer"

- ☐ A curve table shall be placed on the final plat containing the following for all curvilinear boundaries and street centerlines; delta, radius, arc, tangent, chord and chord bearing. All distances shall be shown to the nearest one-hundredth of a foot; angles or bearings to the nearest ten seconds.

ADDITIONAL STUDIES – IF REQUIRED

WATER QUALITY ASSESSMENT (in case of RPA encroachment)

- ☐ See Article XIII of the Zoning Ordinance for specific requirements

ARCHAEOLOGICAL ASSESSMENT

- ☐ Documentary Study and initial Archaeological Evaluation completed and submitted by Alexandria Archaeology
- ☐ Appropriate archaeology comments on all site plan sheets involving ground disturbance
- ☐ Locations and themes for historical interpretive elements and markers on plan, if applicable.

BUILDING MASSING STUDY

- ☐ A physical model showing the mass and scale of the proposed buildings relative to surrounding buildings. This should be a scaled three-dimensional representation of the proposed building mass (including building articulation) in the context of surrounding buildings. Digital models and/or photomontage may be substituted for physical models if deemed acceptable by the Director of Planning & Zoning.

TRANSPORTATION STUDIES

- ☐ Submit multimodal Transportation Study and TMP or Memo.
- ☐ Submit Parking Study
- ☐ Submit other studies as required (queuing study, signal warrant analysis, etc.)

AFFORDABLE HOUSING PLAN

- ☐ A statement of intended voluntary contribution to the City's Housing Trust Fund or, in the case of a residential project, a voluntary Affordable Housing plan that specifies the

number of affordable on-site units, by unit type, or a statement explaining why the developer is unable to include the on-site units, along with the developer's proposed voluntary contribution to the Housing Trust Fund

☐ It is the City's policy that a voluntary contribution for affordable housing be made on all new development. The payment should be paid to the City prior to issuance of certificate of occupancy in the case of commercial development or rental housing, and paid at sale to end user in the case of for-sale housing. In lieu of this contribution, a developer may submit an Affordable Housing Plan to the Office of Housing proposing another means of meeting the affordable housing requirement.
http://alexandriava.gov/housing/info/default.aspx?id=6628

Design Guidelines
Guidelines Link **–** The design guidelines below can be found on the City's website at:
http://alexandriava.gov/planning/info/default.aspx?id=14676

If the project is located in the following areas, provide information necessary to assess compliance with the appropriate design and/or streetscape guidelines.

☐ Along Mount Vernon Avenue - *Mount Vernon Avenue Design Guidelines*
☐ Old Town North Small Area Plan - *Old Town North Design Guidelines*
☐ Old and Historic Alexandria District - *Alexandria Historic District Design Guidelines*.
☐ Parker Gray Historic District - *Alexandria Historic District Design Guidelines*.
☐ If involving a site which occupied by a building on the *Buildings over 100 Years Old Outside the Historic Districts* list - *Alexandria Historic District Design Guidelines*.
☐ Along Washington Street - *Washington Street Standards and Guidelines*, the *Old Town North Urban Design Guidelines* and the *Alexandria Historic District Design Guidelines.*
☐ Carlyle CDD – *Carlyle Design Guidelines* and the *Carlyle Streetscape Design Guidelines*.
☐ Potomac Yard/Potomac Greens Small Area Plan - *Potomac Yard Urban Design Guidelines*.
☐ Beauregard Small Area Plan – *Beauregard Urban Design Standards and Guidelines*
☐ Four Mile Run – *Four Mile Run Design Guidelines*
☐ Oakville Triangle – Oakville Design Guidelines

All projects Transportation and Environmental Services – Memos to the Industry -
http://alexandriava.gov/tes/info/default.aspx?id=3522

ADDITIONAL APPLICATIONS WHICH MAY BE REQUIRED FOR CERTAIN DEVELOPMENT PROPOSALS
Generally, all applications related to the same development proposal are required to be processed concurrently. There is a separate fee for each of these applications. See current fee schedule. Check those which are submitted with this application.

☐ **Master Plan and/or Rezoning.** Required when the proposal requires different zoning or a change to the City's Master Plan. See sections 11-800 and 11-900 of the Zoning Ordinance.
☐ **Transportation Management Plan Special Use Permit**. Required for any project containing 50,000 sq.ft. or more of commercial space, 40,000 sq.ft. or more of retail space, 150,000 sq.ft. or more of industrial space or 250 or more residential units. See section 11-700 of the Zoning Ordinance.
☐ **Vacation**. Required when a portion of the public right-of-way is proposed to be acquired and utilized in the development.
☐ **Encroachment**. Required when portions of the building (including stoops, steps, awnings, etc.) or planters, etc. project into the public right-of-way.

☐ **Coordinated Development District (CDD) Concept Plan**. Required on tracts zoned CDD, in order to proceed with development under the CDD zoning. See section 5-600 of the Zoning Ordinance.
☐ SUP for parking reductions and signs
☐ SUP for specific uses
☐ **Board of Architectural Review Approvals**. Required when the project is within one of the City's two historic districts. See chapter 10 of the Zoning Ordinance. ***Note this is a separate review process.**

Revised:
7/26/2013 – RAL
12/9/2013 – JXB
12/3/2014 - DXR
2/25/2015 -DXR
3/25/2015 – SMA
1/18/2016 – JEM
4/6/2016 - KMJ

DEVELOPMENT FINAL PLAN CHECKLIST

Department of Planning and Zoning
Development Division, City Hall
301 King Street, Room 2100
Alexandria, Virginia 22314
Phone: (703) 746- 4666

Project Name: _____

Project Location (Address): _____

Tax Map References: _____

Applicant Name: _____

Applicant Address: _____

Applicant E-mail Address: _____

The following materials are required for a complete Final Site Plan (DSUP/DSP) submission:

Payment Rc'd: _____/_____/_____
date amt initials
Payment Verified _____/_____/_____
date amt initials

_____ **Filing Fee**. Please see fee schedule here.

_____ **Completed and signed ESI checklist**

_____ **ESI fee for Transportation & Environmental Services Review**, if applicable
G Check here to specify non-ESI member, with no ESI review required

____ **Response Letter**. A response letter must be provided with the initial final site plan submission which provides a response to **EACH** recommendation, code requirement, and finding contained in the Preliminary DSP or DSUP staff report, and for subsequent final submissions, which responds to **EACH** staff comment on the prior final review. Responses must include a reference to the plan sheet where change has been made. The Response Letter must also include a detailed description of and justification for any changes made to the plan which are not a result of a specific approval condition or staff comment.

____ **Final Site Plans.** Fourteen sets of Final Site Plan drawings (rolled) shall be provided. Lesser numbers may be required after the first submission; check with the Development Team Leader. The last submission will require three sets of prints, one set of mylars. **NOTE: When second and subsequent final site plans are submitted all sets shall be marked in red where the changes to the plans have been made in response to review comments.**

____ **Electronic Copy.** For **each submission,** provide a CD with PDF files of the entire site plan Please submit as few PDF files as possible with clearly defined file names. (ex. Sheet C1 – C10 or Sheet C1 Title Sheet, Sheet C2 Notes, etc.)

All Final Site Plans and application materials shall be submitted to the Department of Planning and Zoning at the above address. Plans will not be distributed for review to other departments until a

complete submission, with all items, is filed. Submission of any materials to departments other than Planning & Zoning may result in a processing delay, as review dates are determined by routing from Planning & Zoning.

I certify that I am responsible for the preparation of the final site plans being submitted and that the plans are consistent with all prior approvals granted by the City except as may be called out in the Response Letter accompanying this final site plan submission. I further certify that I have filled out the attached check list and confirmed that all required information has been provided.

_____ _____

Signature of Engineer/Architect/Surveyor Date of Submission

FINAL SITE PLAN DRAWINGS SUBMISSION FORMAT/REQUIREMENTS:

Note: The following sheets and information are required for every submission. Additional sheets and information should be provided where necessary to demonstrate compliance with City requirements or conditions of approval.

REQUIREMENTS FOR EACH SHEET

____ Print size shall not exceed 24" x 36" and all sheets shall be the same size
____ Scale no less than 40' to 1" (20' or 30' to 1" preferred), with scale identified on each sheet
____ City approval signature block in same place (lower right corner) on each sheet (see attachment for configuration and size of block)
____ Date, scale and north point with reference to source of meridian
____ Name, address, signature and registration number of professional preparing the plan on each sheet
____ Date the plan was prepared on each sheet

COVER SHEET

____ Name and address of the developer and of the owner(s) of record
____ A narrative description of the proposed development
____ Location map with the site shown in relation to the nearest intersection of two or more streets
____ Index to plan sheets
____ Key to plan sheets if more than one sheet is needed to show the whole site
____ Total area included in the site plan, total area of tax parcel, total existing and proposed impervious area on the tax parcel, and total area that will be disturbed during construction (all expressed in square feet and acres)
____ A list of all special use permits and zoning modifications or waivers **approved** with the preliminary plan
____ Notes
  ____ Noise
  ____ ESA Statement (amend accordingly)
  ____ Wells
  ____ Contaminated Lands
  ____ E&S
____ Table of all symbols and abbreviations utilized in the plan set.

ZONING TABULATIONS (May be provided on cover where sufficient space exists)

For each element, list zoning ordinance requirement, number approved on preliminary plan and number proposed on final plan, if different.

****Note:** If the proposed development includes multiple lots, the zoning tabulation information must be provided for each individual lot unless all the lots will be consolidated in conjunction with the proposal.**

____ Zoning of the site
____ Existing uses on the site
____ Proposed uses for the site
____ Lot area (and minimum lot area under zoning, if applicable)
____ Number of dwelling units (list by number of bedrooms for multifamily)

____ Units per acre for residential
____ Gross square feet (GSF) of building area*****, total and listed by use (with parking listed separately)
____ Net square feet (NSF) of floor area, total and listed by use
____ Floor-area-ratio (existing if applicable, and proposed listed separately and combined)
____ Open space, with ground level open space listed separately from other open space
____ Average finished grade of each building
____ Height of each building
____ Yards; required and proposed listed separately
____ Frontage; required and proposed listed separately
____ Parking spaces (listed by compact, standard, and handicapped sizes and total)
____ Parking spaces (listed by location i.e. above ground and/or below ground)
____ Loading spaces
____ Existing and proposed trip generation

***Note: The gross square footage of a building or buildings on a lot or tract of land (whether "main" or "accessory") is the sum of all gross horizontal areas under a roof or roofs. These areas shall be measured from the exterior faces of walls and from eaves of all roofs where they extend beyond the wall line, or from the center line of party walls. Parking garages, other than garages attached to, or on the same lot with, individual residences and designated for use by a single household, are excluded from the gross square footage calculation.**

DSP/DSUP CONDITIONS WITH PLANNING COMMISSION & CITY COUNCIL ACTIONS
(Place this information on a separate sheet of the submission following the cover sheet)
____ Copy of the approved DSUP/DSP conditions, with action, from the staff report for the project
____ Copy of the City Department Comments containing Code Requirements from the staff report.

EXISTING CONDITIONS PLAN
____ Same sheet as required in preliminary site plan (with corrections, if any required by approval)

FINAL SITE PLAN
Include existing features to be retained and show location, dimension, size, height and elevation of:
____ Boundaries of zoning districts on the site
____ Sidewalks, streets, alleys with widths labeled, and elevations
____ Show the full right-of-way width and centerlines of all adjoining streets
____ Existing and modified lane widths and uses (right turn, left turn, etc.)
____ Traffic controls including signs, markings and signals on a separate sheet if necessary (see Traffic Signal Plan, below)
____ Maintenance of traffic plan
____ Existing and proposed on-street parking locations and individual spaces when required
____ Direction of traffic and volumes at all site entrances, exits and intersections
____ Sight distance per AASHTO at all driveways and street intersections; horizontal and vertical
____ Easements, covenants and reservations including emergency vehicle easements (EVE)
____ Building restriction lines, highway setback lines, zone transition lines, vision clearances
____ Property lines; show course and distance of each site boundary line
____ Dimensions of front, side and rear yards
____ Buildings and structures, including optional decks and other projections such as canopies, roof overhangs; or maximum building envelope (where approved as envelope) showing outside dimensions, including height, and first floor elevations
____ Stoops, steps and staircases

____ Locations of building entrances and exits
____ Sump pump and roof drain outfalls
____ Locations of underground parking and the extent of related subsurface structures
____ Dimensions of all on-site parking spaces indicating type (standard, compact or handicapped)
____ Storm and sanitary sewer systems, including lateral lines, water mains and service lines, with size and owner of line indicated; indicate direction of flow; profiles; calculations for storm and sanitary
____ Gas mains and service lines; with size of line and owner of line indicated
____ Fire hydrants, water mains and service lines; with size of line and owner of line indicated
____ Electric, telephone, cable and all other utilities on the property; identify owners
____ Transformers, switchboxes, cable boxes, telephone pedestals, and other surface features of utility systems
____ Light poles and fixtures on-site and on adjoining rights-of-way
____ Driveways, entrances, exits, parking areas; show parking spaces by type (standard, compact and handicap) and indicate the number in each bay and the total count
____ Curb radii at intersections and driveway entrances for public and private streets and alleys, and within parking lots
____ Sidewalks, bike and walking trails on sites and on abutting streets or public property/easements
____ Recreation areas, swimming pools
____ Watercourses, bodies of water, wetlands and limits of flood plains
____ Resource Protection Areas as defined in Article XIII of the Zoning Ordinance
____ Soil boring data and test reports for sites containing marine clay or fill, and when the Director of Transportation and Environmental Services requires
____ Significant geological features
____ Proposed grading shown with 2' contours on the subject property and on adjacent parcels for sufficient distance to indicate the relationship of the site to off-site terrain
____ Slopes, terraces and retaining walls, including elevations of level areas and tops and bottoms of walls and exterior stairways and ramps
____ Indicate elevations at the base of all utility structures other than individual poles, such as fire hydrants and transformers
____ Provide rim elevation and invert elevations of all piping at manholes
____ Elevations of streets and alleys
____ Total area that will be disturbed during construction (expressed in square feet, acres, and delineated accordingly)
____ Roadway alignment data

LANDSCAPE PLAN

(See "Landscape Guidelines" published by the Department of Planning and Zoning, City of Alexandria.)

____ Buildings, streets, driveways, paved areas and other structures
____ Utilities and Utility easements
____ Locations of off and on site lighting including street lighting
____ Street trees and natural vegetation to be retained; include locations, size and species.
____ Proposed tree protection locations and details
____ Proposed trees and landscaping, including within public right-of-ways
____ Location and dimensions of areas to be landscaped (including within public right-of-ways), specifying the location, names, species, caliper, and size of proposed individual trees, shrubs, and ground cover plants (indicate initial height for trees and shrubs, initial width for shrubs, and initial spread for groundcover plants)
____ Tabulation of required, existing and proposed crown coverage

____ Tree and shrub planting details
____ Landscape planters on underground parking
____ Total area that will be disturbed during construction (expressed in square feet, acres, and delineated accordingly)
____ The following notes:
    ____ All materials' specifications shall be in accordance with the industry standard for grading plant material-The American Standard for Nursery Stock (ANSI Z60.1).
    ____ Maintenance of all trees and landscape materials shall conform to accepted industry standards set forth by the Landscape Contractors Association, American Society of Landscape Architects, the International Society of Arboriculture, and the American National Standards Institute.

LIGHTING PLAN

____ Buildings and structures
____ Location of all existing and proposed lights, including street lights and building lights.
____ Type of fixture
____ Mounting height
____ Strength of fixture in lumens or watts
____ Manufacturers' specifications for fixtures
____ Photometric calculations (point lighting plan) accounting for proposed street trees

EROSION AND SEDIMENT CONTROL PLANS

____Erosion and Sediment (E&S) Control Plan Sheets showing:
    ____ Two-phase plan for sediment and erosion control
    ____ Narrative phasing plan including demolition and sequence of construction activities
    ____ All appropriate details of erosion and sediment control measures (must meet Virginia Erosion and Sedimentation Control Handbook (VESCH) standards)
    ____ Sources of water for construction entrance washdown
    ____ Grading for drains and traps for construction entrance runoff
    ____ Phase1 drainage area map indicating existing conditions drainage area, runoff coefficients and peak discharges for 2- and 10-year storms
    ____ Phase 2 drainage area map indicating drainage areas to selected BMPs, runoff coefficients and peak discharges for 2- and 10-year storms
    ____ Show and list appropriate control measures defined for each drainage area
    ____ Total area that will be disturbed during construction (expressed in square feet, acres, and delineated accordingly)
    ____ Identify areas having different ground covering materials (i.e. concrete, asphalt, gravel, turf, crushed stone, etc.)
    ____ Delineate any wetlands or Resource Protection Areas (RPA)
    ____ Legend for line types (must be in accordance with VESCH)
    ____ Grading for sediment traps and basins
    ____ Tabulate drainage area, wet volume, dry volume, and clean-out volume for traps and basins with respective elevations
    ____ Temporary and permanent seeding mixtures
    ____ Erosion and Sediment Control Narrative to include:
    ____ Adjacent properties
    ____ Critical areas
    ____ Soils description
    ____ BMP strategies

____ Maintenance practices to be employed
____ Phasing
____ Standard notes
____ Stockpiling procedures
____ Contaminated soils
Calculations for:
____ Traps
____ Basins
____ Dewatering structures
____ Culvert protection
____ Culvert sizing
____ Block for Certified Responsible Land Disturber
____ References to any needed VPDES permit and indication that a copy will be filed with the City
____ References to any needed POTW permit and indication that a copy will be filed with the City
____ Geotechnical information

STORMWATER MANAGEMENT/BMP SHEETS
(*See Article XIII of the Zoning Ordinance for guidance on water quality calculations*)
____ Water Quality Impact Assessment
____ Location and description of RPA components
____ Location and nature of RPA encroachment
____ Type and location of proposed BMP, with supporting calculations
In addition, where a MAJOR assessment is required:
____ Hydrogeological element
____ Landscape plan supplement
____ Ecological impact analysis
____ Stormwater Management Sheets
____ Outfalls located and determined to be adequate for proposed discharge
____ Pre and post development calculations
____ Drainage divides off-site identified and delineated
____ Drainage divides on-site identified and delineated
____ Show flow routing to detention
____ Calculate HGL and depict on profiles showing 2 feet of freeboard
____ Computation and display of inlet flow
____ Show full flow calculations
____ Demonstrate that velocities are no less than 2 FPS and no more than 20 FPS
____ Use N-values >36"=0.015 & <or=36" 0.013
____ Show erosive velocity at outfalls
____ BMP Sheets
____ Water Quality Volume (WQV) computation (in cubic feet and acre-feet)

____ Drainage area map with scale and north arrow indicating the area drainang to the selected water quality BMPs
____ Water Quality Worksheets A or B and C
____ City standard water quality BMP data blocks (2)
____ BMP detail including WQV default elevation
____ Surface appurtenance casting detail

____ Signage detail for surface BMP
____ Standard BMP notes
____ Waiver approval letters

SIGNING AND MARKING PLANS

____ Street layout, including curb lines or edge of pavement, sidewalks, handicap ramp locations
____ Existing pavement makings, noting markings to be eradicated
____ Proposed new pavement markings, including pattern, width and color
____ Dimensions of proposed lane widths, and parking lanes and spaces
____ Pavement marking materials specifications, including type and thickness
____ Existing signs to be retained, removed or relocated
____ Proposed new traffic signs, including locations, MUTCD sign codes where applicable, and special legends
____ Sign schedule including sign code, size, legend, sheeting and sign blank specifications, special installation requirements

TRAFFIC SIGNAL PLAN

____ Intersection layout showing poles, mast arms, signal head, detector and controller locations and specifications
____ Intersection lane use and markings
____ Vehicular and pedestrian signal head configurations
____ Signal phasing and sequence charts and initial timing plans
____ Location of power connection
____ Cable and conduit layout, sizes and specifications
____ Wiring size and specifications
____ Interconnect details
____ Specifications for poles, mast arms and pole foundations; pole foundation designs sealed by registered engineer

FIRE SAFETY PLAN

(See 'Water and Fire Requirements For Site Plans and New Construction' prepared and published by the City of Alexandria Fire/EMS Department.)

____ Building foot prints, driveways, parking areas.
____ Building entrances and exits
____ Use group classification and type of construction (defined by USBC).
____ Existing and proposed water main location and size
____ Existing and proposed fire hydrant locations
____ Available water pressure and flow capability, static pressure, residual pressure, flow in GPM
____ Fire flow calculations in accordance with city standards that are prepared by a licensed engineer that determine the require fire flow for the project. Verification that the existing and/or proposed infrastructure is capable of providing the required fire flow shall be provided..
____ Type of fire suppression or detection system to be provided (e.g. sprinklers, standpipes, smoke or heat detectors).
____ Location and size of underground fire lines
____ Location of fire department siamese connection (typically, street front of building)
____ Height of building in feet and stories
____ Identification of fire walls, tenant separations, etc.
____ Topographical map relating grade and elevation to fire department connections.
____ Location of all Emergency Vehicle Easements and of EVE signs outlining the EVE

____ Emergency vehicle turnaround space for drive aisles in excess of 100 feet.
____ Fire ladder truck access to the front and rear of all buildings in excess of 50 feet in height.

DIMENSION PLAN

(The Dimension Plan is to be submitted with the first and second submission as a separate sheet. A paper copy of the dimension plan is to be submitted at the time of the mylar submission.)

Include existing features to be retained and show location, dimension, size, height and elevation of:

____ Sidewalks, streets, alleys, driveways and parking lots; (edge of pavement or top of curb)
____ Show the full right-of-way width and centerlines of all adjoining streets
____ Buildings and structures, showing outside dimensions, including height
____ Property lines
____ Stoops, steps and staircases
____ Locations of building entrances; identification of primary building entrance if applicable
____ 3 x,y coordinate pairs in state plane coordinates (NAD 83) conforming to 50 scale (1:600/1"=50') National Map Accuracy Standards.
____ Fire Hydrants

Note: The Dimension Plan is used to update the City of Alexandria's Geographic Information System and therefore should contain only the information specified above. Additionally, Alexandria GIS does not meet the threshold for accuracy, as listed for the coordinate data above and is therefore not suitable as source for obtaining this coordinate information.

DETAILS

(Details may be incorporated into relevant sheets if sufficient space is available.)

____ Fences and walls, retaining walls
____ Street typical sections
____ Pavement sections
____ Curbs
____ Driveway aprons
____ Handicap ramps
____ Location and dimension of all handicapped parking spaces
____ Sidewalks and plaza sections/details
____ Signs
____ Trash receptacles
____ Two benchmarks

THE FOLLOWING SHEETS ARE NOT REQUIRED TO BE PROVIDED IN EVERY SET. INSTEAD, 3 COPIES OF EACH SHEET MAY BE PROVIDED SEPARATELY.

OPEN SPACE EXHIBIT

(*The purpose of this sheet is to demonstrate to staff which areas were counted toward open space.)*

____ parcels
____ streets, alleys, driveways, all other areas of paving
____ buildings and entrances
____ areas counted as open space, shaded and dimensioned with areas counted as usable open space identified
____ tabulations of areas counted as open space and usable open space

ARCHITECTURAL ELEVATIONS

____ Elevations of each building face, to scale and with dimensions
____ Label all building materials

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Revised 5/13/05kmj
1/14/05kmj
9/29/03kmj
8/18/04kmj
4/27/06 kmj
12/14/09 kmj
2/27/12 ral
7/26/13 ral
12/9/2013 jxb

GRADING PLAN CHECK LIST SUBMISSION REQUIREMENTS:

Per City of Alexandria Code Section 5-6-224 (d)

Note: The following sheets and information are required for every submission. Additional sheets and information should be provided where necessary to demonstrate compliance with City requirements or conditions of approval. Provide a cd of all submission documents, $500 submission fee, applicable VSMP fee (see VSMP fee schedule-LINK), and a VSMP application if required with the first submission.

The Check List shall be completed and submitted with first submission of the plans. Failure to comply may result in the plan being deemed incomplete and unacceptable for review.

Property Address: _____

Engineer: _____

Engineer Phone # and Email: _____

Owner/Applicant (do not duplicate Engineer information): _____

Owner/Applicant Contact Phone # and Email: _____

THE UNDERSIGNED HEREBY agrees to allow the City to post an informational notice placard on the subject property for a total of 30 days.

APPLICANT OR AUTHORIZED AGENT:

Name _____

Signature _____

REQUIREMENTS FOR EACH SHEET

____ Scale no less than 30' to 1" with scale identified on each sheet
____ City grading plan approval signature block in same place (lower right corner) on each sheet
____ Date, scale and north arrow with reference to source of meridian
____ Name, address, email, signature and registration number of professional preparing the plan on each sheet (original signature required for mylar submission)
____ Date the plan was prepared on each sheet/ Date of latest revision
____ Name, address, email, and phone number of the developer/builder and/or the owner(s) of record
____ Table of standard symbols per common engineering practice and abbreviations utilized in the plan set

ADDITIONAL REQUIREMENTS

____ Location map on cover sheet with the site shown in relation to the nearest intersection of two or more streets, parcel number of property (includes the tax reference number)
____ A narrative description of the proposed development
____ Index to plan sheets

____ Total area included in the site plan, total area of tax parcel, total existing and proposed impervious area on the tax parcel, and total area that will be disturbed during construction (all expressed in square feet and acres). The disturbed area will be calculated as described in Memo to the Industry 02-08 on Grading Plan Requirements and Waiver Provisions (LINK)

____ If applicable, a list of all special use permits, subdivisions, variances, certificate of appropriateness, special exception, waivers, etc., **approved** for the Grading Plan (i.e. Curb cut approval)

____ Copy of Curb cut approval (if required) shown on plan

____ City Standard Notes *(amend as applicable- available from Development Coordinator and online under T&ES Memos to Industry- LINK)*

GRADING PLAN

Show location, dimensions, size, height and elevation of the following along with the existing features to be retained:

____ Sidewalks, streets, alleys with widths labeled, and elevations

____ Vision clearances (on corner lots)

____ Property lines; show course and distance of each site boundary line

____ Setback dimensions of front, side and rear yards

____ Buildings and structures, including optional decks and other projections such as canopies, roof overhangs

____ Stoops, steps and staircases

____ Locations of building entrances and exits

____ Sump pump and roof drain outfalls *[per the requirements of Memo to Industry 05-14- LINK]*

____ Existing and proposed storm and sanitary sewer systems, including lateral lines in plan and profile.

____ Existing and proposed gas mains and service lines in plan view

____ Show all utilities on one plan sheet

____ Provide profiles for any utility crossings, denoting horizontal and vertical clearances

____ Light poles and fixtures on-site and on adjoining rights-of-way

____ Driveways, entrances, exits, parking areas; show parking spaces by type (standard, compact and handicap) and indicate the number in each bay and the total count

____ Dimensions of new curb cut (if provided) at property line

____ Sidewalks, bike and walking trails on site and on abutting streets or public property/easements

____ If applicable, recreation areas, swimming pools, etc.

____ Watercourses, bodies of water, wetlands and limits of flood plains

____ Depict any Resource Protection Areas as defined in Article XIII of the Zoning Ordinance and delineate their appropriate buffer width

____ To any wetland or RPA add a note stating that "RPA buffer shall be vegetated with native riparian species and remain undisturbed. RPA is limited to water dependent facilities or redevelopment."

____ Significant geological features and soil types (Hydrologic Soil Group A, B, C or D as defined by NRCS)

____ Proposed grading shown with 2' contours on the subject property and on adjacent parcels for sufficient distance to indicate the relationship of the site to off-site terrain. The Director of Transportation and Environmental Services (T&ES), at his discretion, may ask to show the contours at a lesser interval than 2', if required, to understand the pattern of micro drainage from the site and/or the adjacent properties.

____ Two benchmarks
____ Slopes, terraces and retaining walls, including elevations of level areas and tops and bottoms of walls and exterior stairways and ramps
____ Indicate elevations at the base of all utility structures other than individual poles, such as fire hydrants and transformers
____ Provide rim elevation and invert elevations of all piping at manholes
____ Elevations of streets and alleys
____ If an operator intends to meet the requirements established in 9VAC25-870-63 or 9VAC25-870-66 through the use of off-site compliance options, where applicable, then a letter of availability from the off-site provider must be included
____ Fee and fee form (Par XIII of Chapter 9VAC25-870)
____ A description of any additional control measures necessary to address a TMDL pursuant to subsection E of 9VAC25-870-54
____ Standard pollution prevention notes and any other management of site specific pollutants over and above those covered in the notes.

ZONING REQUIREMENTS (Provided on cover sheet)
For each element, list zoning ordinance requirement, number approved on preliminary plan and number proposed on final plan, if different.

____ Zoning of the site
____ Existing use on the site
____ Proposed use for the site
____ Existing and required lot area
____ Depict building restriction line
____ Preliminary gross square feet (GSF) of existing and new building area (attach P&Z floor area calculations sheet). Note FAR review as a Preliminary Review
____ Preliminary net square feet (NSF) of existing and new building area (attach P&Z floor area calculations sheet). Note FAR review as a Preliminary Review
____ Floor-area-ratio (existing and proposed)
____ Open space (existing and proposed)
____ Average finished grade of structure for existing and new construction
____ Height of structure from existing and average finished grade
____ Yards (front, side and rear) required and proposed
____ Parking space(s), if applicable listed by total number, size of space and type (compact, standard, and handicapped)
____ % of crown coverage existing and proposed (based on P&Z Landscape Guidelines)

****Note: ** If the proposed development includes multiple lots, the zoning tabulation information must be provided for each individual lot unless all the lots will be consolidated in conjunction with the proposal.**

EROSION AND SEDIMENT CONTROL PLANS (When required)

____ Delineate the total area that will be disturbed during construction and show it on the plan. Calculate the total disturbed area as described in the Memorandum to the Industry on Grading Plan Requirements and Waiver Provisions (LINK) in square feet and acres and show it on the plan. If the total disturbed area is more than 2,500 square feet then the proposed improvements shall be designed to complete the requirements of Article XIII of the Zoning Ordinance of the City of Alexandria.
____ Narrative phasing plan including demolition and sequence of construction activities
____ All appropriate details of erosion and sediment control measures [must meet Virginia Erosion and Sedimentation Control Handbook (VESCH) standards]
____ Sources of water for construction entrance wash down
____ Grading for drains and traps for construction entrance runoff
____ Show and list appropriate control measures defined for each drainage area
____ Identify areas having different ground covering materials (i.e. concrete, asphalt, gravel, turf, crushed stone, etc.)
____ Delineate any wetlands or Resource Protection Areas (RPA)
____ Legend for line types (must be in accordance with VESCH)
____ Temporary and permanent seeding mixtures
____ Erosion and Sediment Control Narrative per requirements outlined in Memo 02-09 (LINK)
____ BMP strategies (projects with 2,500 SF of disturbed area including construction staging and storage.)
____ BMP Narrative
____ Delineation and description of areas with contaminated soils
____ Erosion & Sediment Control Notes *(amend as applicable- available from Development Coordinator and online under T&ES Memos to Industry- LINK)*

STORMWATER MANAGEMENT (QUALITY AND QUANTITY) and BMP SHEETS (When Required)
(*See Article XIII of the Zoning Ordinance for guidance on water quality calculations and quantity requirements*)

____ Location and description of RPA components
____ Location and nature of RPA encroachment
____ Water Quality Impact Assessment, if applicable
____ Type and location of proposed BMP (including geographic coordinates- NAD88), with supporting calculations
____ Pre and post development runoff calculations for 2 and 10 year storms
____ Stormwater Narrative
____ Stormwater Outfall Narrative
____ Stormwater Outfall Analysis
____ Stormwater Detention Facility Design
____ Pre and Post-development drainage divides off-site/on-site identified and delineated
____ Water Quality Volume (WQV) computation (in cubic feet and acre-feet)
____ Drainage area map with hatched areas indicating the impervious area draining to selected water quality BMPs
____ Virginia Runoff Reduction Method (VRRM) worksheets
____ City standard water quality BMP data blocks (2) (Project Description and Miscellaneous Blocks)

____ Signage detail for surface BMP
____ Water Quality Improvement Fund request, if applicable, shall be included on the first final plan with original hard copy included. Once the request is approved then both the request and approval letters must be included on the plan of subsequent submissions and/or Mylar.
_____ BMP and associated structure details including planting plans if applicable.
_____ BMP Sign details
_____ BMP table with a separate listing for each individual BMP that includes the name of the practice, total area treated (acres), pervious area treated (acres), impervious area treated (acres), phosphorous removal efficiency (percentage), phosphorous removed by the practice (lbs), and geographic coordinates in decimal degree format. (SWM)

- When required, BMP and/or Detention Maintenance Agreement must be recorded prior to plan release

EXISTING AND PROPOSED VEGETATION

(Refer to included example plan exhibit)

____ Required notes for tree preservation and protection, and proposed plantings per the City's Landscape Guidelines
____ Inventory, identification, and location(s) of existing trees on-site and within 15 feet of the property line (as applicable) as outlined in the City's Landscape Guidelines.
____ Identify existing trees that are to be saved as "TBS" and existing trees that are to be removed as "TBR" (as applicable).
____ Location of tree protection fencing per the City's Landscape Guidelines for all trees to be saved.
____ Notifications to neighbors per the City's Landscape Guidelines of potential impacts to trees located within 15 feet of the property line on adjacent (as applicable).
____ Tree protection details per the City's Landscape Guidelines (as applicable).
____ Locations of proposed vegetation.
____ A proposed planting schedule indicating species, specifications, quantities, and crown coverage allowance.
____ Crown coverage calculations including existing, removed, required, and proposed crown coverage.

City of Alexandria

Municipal Separate Storm Sewer System (MS4) Program Plan

Appendix E – MCM #5: Post-Construction Stormwater Management

City of Alexandria, Virginia

Policies and Procedures for Post-Construction BMP Inspection and Maintenance

6/5/2014
Updated 4/28/2019

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A. Purpose

The purpose of this document is to provide policies and procedures for the long-term maintenance of Stormwater Best Management Practices (BMPs).

Public BMPs owned and operated by the City of Alexandria will be maintained by the City. Annual Inspections will be performed for all publicly owned and operated BMPs.

Privately owned BMPs will be the responsibility of the property owner or other entity named in the recorded BMP Operation and Maintenance Agreement. City staff will inspect all privately owned BMP facilities other than those that treat stormwater from an individual residential lot at least once during every 5-year Municipal Separate Storm Sewer System (MS4) permit cycle.

B. Public Stormwater BMP Inspections and Maintenance

1. Maintenance Schedule and Guidelines

Public BMPs will be maintained according to the BMP maintenance schedule and guideline specific to each BMP found in Appendix 1 of this document.

2. Inspections

Inspections will be performed on an annual basis. After completion, the results of each inspection and any associated pictures will be entered into the City's database.

3. Follow up

When any BMPs require maintenance, the required maintenance tasks will be addressed as soon as practicable. Any work performed, inspections, and inspection pictures will be documented in the City's database.

C. Private Stormwater BMP Maintenance Regulations

City of Alexandria, Virginia
Stormwater BMP Maintenance Regulations

Effective: July 1, 2014
Updated: April 28, 2019

1. Authority

The following regulations for stormwater Best Management Practice (BMP) maintenance have been adopted as permitted by the Zoning Ordinance of the City of Alexandria section 13-104(C).

These regulations supplement the Zoning ordinance of the City of Alexandria relating to the regulation of stormwater BMP maintenance.

2. BMP Regulations

It is the responsibility of the owner of any stormwater BMP facility as described in the Environmental Management Ordinance to provide adequate maintenance and proper functioning of the system. All BMPs must operate in good working condition and in accordance with the approved design and specifications. Maintenance shall be performed in accordance with the requirements set forth in:

1. The BMP maintenance agreement and;
2. The BMP maintenance schedule and guideline, or in cases where no BMP maintenance schedule and guideline is recorded, in accordance with the maintenance requirements as set forth in the original design.

3. Inspections and Maintenance Records

The owner of any BMP shall keep on file all inspection and maintenance records for the facility. The records shall include at a minimum:

1. The date of inspection or maintenance,
2. The result of the inspection,
3. The type of maintenance performed, if required, and,
4. The signature of the owner of the facility or the individual acting on the owner's behalf.

All records must be kept on file for a minimum of five years and be available for submission to the City upon request.

4. City Inspections

Inspections by the City may be conducted or established on any reasonable basis, including but not limited to: routine inspections; random inspections; inspections based upon complaints or other notice of possible violations; and joint inspections with other agencies inspecting under environmental or safety laws. Inspections may include, but are not limited to: reviewing maintenance and repair records; sampling discharges, surface water, groundwater, and material or water in BMPs; and evaluating the condition of BMPs.

5. Notification of Enforcement Action

If inadequate maintenance is observed by the City, the City shall notify, in writing, the property owner or other person violating these regulations. The notification shall indicate the nature of the violation, contain the address or other description of the site upon which the violation is occurring, order the necessary action to correct the violation, and give a deadline for correcting the violation. Notification will follow the procedure below:

1. The first Letter of Notification shall require the owner to contact the City with a maintenance plan within 30 days and shall allow 90 days for the owner to perform the required BMP maintenance actions.
2. If an adequate response is not received within 30 days following the Letter of Notification, a Letter of Corrective Action will be issued requiring the owner to contact the City with a maintenance plan and to perform the required BMP maintenance within 60 days.
3. If an adequate response is not received within 30 days following the Letter of Corrective Action, a Notice of Noncompliance will be issued requiring the owner to contact the City with a maintenance plan and to perform the required BMP maintenance within 30 days.
4. If an adequate response is not received within 30 days following the Notice of Noncompliance, a Notice of Violation with associated civil penalties will be issued by the City Attorney's Office.

6. Extension of time

A person who receives an enforcement letter, or the owner of the land on which the violation occurs, may submit to the Director or T&ES or his or her designee a written request for an extension of time for correction of the violation. On determining that the request includes enough information to show that the violation cannot be corrected within the specified time limit for reasons beyond the control of the person requesting the extension, the City may extend the time limit as is reasonably necessary to allow timely correction of the violation.

7. Penalties for noncompliance

Any person who violates these regulations shall be subject to a civil penalty. Each day the violation continues shall constitute a separate offense.

1. First time offenders shall be subject to a civil penalty not to exceed five hundred ($500.00) per day of continuing violation.
2. Repeat violators shall be subject to a civil penalty not to exceed one thousand dollars ($1000.00) per day of continuing violation.

The City Attorney's Office will pursue collection of the civil penalty through prosecution in the appropriate court. Additionally, the city may perform the necessary corrections and bill the property owner.

D. Procedures for the Inspection of Private Stormwater BMPs

1. Inspection Procedure

All privately owned stormwater BMPs not serving single family residential properties will be inspected a minimum of once during every MS4 permit cycle.

Inspections will be performed according to the following procedures:

1. Prior to inspection, a pre-inspection notification letter will be sent to the property owner and/or contact on file for each BMP. A copy of the pre-inspection notification letter can be found in Appendix 3 of this document.
2. Inspections will be documented on the inspection forms found in Appendix 2 of this document.
3. After the inspection has been completed, documentation of the inspection, including any pictures will be saved in the City's database.
4. After inspection, a post inspection letter will be sent to the property owner and/or contact on file for each BMP with the results of the inspection. If required, the letter will state any maintenance items needed to bring the BMP into compliance with its maintenance requirements. Post-inspection notification letters can be found in Appendix 4 of this document.
5. All enforcement action notification will follow the procedures outlined in the City's Stormwater BMP Maintenance Regulations. All enforcement action letters can be found in Appendix 5 of this document.

2. Documentation

All inspection forms, pre- and post- inspection letters, and applicable enforcement letters will be documented in the City's database after completion of each inspection. Documentation will be kept on file with the City for a minimum of 5 years.

E. Single Family Residential BMP Inspections and Maintenance

It is the responsibility of the owner of any stormwater BMP facility that treats stormwater from an individual residential lot to provide adequate maintenance and proper functioning of the system. All BMPs must operate in good working condition and in accordance with the approved design and specifications.

1. Inspections and Maintenance Records

The owner of any BMP shall keep on file all inspection and maintenance records for the facility. The records shall include at a minimum:

1. The date of inspection or maintenance,
2. The result of the inspection,
3. The type of maintenance performed, if required, and,
4. The signature of the owner of the facility or the individual acting on the owner's behalf.

All records must be kept on file for a minimum of five years and be available for submission to the City upon request.

2. City Outreach and Inspections

As an alternative to required maintenance agreements, the City will perform homeowner outreach targeted to the maintenance of single family residential BMPs. City Staff will mail out annual fact sheets and/or maintenance reminders targeted to the owner of each BMP.

Inspections by the City may be conducted or established on any reasonable basis, including but not limited to: routine inspections; random inspections; inspections based upon complaints or other notice of possible violations; and joint inspections with other agencies inspecting under environmental or safety laws. Inspections may include, but are not limited to: reviewing maintenance and repair records; sampling discharges, surface water, groundwater, and material or water in BMPs; and evaluating the condition of BMPs.

Appendix 1-BMP Maintenance Schedule and Guidelines

Bioretention Area Maintenance Schedule and Guidelines

First Year Maintenance Guidelines

Successful establishment of bioretention areas requires that the following tasks be undertaken in the first year following installation:

- Initial inspections. For the first 6 months following construction, the bioretention area should be inspected at least twice after storm events that exceed 1/2 inch of rainfall.
- Spot reseeding. Inspect for bare or eroding areas in the contributing drainage area or around the bioretention area, and make sure they are immediately stabilized with grass cover.
- Watering. Watering is needed once a week during the first 2 months, and then as needed during first growing season (April-October), depending on rainfall.
- Remove and replace dead plants.

Routine Maintenance Guidelines

Bioretention areas must be inspected to ensure that they operate in good working condition and in accordance with the approved design and specifications. Items in need of repair must be documented and addressed as soon as practicable.

Routine Maintenance Tasks	Frequency
Remove trash and debris	As needed
Check and repair eroded areas	Annually
Inspect for and remove excess sediment	Annually
Mow grass filter strips and bioretention turf cover	At least four times per year
Weed and rake mulch	Twice during the growing season
Inspect plant composition for consistency with approved plans and correct any deficiencies	Annually
Re-mulch to maintain a three-inch layer	Annually
Prune trees and shrubs	Annually
Inspect for clogging or ponding water in the filter bed	Annually
Remove invasive plants	As needed
Replace dead or damaged plant material	As needed
Repair broken pipes	As needed
Remove sediment in pretreatment cells and inflows	Every 2-3 years
Replace the mulch layer	Every 3 years

Constructed Wetlands Maintenance Schedule and Guidelines

First Year Maintenance Guidelines

Successful establishment of constructed wetland areas requires that the following tasks be undertaken in the first year:

- Initial Inspections. During the first 6 months following construction, the site should be inspected at least twice after storm events that exceed 1/2 inch of rainfall.
- Spot Reseeding. Inspect for bare or eroding areas in the contributing drainage area or around the wetland buffer, and make sure they are immediately stabilized with grass cover.
- Watering. Trees planted in the buffer and on wetland islands and peninsulas need watering during the first growing season. In general, consider watering every three days for first month, and then weekly during the first growing season (April - October), depending on rainfall.
- Reinforcement Plantings. Remove and replace any dead or dying plantings.

Routine Maintenance Guidelines

Constructed wetlands must be inspected to ensure that they operate in good working condition and in accordance with the approved design and specifications. Items in need of repair must be documented and addressed as soon as practicable.

Routine Maintenance Tasks	Frequency
Remove trash and debris	As needed
Check and repair eroded areas	Annually
Check for and remove nuisance animals and burrows	Annually
Inspect plant composition for consistency with approved plans and correct any deficiencies	Annually
Forebay inspection and cleanout	Annually-remove sediment when forebay reaches 50% capacity or every 5 years
Inspect the orifice and repair any clogging	Annually
Inspect and exercise all mechanical devices	Annually
Inspect for and repair any structural damage and leaks	Annually
Inspect inlets and outlets and repair any clogging and damage	Annually
Remove woody vegetation on or near embankments, forebays, spillways, and outlets	Annually
Check sediment accumulation in the permanent pool	Annually, dredge if necessary
Harvest overgrown vegetation to guide wetland maturation	As needed
Replace displaced rip rap	As needed
Remove invasive plants	As needed
Replace dead or damaged plant material	As needed
Repair broken pipes	As needed

Dry Swale Maintenance Schedule and Guidelines

Routine Maintenance Guidelines

Swales must be inspected to ensure that they operate in good working condition and in accordance with the approved design and specifications. Items in need of repair must be documented and addressed as soon as practicable.

Routine Maintenance Tasks	Frequency
Remove trash and debris	As needed
Check and repair eroded areas	Annually
Remove any invasive vegetation or weeds	As needed
Mow grass to a height of 4”-9”	As needed to maintain correct height
Inspect plant composition for consistency with approved plans and correct any deficiencies	Annually
Replace any dead or dying plantings	Annually
Remove accumulated sand or sediment	Annually
Inspect check dams and repair any erosion or blockage	Annually
Inspect underdrains and repair any clogging or damage	Annually
Inspect inflow and outlets and repair any clogging or damage	Annually

Dry Detention Basin Maintenance Schedule and Guidelines

First Year Maintenance Guidelines

Successful establishment of dry detention basins requires that the following tasks be undertaken in the first year following installation:

- Immediately after the dry extended detention basin is established, the vegetation will be watered twice weekly if needed until the plants become established (commonly six weeks).
- No portion of the dry extended detention pond will be fertilized after the first initial fertilization to establish the vegetation.
- The vegetation in and around the basin will be maintained at a height of approximately six inches.

Routine Maintenance Guidelines

Dry detention basins must be inspected to ensure that they operate in good working condition and in accordance with the approved design and specifications. Items in need of repair must be documented and addressed as soon as practicable.

Routine Maintenance Tasks	Frequency
Remove debris and trash	As needed
Outlet/inlet inspection and cleanout	Annually
Bank mowing and inspection/stabilization of eroded areas	As needed to maintain 4”-9” height
Forebay inspection and cleanout	Annually -remove sediment every 7 years or when sediment volume exceeds 50% of storage volume
Check pond depth	Annually-remove sediment as needed
Remove woody vegetation along embankment	Annually
Inspect for and repair structural damage	Annually
Inspect, exercise, and repair all mechanical devices	Annually
Repair broken pipes	As needed
Replace riprap that has been choked with sediment	As needed

Extended Detention (ED) Pond Maintenance Schedule and Guidelines

First Year Maintenance Guidelines

ED Ponds are prone clogging at the ED low-flow orifice. Ideally, the orifice should be inspected at least twice a year after initial construction.

Routine Maintenance Guidelines

ED Ponds must be inspected to ensure that they operate in good working condition and in accordance with the approved design and specifications. Items in need of repair must be documented and addressed as soon as practicable.

Routine Maintenance Tasks	Frequency
Remove trash and debris	As needed
Check and repair eroded areas	Annually
Check for and remove nuisance animals and burrows	Annually
Mow area around facility	Twice per year at a minimum
Forebay inspection and cleanout	Annually-remove sediment when 50% capacity reached or every 7 years
Inspect plant composition for consistency with approved plans and correct any deficiencies	Annually
Inspect the orifice and repair any clogging or damage	Annually
Inspect and exercise all mechanical devices	Annually
Inspect for and repair any structural damage and leaks	Annually
Inspect inlets and outlets and repair any clogging or damage	Annually
Remove woody vegetation on or near embankments, forebays, spillways, and outlets	Annually
Check sediment accumulation in the permanent pool	Annually, dredge if necessary
Replace displaced rip rap	As needed
Remove invasive plants	As needed
Replace dead or damaged plant material	As needed
Repair broken pipes	As needed

Grass Channel Maintenance Schedule and Guidelines

Routine Maintenance Guidelines

Grass channels must be inspected to ensure that they operate in good working condition and in accordance with the approved design and specifications. Items in need of repair must be documented and addressed as soon as practicable.

Routine Maintenance Tasks	Frequency
Remove trash and debris	As needed
Check and repair eroded areas	Annually
Mow grass to height of 4”-9”	As need to maintain correct height
Remove excess sediment accumulation	Annually
Inspect for and repair any clogging	Annually
Inspect check dams and repair any erosion or blockages	Annually
Inspect plant composition for consistency with approved plans and correct any deficiencies	Annually
Remove invasive plants	As needed
Replace dead or damaged plant material	As needed

Infiltration Practice Maintenance Schedule and Guidelines

Routine Maintenance Guidelines

Infiltration practices must be inspected to ensure that they operate in good working condition and in accordance with the approved design and specifications. Items in need of repair must be documented and addressed as soon as practicable

Routine Maintenance Tasks	Frequency
Remove trash and debris	As needed
Check for and repair eroded areas	Annually
Check for and remove nuisance animals and burrows	Annually
Mow grass to a height of 4”-9”	As needed to maintain correct height
Inspect for and remove excess sediment	Annually
Inspect facility for clogging and repair	Annually
Remove woody vegetation from facility	As needed
Inspect plant composition for consistency with approved plans and correct any deficiencies	Annually
Inspect for and repair any structural damage	Annually
Inspect for and repair any clogged outlets or inlets	Annually
Replace clogged pea gravel, topsoil, and filter fabric	As needed
Remove invasive plants	As needed
Replace dead or damaged plant material	As needed
Repair broken pipes	As needed

Permeable Pavement Maintenance Schedule and Guidelines

Routine Maintenance Guidelines

Permeable pavement must be inspected to ensure that it operates in good working condition and in accordance with the approved design and specifications. Items in need of repair must be documented and addressed as soon as practicable.

Routine Maintenance Tasks	Frequency
Remove trash and debris	As needed
Check and repair eroded areas	Annually
Inspect for and remove excess sediment	Annually
Inspect facility for clogging and repair any clogging and improper drainage	Annually
Inspect for and repair any structural damage	Annually
Inspect for repair any clogged or damaged inlets and outlets	Annually

Proprietary BMP Maintenance Schedule and Guidelines

Routine Maintenance Guidelines

Proprietary systems must be maintained in good working condition and in accordance with the approved design and specifications. All proprietary systems should be inspected and maintained according to the manufacturer's recommendations.

A copy of the manufacturer's recommended inspection and maintenance schedule must be attached to the BMP Maintenance Agreement.

Rainwater Harvesting Maintenance Schedule and Guidelines

Routine Maintenance Guidelines

Rainwater harvesting systems must be inspected to ensure they operate in good working condition and in accordance with the approved design and specifications. Items in need of repair must be documented and addressed as soon as practicable.

All rainwater harvesting system components should be inspected by the responsible party twice per year. A comprehensive inspection by a qualified third-party inspector should occur every third year.

Routine Maintenance Tasks	Frequency
Remove leaves and debris from gutters and downspouts	Semi-annually
Remove any algae growth	Semi-annually
Inspect and clean prescreening devices and first flush diverters	Quarterly
Inspect and clean storage tank lids	Annually
Inspect for and repair any clogging	Annually
Inspect and repair mosquito screens	Annually
Inspect tank and remove sediment build up	Every 3 years
Clear overhanging vegetation and trees over roof	Every 3 years
Check integrity of backflow preventer	Every 3 years
Inspect structural integrity of tank, pump, pipe, and electrical system and repair any damage	Every 3 years
Replace damaged or defective system components	As needed

Rooftop Disconnection BMP Maintenance Schedule and Guidelines

Routine Maintenance Guidelines

Rooftop disconnections must be inspected to ensure that they operate in good working condition and in accordance with the approved design and specifications. Items in need of repair must be documented and addressed as soon as practicable.

Routine Maintenance Tasks	Frequency
Remove trash and debris	As needed
Check and repair eroded areas	Annually
Inspect for downspout disconnection	Annually
Inspect for and remove any sediment accumulation	Annually
Check that pervious areas receiving flow have not been disturbed or converted	Annually

Sand Filter Maintenance Schedule and Guidelines

First Year Maintenance Guidelines

Proper functioning of the sand filter requires that the following tasks be undertaken in the first year:

- Initial Inspections. During the first 6 months following construction, the site should be inspected at least twice after storm events that exceed 1/2 inch of rainfall.

Routine Maintenance Guidelines

Sand filters must be inspected to ensure that they operate in good working condition and in accordance with the approved design and specifications. Items in need of repair must be documented and addressed as soon as practicable.

Routine Maintenance Tasks	Frequency
Remove trash and debris	Annually, or more often if needed
Inspect sedimentation chamber or forebay, cleanout when sediment accumulation exceeds design level	Annually
Inspect for standing water or ponding for more than 48 hours after a storm	Annually
Inspect and exercise all mechanical devices and repair if needed	Annually
Inspect for and repair any structural damage and leaks	Annually
For filters that hold water, check for water at normal pool	Annually
Inspect for and repair any clogging	Annually
Cleanout wet sedimentation chambers	Every 2-3 years or when over ½ full
Remove sediments from dry sedimentation chamber	Every 2-3 years

Sheet Flow to Vegetated Filter Areas and Conserved Open Space Maintenance Schedule and Guidelines

Routine Maintenance Guidelines

These practices must be inspected to ensure that they operate in good working condition and in accordance with the approved design and specifications. Items in need of repair must be documented and addressed as soon as practicable.

Routine Maintenance Tasks	Frequency
Remove trash and debris	As needed
Check and repair eroded areas	Annually
Mow grass filter strips to prevent woody growth	Semi-annually
Inspect for and remove sediment accumulation	Annually
Inspect level spreader for diffuse flow and repair any channeling	Annually
Inspect plant composition for consistency with approved plans and correct any deficiencies	Annually
Remove invasive plants	As needed
Replace dead or damaged plant material	As needed

Soil Compost Amendment Maintenance Schedule and Guidelines

First Year Maintenance Guidelines

In order to ensure the success of soil compost amendments, the following tasks must be undertaken in the first year following soil restoration:

- Initial inspections. For the first six months following the incorporation of soil amendments, the site should be inspected at least once after each storm event that exceeds 1/2-inch of rainfall.
- Spot Reseeding. Check for bare or eroding areas in the contributing drainage area or around the soil restoration area and make sure they are immediately stabilized with grass cover.
- Fertilization. Depending on the amended soils test, a one-time, spot fertilization may be needed in the fall after the first growing season to increase plant vigor.
- Watering. Water once every three days for the first month, and then weekly during the first year (April-October), depending on rainfall.

Routine Maintenance Guidelines

Soil compost amendments must be maintained in good working condition and in accordance with the approved design and specifications. There are no major on-going maintenance needs associated with compost amendments.

Urban Bioretention Area Maintenance Schedule and Guidelines

First Year Maintenance Guidelines

Successful establishment of bioretention areas requires that the following tasks be undertaken in the first year following installation:

- Initial inspections. For the first 6 months following construction, the bioretention area should be inspected at least twice after storm events that exceed 1/2 inch of rainfall.
- Spot reseeding. Inspect for bare or eroding areas in the contributing drainage area or around the bioretention area, and make sure they are immediately stabilized with grass cover.
- Watering. Watering is needed once a week during the first 2 months, and then as needed during first growing season (April-October), depending on rainfall.
- Remove and replace dead plants.

Routine Maintenance Guidelines

Bioretention areas must be inspected to ensure that they operate in good working condition and in accordance with the approved design and specifications. Items in need of repair must be documented and addressed as soon as practicable.

Routine Maintenance Tasks	Frequency
Remove trash and debris	As needed
Check and repair eroded areas	Annually
Inspect for and remove excess sediment	Annually
Weed mulch	Twice during the growing season
Inspect plant composition for consistency with approved plans and correct any deficiencies	Annually
Re-mulch to maintain a three-inch layer	Annually
Prune trees and shrubs	Annually
Inspect for clogging or ponding water in the filter bed	Annually
Remove invasive plants	As needed
Replace dead or damaged plant material	As needed
Repair broken pipes	As needed
Replace the mulch layer	Every 3 years

Vegetated Roof Maintenance Schedule and Guidelines

First Year Maintenance Guidelines

Successful establishment of vegetated roofs require that the following tasks be undertaken during the first year following construction:

- Initial inspections. The roof should be inspected monthly during the vegetation establishment period, and then every six months thereafter to assess the state of vegetative cover and to look for leaks, drainage problems and other functional or structural concerns

Routine Maintenance Guidelines

Vegetated roofs must be inspected to ensure that they operate in good working condition and in accordance with the approved design and specifications. Items in need of repair must be documented and addressed as soon as practicable.

The use of herbicides, insecticides, fungicides, and fertilizers should be avoided, since their presence could hasten degradation of the waterproof membrane. Also, power-washing and other exterior maintenance operations should be avoided so that cleaning agents and other chemicals do not harm the vegetated roof plant communities.

Routine Maintenance Tasks	Frequency
Remove trash and debris	Semi-annually
Inspect waterproof membrane for leaks or cracks and repair any damage	Semi-annually
Remove invasive plants	Semi-annually
Inspect and remove overgrowth and debris from roof drains, scuppers and gutters	Semi-annually
Inspect plant composition for consistency with approved plans and correct any deficiencies	Semi-annually
Replace any dead or dying plants	Semi-annually
Remove excess debris, fallen leaves, and overgrowth	Semi-annually
Check and repair areas of erosion	Semi-annually
Water to promote plant growth and survival	As needed

Wet Pond Maintenance Schedule and Guidelines

First Year Maintenance Guidelines

Successful establishment of wet ponds requires that the following tasks be undertaken during the first year following construction.

- Initial inspections. For the first six months following construction, the site should be inspected at least twice after storm events that exceed a 1/2-inch of rainfall.
- Aquatic Benches. Remove and replace dead or dying plants.
- Spot Reseeding. Inspect for eroding areas in the contributing drainage area or around the pond buffer, and make sure they are immediately stabilized with grass cover.
- Watering. Trees planted in the pond buffer need to be watered during the first growing season. In general, consider watering every 3 days for first month, and then weekly during the remainder of the first growing season (April - October), depending on rainfall.

Routine Maintenance Guidelines

Wet Ponds must be inspected to ensure that they operate in good working condition and in accordance with the approved design and specifications. Items in need of repair must be documented and addressed as soon as practicable.

Routine Maintenance Tasks	Frequency
Remove trash and debris	As needed
Check and repair eroded areas	Annually
Check for and remove nuisance animals and burrows	Annually
Mow area around facility	Twice per year at a minimum
Forebay inspection and cleanout	Annually-remove sediment when forebay reaches 50% capacity or every 7 years
Inspect plant composition for consistency with approved plans and correct any deficiencies	Annually
Inspect and repair any clogging or damage to the orifice	Annually
Inspect and exercise all mechanical devices	Annually
Inspect for and repair structural damage and leaks	Annually
Inspect and repair any damaged or clogged inlets and outlets	Annually
Remove woody vegetation on or near embankments, forebays, spillways, and outlets	Annually
Check sediment accumulation in the permanent pool	Annually, dredge if necessary
Replace displaced rip rap	As needed
Remove invasive plants	As needed
Replace dead or damaged plant material	As needed
Repair broken pipes	As needed

Wet Swale Maintenance Schedule and Guidelines

Routine Maintenance Guidelines

Swales must be inspected to ensure that they operate in good working condition and in accordance with the approved design and specifications. Items in need of repair must be documented and addressed as soon as practicable.

Routine Maintenance Tasks	Frequency
Remove trash and debris	As needed
Check and repair eroded areas	Annually
Remove any invasive vegetation	As needed
Inspect plant composition for consistency with approved plans and correct any deficiencies	Annually
Replace any dead or dying plantings	Annually
Remove accumulated sand or sediment	Annually
Inspect for and repair any eroded or blocked check dams	Annually
Inspect for and remove any clogging at inflow and outlets	Annually

Appendix 2-Inspection Forms

Appendix 2-Inspection Forms

City of Alexandria, Virginia
BMP Inspection-Bioretention

Project Name:
Location:
Project #:
BMP Type:
BMP Info:

Inspection Date:	**Inspection Time:**
Primary Inspector:	**Time since last precipitation:**
Secondary Inspector:	**Amount of last precipitation:**

Flow condition:
Structural condition:
Overall condition:

Parameter	Satisfactory (Y/N)	N/A	Comments
Contributing Drainage Area			
Vegetation	☐Yes ☐No	☐	
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Pre-treatment			
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Vegetation	☐Yes ☐No	☐	
Inlet			
Inlet stability	☐Yes ☐No	☐	
Trash, debris, or sediment	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Inflow blocked by vegetation	☐Yes ☐No	☐	
Side slopes			
Erosion	☐Yes ☐No	☐	
Sediment accumulation	☐Yes ☐No	☐	
Nuisance animals	☐Yes ☐No	☐	
Vegetation			

Plant composition consistent with approved plans	☐Yes ☐No	☐	
Invasive species	☐Yes ☐No	☐	
Dead or dying plants	☐Yes ☐No	☐	
75-90% cover (mulch/ turf)	☐Yes ☐No	☐	
Mulch 2”-3” deep	☐Yes ☐No	☐	
Grass is more than 6”-10”	☐Yes ☐No	☐	
Filter media			
Compacted or inconsistent with plan design	☐Yes ☐No	☐	
Mulch condition	☐Yes ☐No	☐	
Evidence of oil, grease, chemicals or fertilizer	☐Yes ☐No	☐	
Trash, debris, or sediment	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Clogging	☐Yes ☐No	☐	
Underdrain			
Water conveyance	☐Yes ☐No	☐	
Standing water present	☐Yes ☐No	☐	
Planters (if applicable)			
Water drains within 3-4 hours	☐Yes ☐No	☐	
Structural deficiencies	☐Yes ☐No	☐	
Outlet			
Trash, debris, or obstructions	☐Yes ☐No	☐	
Sediment	☐Yes ☐No	☐	
Evidence of erosion	☐Yes ☐No	☐	
Obstructions	☐Yes ☐No	☐	
Condition of grates	☐Yes ☐No	☐	
Observation well present and capped	☐Yes ☐No	☐	
Overall			
Adequate facility access	☐Yes ☐No	☐	
Mosquito proliferation	☐Yes ☐No	☐	
Encroachments	☐Yes ☐No	☐	

Appendix 2-Inspection Forms

Inspection Comments

Appendix 2-Inspection Forms

City of Alexandria, Virginia
BMP Inspection-Constructed Wetlands

Project Name:
Location:
Project #:
BMP Type:
BMP Info:

Inspection Date:	**Inspection Time:**
Primary Inspector:	**Time since last precipitation:**
Secondary Inspector:	**Amount of last precipitation:**

Flow condition:
Structural condition:
Overall condition:

Parameter	Satisfactory (Y/N)	N/A	Comments
Contributing Drainage Area			
Vegetation	☐Yes ☐No	☐	
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Pre-treatment			
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Forebay less than 50% filled	☐Yes ☐No	☐	
Clogging	☐Yes ☐No	☐	
Adequate vegetation	☐Yes ☐No	☐	
Inlet			
Inlet stability	☐Yes ☐No	☐	
Trash, debris, or sediment	☐Yes ☐No	☐	
Evidence of erosion	☐Yes ☐No	☐	
Woody growth	☐Yes ☐No	☐	
Nuisance animals	☐Yes ☐No	☐	
Vegetation			

Plant composition consistent with approved plans	☐Yes ☐No	☐	
Invasive species	☐Yes ☐No	☐	
Overgrown grass around facility	☐Yes ☐No	☐	
Dead or dying plants	☐Yes ☐No	☐	
Wetland Cells and pools			
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Nuisance animals	☐Yes ☐No	☐	
Sediment accumulation	☐Yes ☐No	☐	
Adequately maintaining permanent pool	☐Yes ☐No	☐	
Riser and principal spillway			
Structural damage	☐Yes ☐No	☐	
Valves operational	☐Yes ☐No	☐	
Seepage into conduit	☐Yes ☐No	☐	
Clogging	☐Yes ☐No	☐	
Trash rack is clear of debris	☐Yes ☐No	☐	
Obstruction of orifice	☐Yes ☐No	☐	
Sediment accumulation	☐Yes ☐No	☐	
Dam/Embankment			
Cracking, bulging, or sliding	☐Yes ☐No	☐	
Soft spots, seepage, or sink holes	☐Yes ☐No	☐	
Nuisance animals	☐Yes ☐No	☐	
Woody vegetation	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Emergency Spillway			
Woody growth	☐Yes ☐No	☐	
Trash, debris, or sediment	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Soft spots, seepage, or sink holes	☐Yes ☐No	☐	
Riprap failure	☐Yes ☐No	☐	
Obstruction	☐Yes ☐No	☐	
Outlet			

Appendix 2-Inspection Forms

Woody growth	☐Yes ☐No	☐	
Trash, debris, or obstructions	☐Yes ☐No	☐	
Sediment accumulation	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Rip rap failure	☐Yes ☐No	☐	
Pipe condition	☐Yes ☐No	☐	
Endwall/headwall condition	☐Yes ☐No	☐	
Overall			
Adequate facility access	☐Yes ☐No	☐	
Mosquito proliferation	☐Yes ☐No	☐	
Encroachments on pond	☐Yes ☐No	☐	

Inspection Comments

Appendix 2-Inspection Forms

City of Alexandria, Virginia
BMP Inspection-Dry Swale

Project Name:	
Location:	
Project #:	
BMP Type:	
BMP Info:	

Inspection Date:	**Inspection Time:**
Primary Inspector:	**Time since last precipitation:**
Secondary Inspector:	**Amount of last precipitation:**

Flow condition:	
Structural condition:	
Overall condition:	

Parameter	Satisfactory (Y/N)	N/A	Comments
Contributing Drainage Area			
Vegetation	☐Yes ☐No	☐	
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Pre-treatment			
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Clogging	☐Yes ☐No	☐	
Vegetation	☐Yes ☐No	☐	
Inlet /swale sides and base			
Inlet stability	☐Yes ☐No	☐	
Trash, debris, or sediment	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Check dams			
Dam functions properly	☐Yes ☐No	☐	
Trash/debris build up behind dam	☐Yes ☐No	☐	
Vegetation			

Appendix 2-Inspection Forms

Plant composition consistent with approved plans	☐Yes ☐No	☐	
Invasive species	☐Yes ☐No	☐	
Dead or dying plants	☐Yes ☐No	☐	
Grass height is 4”-9”	☐Yes ☐No	☐	
Underdrain			
Water conveyance	☐Yes ☐No	☐	
Standing water present	☐Yes ☐No	☐	
Outlet			
Trash, debris, or obstructions	☐Yes ☐No	☐	
Sediment build up	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Overall			
Adequate facility access	☐Yes ☐No	☐	
Mosquito proliferation	☐Yes ☐No	☐	
Encroachments	☐Yes ☐No	☐	

Inspection Comments

Appendix 2-Inspection Forms

City of Alexandria, Virginia
BMP Inspection-Extended Detention Pond

Project Name:	
Location:	
Project #:	
BMP Type:	
BMP Info:	

Inspection Date:	**Inspection Time:**
Primary Inspector:	**Time since last precipitation:**
Secondary Inspector:	**Amount of last precipitation:**

Flow condition:
Structural condition:
Overall condition:

Parameter	Satisfactory (Y/N)	N/A	Comments
Contributing Drainage Area			
Vegetation	☐Yes ☐No	☐	
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Pre-treatment			
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Forebay less than 50% filled	☐Yes ☐No	☐	
Clogging	☐Yes ☐No	☐	
Vegetation	☐Yes ☐No	☐	
Inlet			
Inlet stable	☐Yes ☐No	☐	
Trash, debris, or sediment	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Woody growth	☐Yes ☐No	☐	
Nuisance animals	☐Yes ☐No	☐	
Vegetation			
Plant composition consistent with approved plans	☐Yes ☐No	☐	
Invasive species	☐Yes ☐No	☐	

Grass overgrown around facility	☐Yes ☐No	☐	
Dead or dying plants	☐Yes ☐No	☐	
Permanent pool/Side slopes			
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Nuisance animals	☐Yes ☐No	☐	
Sediment	☐Yes ☐No	☐	
Permanent pool maintained	☐Yes ☐No	☐	
Riser and principal spillway			
Structural damage	☐Yes ☐No	☐	
Valves are operational	☐Yes ☐No	☐	
Seepage into conduit	☐Yes ☐No	☐	
Evidence of clogging	☐Yes ☐No	☐	
Trash rack clear of debris	☐Yes ☐No	☐	
Obstruction of orifice	☐Yes ☐No	☐	
Excessive sediment	☐Yes ☐No	☐	
Dam/Embankment			
Cracking, bulging, or sliding	☐Yes ☐No	☐	
Soft spots, seepage, or sink holes	☐Yes ☐No	☐	
Nuisance animals	☐Yes ☐No	☐	
Woody vegetation	☐Yes ☐No	☐	
Emergency Spillway			
Woody growth	☐Yes ☐No	☐	
Trash, debris, or sediment	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Soft spots, seepage, or sink holes	☐Yes ☐No	☐	
Riprap failure	☐Yes ☐No	☐	
Obstruction	☐Yes ☐No	☐	
Outlet			
Woody growth	☐Yes ☐No	☐	
Trash, debris, or obstructions	☐Yes ☐No	☐	
Sediment accumulation	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Rip rap failure	☐Yes ☐No	☐	
Pipe condition	☐Yes ☐No	☐	
Endwall/headwall condition	☐Yes ☐No	☐	

Appendix 2-Inspection Forms

Overall			
Adequate facility access	☐Yes ☐No	☐	
Mosquito proliferation	☐Yes ☐No	☐	
Encroachments on pond	☐Yes ☐No	☐	

Inspection Comments

Appendix 2-Inspection Forms

City of Alexandria, Virginia
BMP Inspection-Grass Channel

Project Name:	
Location:	
Project #:	
BMP Type:	
BMP Info:	

Inspection Date:	**Inspection Time:**
Primary Inspector:	**Time since last precipitation:**
Secondary Inspector:	**Amount of last precipitation:**

Flow condition:	
Structural condition:	
Overall condition:	

Parameter	Satisfactory (Y/N)	N/A	Comments
Contributing Drainage Area			
Vegetation	☐Yes ☐No	☐	
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Pre-treatment			
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Clogging	☐Yes ☐No	☐	
Vegetation	☐Yes ☐No	☐	
Inlet			
Inlet is stable	☐Yes ☐No	☐	
Trash, debris, or sediment	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Check dams			
Proper function of dam	☐Yes ☐No	☐	
Trash/debris build up behind dam	☐Yes ☐No	☐	
Vegetation			

Appendix 2-Inspection Forms

Plant composition consistent with approved plans	☐Yes ☐No	☐	
Invasive species	☐Yes ☐No	☐	
Dead or dying plants	☐Yes ☐No	☐	
Grass height is not 4”-9”	☐Yes ☐No	☐	
Side slopes			
Erosion	☐Yes ☐No	☐	
Channel Bottom			
Trash or debris	☐Yes ☐No	☐	
Soil compaction	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Outlet			
Trash, debris, or obstructions	☐Yes ☐No	☐	
Sediment build up	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Outlet stable	☐Yes ☐No	☐	
Overall			
Adequate facility access	☐Yes ☐No	☐	
Mosquito proliferation	☐Yes ☐No	☐	
Encroachments	☐Yes ☐No	☐	

Inspection Comments

Appendix 2-Inspection Forms

City of Alexandria, Virginia
BMP Inspection-Hydrodynamic

Project Name:	
Location:	
Project #:	
BMP Type:	
BMP Info:	

Inspection Date:	**Inspection Time:**
Primary Inspector:	**Time since last precipitation:**
Secondary Inspector:	**Amount of last precipitation:**

Flow condition:	
Structural condition:	
Overall condition:	

Parameter	Satisfactory (Y/N)	N/A	Comments
Contributing Drainage Area			
Vegetation	☐Yes ☐No	☐	
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Debris Clean Out			
Trash or debris	☐Yes ☐No	☐	
Clogging	☐Yes ☐No	☐	
Structural Components			
Deterioration	☐Yes ☐No	☐	
Grates	☐Yes ☐No	☐	
Spalling or Cracking	☐Yes ☐No	☐	
Sediment Deposition			
Inlets and Outlets	☐Yes ☐No	☐	
Sediment build-up below manufacturer's limit	☐Yes ☐No	☐	
Overall			
Evidence of flow bypassing	☐Yes ☐No	☐	
Odors	☐Yes ☐No	☐	
Facility access	☐Yes ☐No	☐	
Mosquito			

Encroachments			

Inspection Comments

Appendix 2-Inspection Forms

City of Alexandria, Virginia
BMP Inspection-Infiltration Practice

Project Name:	
Location:	
Project #:	
BMP Type:	
BMP Info:	

Inspection Date:	**Inspection Time:**
Primary Inspector:	**Time since last precipitation:**
Secondary Inspector:	**Amount of last precipitation:**

Flow condition:
Structural condition:
Overall condition:

Parameter	Satisfactory (Y/N)	N/A	Comments
Contributing Drainage Area			
Vegetation	☐Yes ☐No	☐	
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Pre-treatment			
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Clogging	☐Yes ☐No	☐	
Vegetation	☐Yes ☐No	☐	
Inlet			
Inlet is stable	☐Yes ☐No	☐	
Trash, debris, or sediment	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Inflow blocked by vegetation	☐Yes ☐No	☐	
Embankment/Side slopes			
Erosion	☐Yes ☐No	☐	
Sediment build up	☐Yes ☐No	☐	
Nuisance animals	☐Yes ☐No	☐	
Vegetation			

Appendix 2-Inspection Forms

Plant composition consistent with approved plans	☐Yes ☐No	☐	
Trees in the facility	☐Yes ☐No	☐	
Grass height is more than 4”-9”	☐Yes ☐No	☐	
Facility drainage			
Compacted or inconsistent with plan design	☐Yes ☐No	☐	
Excessive trash and debris	☐Yes ☐No	☐	
Drawdown 3 days after a ½ inch storm.	☐Yes ☐No	☐	
Excessive trash, debris, or sediment	☐Yes ☐No	☐	
Evidence of erosion	☐Yes ☐No	☐	
Evidence of clogging	☐Yes ☐No	☐	
Structural			
Spalling or cracking	☐Yes ☐No	☐	
Grates condition	☐Yes ☐No	☐	
Structural deterioration	☐Yes ☐No	☐	
Outlet			
Trash, debris, or obstructions	☐Yes ☐No	☐	
Sediment accumulation	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Obstructions	☐Yes ☐No	☐	
Grates condition	☐Yes ☐No	☐	
Observation well present and capped	☐Yes ☐No	☐	
Overall			
Adequate facility access	☐Yes ☐No	☐	
Mosquito proliferation	☐Yes ☐No	☐	
Encroachments	☐Yes ☐No	☐	

Inspection Comments

Appendix 2-Inspection Forms

City of Alexandria, Virginia
BMP Inspection-Permeable Pavement

Project Name:	
Location:	
Project #:	
BMP Type:	
BMP Info:	

Inspection Date:	**Inspection Time:**
Primary Inspector:	**Time since last precipitation:**
Secondary Inspector:	**Amount of last precipitation:**

Flow condition:
Structural condition:
Overall condition:

Parameter	Satisfactory (Y/N)	N/A	Comments
Contributing Drainage Area			
Vegetation	☐Yes ☐No	☐	
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Pre-treatment/Inlets			
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Clogging	☐Yes ☐No	☐	
Pavement Surface			
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Loose material stored on pavement surface	☐Yes ☐No	☐	
Sediment accumulation	☐Yes ☐No	☐	
Pavement stained, clogged or ponded	☐Yes ☐No	☐	
Structural Integrity			
Slumping, cracking, spalling or broken pavers	☐Yes ☐No	☐	
Observation wells			
Present and capped	☐Yes ☐No	☐	

Appendix 2-Inspection Forms

Outlet			
Trash, debris, or obstructions	☐Yes ☐No	☐	
Sediment build up	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Pipe condition	☐Yes ☐No	☐	
Overall			
Adequate facility access	☐Yes ☐No	☐	
Mosquito proliferation	☐Yes ☐No	☐	
Encroachments	☐Yes ☐No	☐	

Inspection Comments

Appendix 2-Inspection Forms

City of Alexandria, Virginia
BMP Inspection-Rainwater Harvesting

Project Name:	
Location:	
Project #:	
BMP Type:	
BMP Info:	

Inspection Date:	**Inspection Time:**
Primary Inspector:	**Time since last precipitation:**
Secondary Inspector:	**Amount of last precipitation:**

Flow condition:
Structural condition:
Overall condition:

Parameter	Satisfactory (Y/N)	N/A	Comments
Overall			
Leaking	☐Yes ☐No	☐	
Structural damage evident	☐Yes ☐No	☐	
Electric system is functioning	☐Yes ☐No	☐	
Sediment accumulation is less than 5% of design volume	☐Yes ☐No	☐	
Overhanging trees/vegetation	☐Yes ☐No	☐	
Captured roof area			
Excessive trash or debris	☐Yes ☐No	☐	
Gutter system			
Clogging	☐Yes ☐No	☐	
Runoff reaching the system	☐Yes ☐No	☐	
Algae growth	☐Yes ☐No	☐	
Sediment accumulation	☐Yes ☐No	☐	
Mosquitos in system	☐Yes ☐No	☐	
Screens and filters			

Appendix 2-Inspection Forms

Debris or sediment present	☐Yes ☐No	☐	
Pump			
Pump operational	☐Yes ☐No	☐	
Prescreening/first flush			
Trash/debris or obstructions	☐Yes ☐No	☐	
Overflow pipe			
Excessive erosion	☐Yes ☐No	☐	
Pipe condition	☐Yes ☐No	☐	
Encroachments	☐Yes ☐No	☐	

Inspection Comments

Appendix 2-Inspection Forms

City of Alexandria, Virginia
BMP Inspection-Rooftop Disconnection

Project Name:
Location:
Project #:
BMP Type:
BMP Info:

Inspection Date:	**Inspection Time:**
Primary Inspector:	**Time since last precipitation:**
Secondary Inspector:	**Amount of last precipitation:**

Flow condition:
Structural condition:
Overall condition:

Parameter	Satisfactory (Y/N)	N/A	Comments
Piping, gutters, and drains			
Downspouts remain disconnected	☐Yes ☐No	☐	
Trash or debris	☐Yes ☐No	☐	
Runoff is entering pervious area	☐Yes ☐No	☐	
Downstream treatment			
Treatment practice in place	☐Yes ☐No	☐	
Ponding at point of disconnection	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Adequate facility access	☐Yes ☐No	☐	
Mosquito proliferation	☐Yes ☐No	☐	
Encroachments	☐Yes ☐No	☐	

Appendix 2-Inspection Forms

Inspection Comments

Appendix 2-Inspection Forms

City of Alexandria, Virginia
BMP Inspection-Sand Filter

Project Name:	
Location:	
Project #:	
BMP Type:	
BMP Info:	

Inspection Date:	**Inspection Time:**
Primary Inspector:	**Time since last precipitation:**
Secondary Inspector:	**Amount of last precipitation:**

Flow condition:	
Structural condition:	
Overall condition:	

Parameter	Satisfactory (Y/N)	N/A	Comments
Contributing Drainage Area			
Vegetation	☐Yes ☐No	☐	
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Inlet			
Inlet stability	☐Yes ☐No	☐	
Trash, debris, or sediment	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Oil and grease entry minimized	☐Yes ☐No	☐	
Sedimentation Chambers			
Sediment level below recommended cleanout	☐Yes ☐No	☐	
Water level at normal pool	☐Yes ☐No	☐	
Trash and debris	☐Yes ☐No	☐	
Filter media			
Clogging	☐Yes ☐No	☐	

Appendix 2-Inspection Forms

Media condition acceptable	☐Yes ☐No	☐	
Water retention			
Water at normal pool	☐Yes ☐No	☐	
Leakage	☐Yes ☐No	☐	
Structural components			
Structural deterioration	☐Yes ☐No	☐	
Grates and manholes condition	☐Yes ☐No	☐	
Spalling or cracking	☐Yes ☐No	☐	
Outlet			
Structural deterioration	☐Yes ☐No	☐	
Trash, debris, or sediment	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Obstruction	☐Yes ☐No	☐	
Pump			
Conduits intact	☐Yes ☐No	☐	
Trash, debris, or obstructions	☐Yes ☐No	☐	
Panel box marked	☐Yes ☐No	☐	
Pump failure	☐Yes ☐No	☐	
Overall			
Adequate facility access	☐Yes ☐No	☐	
Mosquito proliferation	☐Yes ☐No	☐	
Encroachments	☐Yes ☐No	☐	
Noticeable odors	☐Yes ☐No	☐	

Inspection Comments

City of Alexandria, Virginia
BMP Inspection-Sheet flow to vegetated areas

Project Name:	
Location:	
Project #:	
BMP Type:	
BMP Info:	

Inspection Date:	**Inspection Time:**
Primary Inspector:	**Time since last precipitation:**
Secondary Inspector:	**Amount of last precipitation:**

Flow condition:	
Structural condition:	
Overall condition:	

Parameter	Satisfactory (Y/N)	N/A	Comments
Contributing Drainage Area			
Vegetation	☐Yes ☐No	☐	
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Inlet			
Inlet is stable	☐Yes ☐No	☐	
Trash, debris, or sediment	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Channel			
Erosion	☐Yes ☐No	☐	
Accumulation of trash/debris at top of filter area	☐Yes ☐No	☐	
Vegetation			
Plant composition consistent with approved plans	☐Yes ☐No	☐	
Invasive species	☐Yes ☐No	☐	
Dead or dying plants	☐Yes ☐No	☐	
Gravel diaphragm			
In place and functioning	☐Yes ☐No	☐	

Appendix 2-Inspection Forms

Level spreader			
Trash or debris	☐Yes ☐No	☐	
Concentrated flow	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Outlet			
Trash, debris, or obstructions	☐Yes ☐No	☐	
Sediment accumulation	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Outlet stable	☐Yes ☐No	☐	
Overall			
Adequate facility access	☐Yes ☐No	☐	
Mosquito proliferation	☐Yes ☐No	☐	
Encroachments	☐Yes ☐No	☐	

Inspection Comments

Appendix 2-Inspection Forms

City of Alexandria, Virginia
BMP Inspection-Soil Compost Amendments

Project Name:
Location:
Project #:
BMP Type:
BMP Info:

Inspection Date:	**Inspection Time:**
Primary Inspector:	**Time since last precipitation:**
Secondary Inspector:	**Amount of last precipitation:**

Flow condition:
Structural condition:
Overall condition:

Parameter	Satisfactory (Y/N)	N/A	Comments
Overall			
Erosion	☐Yes ☐No	☐	
Excessive fertilizer/chemical use	☐Yes ☐No	☐	
Trash or debris	☐Yes ☐No	☐	

Inspection Comments

City of Alexandria, Virginia
BMP Inspection-Proprietary Filter Device

Project Name:	
Location:	
Project #:	
BMP Type:	
BMP Info:	

Inspection Date:	**Inspection Time:**
Primary Inspector:	**Time since last precipitation:**
Secondary Inspector:	**Amount of last precipitation:**

Flow condition:
Structural condition:
Overall condition:

Parameter	Satisfactory (Y/N)	N/A	Comments
Contributing Drainage Area			
Vegetation	☐Yes ☐No	☐	
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Inlet			
Inlet is stable	☐Yes ☐No	☐	
Trash, debris, or sediment	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Pretreatment Chambers			
Sediment level in chamber	☐Yes ☐No	☐	
Filter media			
Clogging	☐Yes ☐No	☐	
Sediment in chamber	☐Yes ☐No	☐	
Sediment on cartridges	☐Yes ☐No	☐	
Water retention			
Water holding chambers at normal pool	☐Yes ☐No	☐	
Leakage	☐Yes ☐No	☐	

Appendix 2-Inspection Forms

Structural components			
Structural deterioration	☐Yes ☐No	☐	
Grates and manholes condition	☐Yes ☐No	☐	
Spalling or cracking	☐Yes ☐No	☐	
Outlet/ Spillway			
Structural deterioration	☐Yes ☐No	☐	
Trash, debris, or sediment	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Obstruction	☐Yes ☐No	☐	
Pump			
Conduits intact	☐Yes ☐No	☐	
Trash, debris, or obstructions	☐Yes ☐No	☐	
Panel box marked	☐Yes ☐No	☐	
Pump failure	☐Yes ☐No	☐	
Overall			
Adequate facility access	☐Yes ☐No	☐	
Mosquito proliferation	☐Yes ☐No	☐	
Encroachments	☐Yes ☐No	☐	
Noticeable odors	☐Yes ☐No	☐	

Inspection Comments

Appendix 2-Inspection Forms

City of Alexandria, Virginia
BMP Inspection-Vegetated Roof

Project Name:	
Location:	
Project #:	
BMP Type:	
BMP Info:	

Inspection Date:	**Inspection Time:**
Primary Inspector:	**Time since last precipitation:**
Secondary Inspector:	**Amount of last precipitation:**

Flow condition:	
Structural condition:	
Overall condition:	

Parameter	Satisfactory (Y/N)	N/A	Comments
Vegetation			
Plant composition consistent with approved plans	☐Yes ☐No	☐	
Dead or dying plants	☐Yes ☐No	☐	
Plants are choking on excess vegetation	☐Yes ☐No	☐	
Invasive vegetation	☐Yes ☐No	☐	
Overgrown grass	☐Yes ☐No	☐	
Drought conditions	☐Yes ☐No	☐	
Pest infestations	☐Yes ☐No	☐	
Trash or debris	☐Yes ☐No	☐	
Structural components			
Waterproof membrane is not leaking or cracked	☐Yes ☐No	☐	
Drainage layer and inlet			
Clogging	☐Yes ☐No	☐	
Inlet condition	☐Yes ☐No	☐	
Soil substrate			
Erosion	☐Yes ☐No	☐	
Clogging	☐Yes ☐No	☐	

Appendix 2-Inspection Forms

Overall			
Erosion	☐Yes ☐No	☐	
Mosquito proliferation	☐Yes ☐No	☐	
Damage/vandalism	☐Yes ☐No	☐	

Inspection Comments

Appendix 2-Inspection Forms

City of Alexandria, Virginia
BMP Inspection-Wet Pond

Project Name:	
Location:	
Project #:	
BMP Type:	
BMP Info:	

Inspection Date:	**Inspection Time:**
Primary Inspector:	**Time since last precipitation:**
Secondary Inspector:	**Amount of last precipitation:**

Flow condition:	
Structural condition:	
Overall condition:	

Parameter	Satisfactory (Y/N)	N/A	Comments
Contributing Drainage Area			
Vegetation	☐Yes ☐No	☐	
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Pre-treatment			
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Forebay less than 50% filled	☐Yes ☐No	☐	
Clogging	☐Yes ☐No	☐	
Adequate vegetation	☐Yes ☐No	☐	
Inlet			
Inlet stability	☐Yes ☐No	☐	
Trash, debris, or sediment	☐Yes ☐No	☐	
Evidence of erosion	☐Yes ☐No	☐	
Woody growth	☐Yes ☐No	☐	
Nuisance animals	☐Yes ☐No	☐	
Vegetation			

Plant composition consistent with approved plans	☐Yes ☐No	☐	
Invasive species	☐Yes ☐No	☐	
Overgrown grass around facility	☐Yes ☐No	☐	
Dead or dying plants	☐Yes ☐No	☐	
Permanent pool/Side slopes			
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Nuisance animals	☐Yes ☐No	☐	
Sediment accumulation	☐Yes ☐No	☐	
Adequately maintaining permanent pool	☐Yes ☐No	☐	
Riser and principal spillway			
Structural damage	☐Yes ☐No	☐	
Valves operational	☐Yes ☐No	☐	
Seepage into conduit	☐Yes ☐No	☐	
Clogging	☐Yes ☐No	☐	
Trash rack is clear of debris	☐Yes ☐No	☐	
Obstruction of orifice	☐Yes ☐No	☐	
Sediment accumulation	☐Yes ☐No	☐	
Dam/Embankment			
Cracking, bulging, or sliding	☐Yes ☐No	☐	
Soft spots, seepage, or sink holes	☐Yes ☐No	☐	
Nuisance animals	☐Yes ☐No	☐	
Woody vegetation	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Emergency Spillway			
Woody growth	☐Yes ☐No	☐	
Trash, debris, or sediment	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Soft spots, seepage, or sink holes	☐Yes ☐No	☐	
Riprap failure	☐Yes ☐No	☐	
Obstruction	☐Yes ☐No	☐	

Appendix 2-Inspection Forms

Outlet			
Woody growth	☐Yes ☐No	☐	
Trash, debris, or obstructions	☐Yes ☐No	☐	
Sediment accumulation	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Rip rap failure	☐Yes ☐No	☐	
Pipe condition	☐Yes ☐No	☐	
Endwall/headwall condition	☐Yes ☐No	☐	
Overall			
Adequate facility access	☐Yes ☐No	☐	
Mosquito proliferation	☐Yes ☐No	☐	
Encroachments on pond	☐Yes ☐No	☐	

Inspection Comments

Appendix 2-Inspection Forms

City of Alexandria, Virginia
BMP Inspection-Wet Swale

Project Name:	
Location:	
Project #:	
BMP Type:	
BMP Info:	

Inspection Date:	**Inspection Time:**
Primary Inspector:	**Time since last precipitation:**
Secondary Inspector:	**Amount of last precipitation:**

Flow condition:	
Structural condition:	
Overall condition:	

Parameter	Satisfactory (Y/N)	N/A	Comments
Contributing Drainage Area			
Vegetation	☐Yes ☐No	☐	
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Pre-treatment			
Trash or debris	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Clogging	☐Yes ☐No	☐	
Vegetation	☐Yes ☐No	☐	
Inlet			
Inlet stability	☐Yes ☐No	☐	
Trash, debris, or sediment	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Check dams			
Proper function of dam	☐Yes ☐No	☐	
Accumulation of trash/debris behind dam	☐Yes ☐No	☐	
Vegetation			

Appendix 2-Inspection Forms

Plant composition consistent with approved plans	☐Yes ☐No	☐	
Invasive species	☐Yes ☐No	☐	
Dead or dying plants	☐Yes ☐No	☐	
Outlet			
Trash, debris, or obstructions	☐Yes ☐No	☐	
Sediment accumulation	☐Yes ☐No	☐	
Erosion	☐Yes ☐No	☐	
Overall			
Adequate facility access	☐Yes ☐No	☐	
Mosquito proliferation	☐Yes ☐No	☐	
Encroachments	☐Yes ☐No	☐	

Inspection Comments

Appendix 3-Pre-Inspection Notification Letter

City of Alexandria, Virginia
Department of Transportation & Environmental Services
Stormwater Management Division
2900-B Business Center Drive
Alexandria, VA 22314
www.alexandriava.gov

DATE

«Owner_Name»
«OWNER_ADDRESS»
«Owner_City», «Owner_State» «Owner_Zip»

RE: STORMWATER BEST MANAGEMENT PRACTICE (BMP) FACILITY INSPECTION
«Plan_Name», «BMP_Address», «BMP_City», «BMP_State» «BMP_Zip»
(Project #«BMP_ID» – «BMP_Type_Full»)

Dear Facility Owner:

As part of the City's stormwater program, staff will be visiting the above-referenced project to inspect the stormwater Best Management Practice (BMP) facility within the next few weeks. This inspection ensures proper maintenance activities are being performed and that the BMP is functioning according to design. The City performs maintenance inspections of stormwater BMPs to meet regulatory requirements as well as practice good environmental stewardship. It is the responsibility of the owner to ensure proper maintenance and functioning of the BMP that serves their property.

Examples of stormwater BMPs include ponds, bioretention areas, sand filters, hydrodynamic devices, and vegetated buffer strips, to name a few. These BMPs improve the quality of stormwater runoff from a developed site by reducing pollutants such as sediment, oil, litter, and excess nutrients that enter our local streams and waterways, such as Four Mile Run, Cameron Run, Holmes Run, the Potomac River and Chesapeake Bay.

As required by the Virginia Stormwater Management Act and Chesapeake Bay Preservation Act, the Environmental Management Ordinance (Article XIII of the Alexandria Zoning Ordinance) establishes the City's stormwater management program and sets forth the owner's inspection and maintenance requirements and the City's quality assurance inspections. Additionally, under the Virginia Stormwater Management Program permit regulations (9VAC25-870), the Virginia Department of Environmental Quality (DEQ) requires the City to control pollution to the maximum extent practicable and to ensure that BMPs are being maintained and function properly.

City Code Section 13-109(G) states that all stormwater BMPs must be adequately maintained by their owners. This is also outlined in the BMP maintenance agreement executed between the site developer/owner and the City to ensure proper functioning and regular maintenance for the life of the

facility. This agreement is on file in our office and conveys to successive landowners with the property deed.

City staff will inspect the above referenced facility in the next few weeks. If you would like to be present for the inspection, it can be scheduled when you can be onsite to discuss any issues and answer any questions you may have about the facility. Please contact me by phone at 703-746-4071 or by email to schedule the inspection or to discuss this further.

A post-inspection letter will be sent following the inspection. In instances where inadequate maintenance is observed or the facility is malfunctioning, this letter will list maintenance requirements and will specify a period of time to correct the deficiencies. Documentation of maintenance must be provided to this office and will be kept on file. **Failure to complete required maintenance activities may result in a notice of violation and assessment of civil penalties.**

Our records show that you are the owner – or may act on behalf of the owner – of the facility. However, if you are not the appropriate contact for the facility, please let me know or forward this letter to the appropriate person or organization.

Your time and cooperation are greatly appreciated and working together will help to achieve our goal of protecting our streams, the Potomac River, and the Chesapeake Bay. Please feel free to contact me if you have any questions or need any additional information. Please reference the project # located at the top of this letter in your correspondence.

Sincerely,

Water Quality Compliance Specialist
City of Alexandria, VA

Appendix 4-Post-Inspection Letters

Post inspection Letter-No maintenance required

City of Alexandria, Virginia
Department of Transportation & Environmental Services
Stormwater Management Division
2900-B Business Center Drive
Alexandria, VA 22314
www.alexandriava.gov

DATE

«Owner_Name»
«Owner_Address»
«Owner_City», «Owner_State» «Owner_Zip»

RE: POST INSPECTION – STORMWATER BEST MANAGEMENT PRACTICE (BMP) FACILITIES
«Plan_Name», «BMP_Address», «BMP_City», «BMP_State» «BMP_Zip»
(Project #«BMP_ID» – «BMP_Type_Full» & BMP)

Dear Facilities Owner:

The City performed an inspection of the above-referenced stormwater Best Management Practice (BMP) facility on DATE. This letter is sent to inform you of the inspection findings and any required maintenance activities that must be performed.

As part of the City's stormwater program, staff inspects stormwater Best Management Practice (BMP) facilities to ensure proper maintenance activities are being performed and that the BMP is functioning according to design. The City performs maintenance inspections of stormwater BMPs to meet regulatory requirements as well as practice good environmental stewardship.

As required by the Virginia Stormwater Management Act and Chesapeake Bay Preservation Act, the Environmental Management Ordinance (Article XIII of the Alexandria Zoning Ordinance) establishes the City's stormwater management program and sets forth the owner's inspection and maintenance requirements and the City's quality assurance inspections. Additionally, under the Virginia Stormwater Management Program permit regulations (9VAC25-870), the Virginia Department of Environmental Quality (DEQ) requires the City to control pollution to the maximum extent practicable and to ensure that BMPs are being maintained and function properly.

City Code Section 13-109(G) states that all stormwater BMPs must be adequately maintained by their owners. This is also outlined in the BMP maintenance agreement executed between the site developer/owner and the City to ensure proper functioning and regular maintenance for the life of the facility. This agreement is on file in our office, runs with the land as part of the recorded deed and is thus binding on subsequent landowners.

The following observations were made during the inspection:

Plan number and Name

- Comments

No action is necessary at this time. Please continue routine inspection and maintenance of the facility to ensure it functions as designed.

Your time and cooperation are greatly appreciated and will help to achieve our goal of protecting our streams, rivers and the Chesapeake Bay. Please contact me directly at 703-746-4071 or via email at xxx@alexandriava.gov if you have any questions, need additional information.

Thank you for your time and cooperation with regard to this matter.

Sincerely,

Water Quality Compliance Specialist

Post-Inspection Letter-Maintenance Required

City of Alexandria, Virginia
Department of Transportation & Environmental Services
Stormwater Management Division
2900-B Business Center Drive
Alexandria, VA 22314
www.alexandriava.gov

DATE

«Owner_Name»
«Owner_Address»
«Owner_City», «Owner_State» «Owner_Zip»

RE: POST INSPECTION – STORMWATER BEST MANAGEMENT PRACTICE (BMP) FACILITIES
«Plan_Name», «BMP_Address», «BMP_City», «BMP_State» «BMP_Zip»
(Project #«BMP_ID» – «BMP_Type_Full» & BMP)

Dear Facilities Owner:

The City performed an inspection of the above-referenced stormwater Best Management Practice (BMP) facility on DATE. This letter is sent to inform you of the inspection findings and required maintenance activities that must be performed. Documentation of maintenance must be received by this office within the timeframe provided below to avoid a notice of violation for noncompliance.

Section 13-109 of the Environmental Management Ordinance (Article XIII of the Alexandria Zoning Ordinance) requires the City of Alexandria to perform maintenance inspections of stormwater BMPs and ensure their proper function. Additionally, under Virginia Stormwater Management Program permit regulations (9VAC 25-870), the Virginia Department of Environmental Quality (DEQ) requires the City to ensure adequate long-term operation and maintenance of these BMPs by requiring the owner to develop a recorded inspection and maintenance schedule.

City ordinance {13-109(G)} states that all stormwater BMPs must be adequately maintained by the property owners. This is also outlined in the BMP maintenance agreement executed between the owner (or site developer) and the City to ensure proper functioning and regular maintenance for the life of the facility. This agreement is on file in our office, runs with the land as part of the recorded deed and is thus binding on subsequent landowners.

The following observations were made during the inspection and require maintenance:

Plan number and Name

- Comments

Immediate maintenance is required to restore proper functioning of the facility. Please perform maintenance of the facility and provide the below requested information.

Provide the following:

- Within **30 days** from the date of this letter provide a written plan identifying applicable maintenance / corrective actions that will be taken. The plan may be submitted by mail or email.
- Perform maintenance / corrective actions within **90 days** of the date of this letter. Provide documentation of the work performed to this office. Documentation may be submitted by mail or email.

Please reference the Project # in your correspondence as listed at the beginning of this letter.

Your time and cooperation are greatly appreciated and will help to achieve our goal of protecting our streams, rivers and the Chesapeake Bay. Please contact me directly at 703-746-4071 or via email at xxx@alexandriava.gov if you have any questions, need additional information, or to submit the above requested information.

Thank you for your time and cooperation with regard to this matter.

Sincerely,

Water Quality Compliance Specialist

Appendix 5-Enforcement Letters

Notice of corrective action required

City of Alexandria, Virginia
Department of Transportation & Environmental Services
Stormwater Management Division
2900-B Business Center Drive
Alexandria, VA 22314
www.alexandriava.gov

DATE

«Owner_Name»
«Owner_Address»
«Owner_City», «Owner_State» «Owner_Zip»

RE: STORMWATER BEST MANAGEMENT PRACTICE (BMP) FACILITY MAINTENANCE
«Plan_Name», «BMP_Address», «BMP_City», «BMP_State» «BMP_Zip»

Certified Mail #

NOTICE OF CORRECTIVE ACTION REQUIRED

Dear Facility Owner:

On DATE, a certified letter from the City of Alexandria was sent notifying you that the stormwater Best Management Practice (BMP) on the above-referenced property required maintenance and was out of compliance with the City's Environmental Management ordinance. The prior notification letter required you to contact the city within 30 days with a plan for maintenance and to perform all required maintenance within 90 days. As of today, the City has not received an adequate response to this letter. **Documentation of maintenance must be received by this office within the timeframe provided below to avoid a notice of violation for noncompliance and the associated penalty fees**.

Section 13-109 of the Environmental Management Ordinance (Article XIII of the Alexandria Zoning Ordinance) requires the City of Alexandria to perform maintenance inspections of stormwater BMPs and ensure their proper function. Additionally, under Virginia Stormwater Management Program permit regulations (9VAC 25-870), the Virginia Department of Environmental Quality (DEQ) requires the City to ensure adequate long-term operation and maintenance of these BMPs by requiring the owner to develop a recorded inspection and maintenance schedule.

City Code Section 13-109(G) states that all stormwater BMPs must be adequately maintained by the property owners. This is also outlined in the BMP maintenance agreement executed between the owner (or site developer) and the City to ensure proper functioning and regular maintenance for the life of the

facility. This agreement is on file in our office, runs with the land as part of the recorded deed and is thus binding on subsequent landowners.

The following observations were made during the inspection and require maintenance:

Plan name and Number

- Comments

Immediate maintenance is required to restore proper functioning of the facility. Perform maintenance of the facility and provide the below requested information.

Provide the following:

- Within **30 days** from the date of this letter provide a written plan identifying applicable maintenance / corrective actions that will be taken. The plan may be submitted by mail or email.
- Perform maintenance / corrective actions within **60 days** of the date of this letter. Provide documentation of the work performed to this office. Documentation may be submitted by mail or email.

Please reference the Project # in your correspondence as listed at the beginning of this letter**.**

Failure to provide the required information and/or perform the required BMP maintenance in the timeframe allowed may result in a notice of violation which carries penalties of up to $32,500 per day per violation until the required maintenance has been completed.

Your time and cooperation are greatly appreciated and will help to achieve our goal of protecting our streams, rivers and the Chesapeake Bay. Please contact me directly at 703-746-4071 or via email at xxx@alexandriava.gov if you have any questions, need additional information, or to submit the above requested information.

Thank you for your time and cooperation with regard to this matter.

Sincerely,

Water Quality Compliance Specialist

Notice of noncompliance

City of Alexandria, Virginia
Department of Transportation & Environmental Services
Stormwater Management Division
2900-B Business Center Drive
Alexandria, VA 22314
www.alexandriava.gov

DATE

«Owner_Name»
«Owner_Address»
«Owner_City», «Owner_State» «Owner_Zip»

RE: STORMWATER BEST MANAGEMENT PRACTICE (BMP) FACILITY MAINTENANCE
«Plan_Name», «BMP_Address», «BMP_City», «BMP_State» «BMP_Zip»

Certified Mail #

NOTICE OF NONCOMPLIANCE

Dear Facility Owner:

On DATE, a certified letter from the City of Alexandria was sent notifying you that the stormwater Best Management Practice (BMP) on the above-referenced property required maintenance and was out of compliance with the City's Environmental Management Ordinance. A second notice of corrective action was sent on DATE. The prior notification letter required you to contact the city within 30 days with a plan for maintenance and to perform all required maintenance within 60 days. As of today, the City has not received an adequate response to this letter.

You have 30 days from the date of this letter to either repair the BMPs or submit in writing a request for an extension. Failure to repair the BMPs or submit in writing for an extension shall result in the issuance of a NOTICE OF VIOLATION. Each notice of violation for failure to maintain a stormwater BMP may result in the assessment of a civil penalty of up to $32,500 per day per violation until corrective action is completed.

Section 13-109 of the Environmental Management Ordinance (Article XIII of the Alexandria Zoning Ordinance) requires the City of Alexandria to perform maintenance inspections of stormwater BMPs and ensure their proper function. Additionally, under Virginia Stormwater Management Program permit regulations (9VAC 25-870), the Department of Environmental Quality (DEQ) requires the City to ensure adequate long-term operation and maintenance of these BMPs by requiring the owner to develop a recorded inspection and maintenance schedule.

City Code Section 13-109(G) states that all stormwater BMPs must be adequately maintained by the property owners. This is also outlined in the BMP maintenance agreement executed between the owner (or site developer) and the City to ensure proper functioning and regular maintenance for the life of the facility. This agreement is on file in our office, runs with the land as part of the recorded deed and is thus binding on subsequent landowners.

The following observations were made during the inspection and require maintenance:

Plan Number and Name

- Comments

Immediate maintenance is required to restore proper functioning of the facility.

Your time and cooperation are greatly appreciated and will help to achieve our goal of protecting our streams, rivers and the Chesapeake Bay. Please contact NAME in the Stormwater Management Division directly at 703-746-4071, via email if you have any questions, need additional information, or to submit the above requested information.

Thank you for your time and cooperation with regard to this matter.

Sincerely,

Division Chief
TES/Stormwater Management Division

CC: , Water Quality Compliance Specialist
, Watershed Management Planner
, Deputy Director of Transportation and Environmental Services
, Director of Transportation and Environmental Services
, Deputy City Attorney

Notice of Violation

City of Alexandria, Virginia
Department of Transportation & Environmental Services
Stormwater Management Division
2900-B Business Center Drive
Alexandria, VA 22314
www.alexandriava.gov

DATE

«Owner_Name»
«Owner_Address»
«Owner_City», «Owner_State» «Owner_Zip»

RE: STORMWATER BEST MANAGEMENT PRACTICE (BMP) FACILITY MAINTENANCE
«Plan_Name», «BMP_Address», «BMP_City», «BMP_State» «BMP_Zip»

NOTICE OF VIOLATION

Dear Facility Owner:

On DATE, a certified letter from the City of Alexandria was sent notifying you that the stormwater Best Management Practice (BMP) on the above-referenced property required maintenance and was out of compliance with the City's Environmental Management ordinance. A second notice of corrective action was sent on DATE. A final notice of noncompliance was sent on DATE.

Due to failure to respond to multiple notices by the City and/or to repair the above-reference BMP, you are hereby served a **NOTICE OF VIOLATION for failure to maintain a BMP and violation of the City's Environmental Management Ordinance.** City Code Section 13-109(G) states that all stormwater BMPs must be adequately maintained by their owners. This is also set forth in the BMP maintenance agreement executed between the site developer and the City to ensure proper functioning and regular maintenance for the life of the facility. This agreement is on file in our office, runs with the land as part of the recorded deed and is thus binding on subsequent landowners.

You will be assessed a civil penalty of $500 per day per violation beginning DATE until the corrective actions below are completed.

The following maintenance items are required to bring your BMP into compliance:

Plan Number and Name

- Comments

This office will pursue collection of the civil penalty through prosecution in the appropriate court. Additionally, the city may perform the necessary corrections and bill the property owner.

Your time and cooperation are greatly appreciated and will help to achieve our goal of protecting our streams, rivers and the Chesapeake Bay. Please contact NAME in Stormwater Management Division directly at 703-746-4071 or via email at email if you have any questions about the BMP corrective measures. Please contact me with any questions about the scope and nature of the impending legal proceedings.

Please let me know if you have any questions.

Yours very truly,

Deputy City Attorney

CC: , Water Quality Compliance Specialist
, Watershed Management Planner
, Deputy Director of Transportation and Environmental Services
, Director of Transportation and Environmental Services

Click here for instructions

STANDARD MAINTENANCE AND MONITORING AGREEMENT
STORMWATER BMP FACILITIES MAINTENANCE / MONITORING AGREEMENT

THIS AGREEMENT, made and entered into this _____day of _____, 20___, by and between, _____ hereinafter called the "Landowner", and the City of Alexandria, Virginia (the "City");

WITNESSTH:

WHEREAS, the Landowner is the owner of certain real property described as tax map # _____, block # _____, parcels # _____ as acquired by deed in the land records of the City of Alexandria, Virginia, Deed book _____ Page #_____ (Instrument # _____,) hereinafter called the "Property".

WHEREAS, the Landowner is proceeding to build on and develop the property; and

WHEREAS, _____, Project Number _____, hereinafter called the "Plan", which is expressly made a part hereof, as approved or to be approved by the City, provides for detention on-site treatment of stormwater within the confines of the property; and

WHEREAS, the City and the Landowner, its successors and assigns agree that the health, safety and welfare of the residents of the City of Alexandria, Virginia, require that on-site stormwater management/Best Management Practices (BMP) facilities be constructed and maintained on the property; and

WHEREAS, the City requires that on-site stormwater management/BMP facilities as shown on the Plan be constructed and adequately maintained by the Landowner, its successors and assigns.

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The on-site stormwater management/BMP facilities shall be constructed by the Landowner, its successors and assigns, in accordance with the plans and specifications identified in the plans.

2. The Landowner, its successors and assigns, shall maintain the stormwater management/BMP facilities in good working conditions, acceptable to the City, so that they are performing their design functions.

3. The Landowner, its successors and assigns, hereby grant permission to the City, its authorized agents and employees, to enter upon the property and to inspect the stormwater management/BMP facilities whenever the City deems necessary. The purpose of the inspection is to assure safe and proper functioning of the facilities. The inspection shall cover the entire

facility including, berms, inlet and outlet structures, vegetation, infiltration media, pond areas, access roads, etc. When deficiencies are noted, the City shall notify the Landowner, its successors and assigns, and provide information the inspection findings and evaluations.

4. In the event the Landowner, its successors and assigns, fail to maintain the stormwater management/BMP facilities in good working condition acceptable to the City, the City may enter upon the Property and take whatever steps it deems necessary to maintain said stormwater management/BMP facilities and to charge the costs of the repairs to the Landowner, its successors and assigns. This provision shall not be construed to allow the City of Alexandria to erect any structure of a permanent nature on the land of the Landowner, outside of an easement belonging to the City. It is expressly understood and agreed that the City is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the City.

5. The Landowner, its successors and assigns, will perform maintenance in accordance with the maintenance schedule for the stormwater management/BMP facilities including sediment removal as outlined on the approved plans and the following specific requirements:

Maintenance of the following Best Management Practice(s):

Please provide the number of and the specific type of facility(ies.)

shall conform to the approved plan's maintenance requirements, requirements contained in Chapter 2 of the Alexandria Supplement to the Northern Virginia BMP Handbook, the Northern Virginia Regional Commission guidebook Maintaining Stormwater Systems: A Guidebook for Private Owners and Operator in Northern Virginia, and/or specific maintenance requirements established by the manufacturer as approved by the Director of Transportation and Environmental Services (T&ES) prior to the release of the Final Site Plan. Specific manufacturer maintenance requirements for the BMP will be submitted to the City of Alexandria, T&ES.

6. In the event the City, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials and the like on account of the Landowner's or its successors' and assigns' failure to perform such work, the Landowner, its successors and assigns, shall reimburse the City, upon demand, within 30 days of receipt thereof for all costs incurred by the City hereunder. If not paid within such 30-day period, the City shall have a lien against the property in the amount of such costs, plus interest at the Judgment Rate, and may enforce it in the same manner a lien for real property taxes may be enforced.

7. The Landowner, its successors and assigns, shall indemnify and hold harmless the City and its agents and employees for any and all damages, accidents, casualties, occurrences or claims which might arise or be asserted against the City for the construction, presence, existence or maintenance of the stormwater management/BMP facilities by the Landowner, its successors and assigns.

8. In the event a claim is asserted against the City, its agents or employees, the City shall promptly notify the Landowners, their successors and assigns, and they shall defend, at their own expense, any suit based on such claim. If any judgment or claim against the City, its agents or employees shall be allowed, the Landowner, its successors and assigns shall pay all costs and expenses in connection therewith.

9. The Landowner, its successors and assigns, hereby grants permission to the city, its authorized agents, employees, guests, and consultants to enter upon the property to install, operate and maintain equipment to monitor the flow characteristics and pollutant content of the influent and effluent, and at intermediate points in the facility. The Landowner further agrees to design and construct the facility to provide access for monitoring as outlined in Chapter 2 of the Alexandria Supplement to the Northern Virginia BMP Handbook and/or in the manufacturer manual for the BMP.

10. The Landowner, its successors and assigns, hereby grants permission to the City, its authorized agents, employees and guests to enter upon the property whenever the City deems necessary, with a ten day advance notice, to conduct tours of the stormwater management/BMP facilities. The purpose of such tours is to expand the base of knowledge in the stormwater management/BMP field amongst planners, engineers, scientists and other interested parties.

11. This Agreement shall be recorded among the land records of the City of Alexandria, Virginia, and shall constitute a covenant running with the land/or equitable servitude, and shall be binding on the Landowner, its administrators, executors, assigns, heirs and other successors in interest.

WITNESS the following signatures and seals:

_____
Landowner Signature

_____
Print or Type Name

_____
Title

ATTEST:

_____

COMMONWEALTH OF _____

CITY OF _____

I, _____, a Notary Public in and for the City and Commonwealth aforesaid, whose commission expires on the ____ day of _____, 20__, do hereby certify that _____, whose name(s) is/are signed to the foregoing Agreement bearing date of the _____ day of _____, 20__, has acknowledged the same before me in my said City and State.

GIVEN UNDER MY HAND THIS _____day of _____, 20____.

_____
NOTARY PUBLIC

WITNESS the following signatures and seals.

_____
Director, Department of T&ES or Designee

_____
Print or Type Name

ATTEST:

_____

COMMONWEALTH OF _____
CITY OF _____

I, _____, a Notary Public in the City of Alexandria and for the Commonwealth of Virginia, whose commission expires on the _____ day of _____, 20 _, do hereby certify that _____, representative for the City of Alexandria, whose name is signed to the foregoing Agreement bearing the date of the ____ day of _____, 20__, has acknowledged the same before me in the City and Commonwealth aforesaid.

GIVEN UNDER MY HAND THIS _____ day of _____, 20_____.

_____
NOTARY PUBLIC

INSTRUCTIONS FOR PREPARING:

STANDARD MAINTENANCE AND MONITORING AREEMENT

STORMWATER BMP FACILITIES MAINTENANCE / MONITORING AGREEMENT

The following instructions are provided to help the applicant properly complete steps associated with this agreement.

- Day, date and Landowner are self-explanatory and must be provided
- Description of property should be provided in full, in the spaces provided

- **Project Name**
- **Project Number** as assigned by the City of Alexandria
- Specify the **Number**, and then the **Specific Type** of stormwater quality BMP facility. If different BMPs are employed for the same project, provide type and number of each being constructed.

- Execute and notarize the document in the spaces provided.
- T&ES staff will also execute and notarize the document.

This document must be executed and recorded with the Land Records Division of the Alexandria Circuit Court. ***The applicant must submit proof (i.e. Receipt) that this agreement has been recorded prior to release of site plan****.*

The following shall be completed by the applicant prior to release of the Performance Bond (if applicable)

- The applicant must submit a written certification by a Registered Engineer or Licensed Surveyor that the BMP(s) have been constructed and installed as designed and in accordance with the Final Site Plan.
- Submit a certification by a qualified professional, to the satisfaction of the Director of T&ES, that any existing stormwater management facilities and associated conveyance systems adjacent to the project were not adversely affected by construction operations and that they are functioning.
- A copy of the BMP Operation and Maintenance Manual shall be submitted to the Division of Environmental Quality via written or digital media. A copy of the executed maintenance service contract made with a qualified private contractor shall be included in the Manual.

City of Alexandria

Municipal Separate Storm Sewer System (MS4) Program Plan

Appendix F – MCM #6: Pollution Prevention and Good Housekeeping

City of Alexandria, Virginia

Good Housekeeping & Pollution Prevention Procedures

Permit Cycle 2023 – 2028

May 2024

Document Title	Page No.
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T&ES PWS, Brick Sidewalk Maintenance	1
T&ES PWS, Concrete Sidewalk Maintenance	6
T&ES PWS, Crack Sealing, Strip Patching, and Paving/Patching/Concrete Construction Maintenance	12
T&ES PWS, Pothole Patch Maintenance	16
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	TITLE	**Brick Sidewalk Maintenance**	
	Procedure #	TES-2013-04	
	Revision		**Date**
	Page	1 of 5	
ORIGINATOR Name / Title	Jeff DuVal / Division Chief, Maintenance	**SIGNATURE**	6/9/2014
APPROVED BY Name / Title	Yon Lambert / Deputy Director, T&ES Operations		6.9.14

OVERVIEW:
The City of Alexandria, Transportation and Environmental Services (T&ES), Maintenance Division provides maintenance and repairs for all City sewers, streets, sidewalks and fire hydrants; maintains stream beds, weirs and stream banks; maintains drainage tunnels, box culverts and storm water pollution removal facilities; maintains bridges; and conducts snow removal and flood control operations. The Maintenance Division coordinates with other City agencies and other divisions within T&ES to respond to weather and hurricanes, and assists in both emergency management and clean-up following these events.

The Standard Operation Procedures (SOP) is a guide for Maintenance Division. The SOP outlines the rules and processes to be followed for administrative functions, field work, and the enforcement of regulations. Where a standard operation procedure is not applicable or does not exist, a Team Member should ask for guidance from his/her Supervisor or the Division Chief.

SECTION 1: PURPOSE
1.1 The Brick Sidewalk Maintenance Team serves to repair and maintain brick sidewalk infrastructure in the City of Alexandria public Right of Way (ROW).

- Provides immediate Traffic Control to ensure roadway and pedestrian safety
- Conducts assessments and inspections of brick sidewalk infrastructure
- Determines and implements appropriate response
- Repairs and maintains brick sidewalk infrastructure

1.2 The Brick Sidewalk Maintenance Team Operations include the following elements:

a. Section 2: Roles and Responsibilities: Provides clear and concise direction on the roles and responsibilities of each Team Member assigned to Brick Maintenance.
b. Section 3: Service Request Process: Identifies the process by which Cityworks Service Requests are processed to Brick Sidewalk Maintenance Team.
c. Section 4: Equipment List: Personal Protective Equipment (PPE), Traffic Control Devices (TCD), and Tools, all of which are mandatory equipment, have been listed.
d. Section 5: Brick Sidewalk Maintenance Operation: Captures the efforts with standard procedure for responding to brick sidewalk maintenance.

e. Section 6: Brick Sidewalk Maintenance Reporting: Contains information required in creating/closing a Cityworks Work Order upon completion of repairs.
f. Section 7: Reference Materials
g. Section 8: Document Changes

SECTION 2: ROLES AND RESPONSIBILITIES

2.1 Brick Sidewalk Maintenance Team roles and responsibilities have been identified below:

- **Supervisor** is responsible for processing the maintenance request from Cityworks and verifying the information is accurate; reviews work of staff engaged in brick repair and maintenance; maintain written and computerized records of repairs. The Assistant Superintendent is responsible for inspection of completed work and closing working orders in Cityworks.
- **Repair Team** is responsible for reporting service levels to Supervisor; coordinate with Supervisor to establish maintenance and repair goals; perform field observation to ensure compliance with department policies, practices, and City ordinances.

SECTION 3: SERVICE REQUEST PROCESS

3.1 Cityworks Work Management system is used to process services requested by customers within the City. Customers and Staff may submit requests by phone, online, or the social networking sites.

3.2 When a notification of services is received, it must first be reviewed by the Superintendents / Assistant Superintendents to verify the need for repair or maintenance on the request. This is accomplished by visiting the location, locating the problem or incident, and identifying the solution.

3.3 Once it has been determined the service request / incident location warrants repair, the Supervisor and Repair Team will be sure to take precautions and reasonable measures to render the location safe. At this point the Superintendent / Assistant Superintendents will create a work order and repair work can begin.

SECTION 4: EQUIPMENT LIST

4.1 Brick Sidewalk Maintenance Team equipment list has been identified below:

- **Personal Protective Equipment (PPE):**
  - Safety Vest
  - Hard Hats
  - Government Issued Work Boots
  - Gloves
  - Protective Eyewear
  - Protective Hearing Equipment
  - Hand Sanitizer
- **Identification and Security**
  - Complete City Issued Uniform
  - Government Issue Identification (ID) Badge

- **Traffic Control Devices:**
  - Minimum of six (6) Orange Cones
  - Minimum of two (2) Flashlights
  - Flags
  - Sidewalk Close Signs

- **Tools**
  - Maps (Sewer and City)
  - Pick
  - Shovel
  - Broom
  - Utility Contacts
  - Emergency Fire and Police Contacts
  - City Risk Management Handouts
  - Utility Truck
  - Gravel
  - Stone Dust
  - Brick or Pavers
  - Leveling Tool
  - Rubber Mallet

SECTION 5: BRICK MAINTENANCE OPERATION

5.1 Brick Sidewalk Maintenance requests are processed during normal business hours and assemble out of 2900 Business Center Driver (BCD). When a Brick Sidewalk request is processed, the following is expected:

- Supervisor is responsible for operating the Utility Truck
- Operator/Support is responsible for operating the Crew Cab (or other vehicle as needed)
- Perform pre-trip equipment check
- The Team must report safely to the work location
- Upon arrival to the work location, team must create safe work zone
- Establish signs displaying that the sidewalk is closed so that sidewalk is not damaged by pedestrians or bicyclists travelling on sidewalk
- To begin laying the walkway
  - Level the ground appropriately for the walkway
  - While the walkway should be level, the ground should slope gently outward from the brick walkway to act as a runoff for rain and snow
  - Layer 4 inches of gravel inside the walkway bed and tamp it down. Be sure that the gravel is spread evenly
  - Fill the brick walkway bed with approximately 1 inch of masonry sand. This will act as a binding agent for the bricks once watered and allowed to dry
  - Tamp and level the stone dust. Check the walkway every few feet with a level to be certain that the proper height and curve is being maintained

- Begin laying the bricks
  - Lay the bricks in the proper pattern over the masonry sand. Use a rubber mallet to tamp each brick down after it has been placed
  - Cover the bricks with another layer of masonry sand after laying all of your bricks or pavers
  - Sweep the masonry sand into all the cracks and in between each brick. Be sure to sweep stone dust along the brick edges with a soft broom
- Seal and secure the bricks with the masonry sand by watering the brick walkway thoroughly. The masonry sand will become hard upon drying and hold the bricks in place
  - Once sidewalk is completed, establish signs to prevent pedestrians from using sidewalk until masonry sand has been given adequate time to dry
  - When sidewalk has dried, remove signage and return sidewalk to operational status

SECTION 6: BRICK SIDEWALK MAINTENANCE TEAM REPORTING

Brick Sidewalk Maintenance Team Report

6.1 Once the Brick Sidewalk Maintenance Team returns to BCD upon completion of the tasks, the Team Supervisor must report the details and efforts of the response in a Cityworks Work Order.

Items to be entered into Cityworks:

- Employee Name
- Department
- Job Title
- Supervisor
- Date
- Hours Worked
- Work site location
- Equipment/Vehicle
- Materials Used
- Assessment
- Unit Accomplished (indicate distance)
- Unit of Measure/Codes and Descriptions (indicate standard of measurement)
- Comments (may be used to indicate additional information for reporting)
- Attach Before and After Pictures (if applicable)
- Save all changes
- Close work order

SECTION 7: REFERENCE

- City Website – Memo to Industry Standard for Brick Pavers (http://alexandriava.gov/tes/info/default.aspx?id=3522)
- Safety and Personal Protective Equipment Specifications (S:\SAFETY Programs\Personal Protective Equipment\PPE Matrix by DIVISIONS\MAINTENANCE)

SECTION 8: DOCUMENT CHANGES

REV Level	Purpose of Change	Changes	Date of Previous Revision
Initial	New	None	NA

	TITLE	**Concrete Sidewalk Maintenance**	
	Procedure #	TES-2013-09	
	Revision	**Date**	
	Page	1 of 6	
ORIGINATOR Name / Title	Jeff DuVal / Division Chief, Public Works Services	**SIGNATURE**	
APPROVED BY Name / Title	Yon Lambert / Deputy Director, T&ES Operations		

OVERVIEW:

The City of Alexandria, Transportation and Environmental Services (T&ES), Public Works Services Division provides maintenance and repairs for all City sewers, streets, sidewalks and fire hydrants; maintains stream beds, weirs and stream banks; maintains drainage tunnels, box culverts and storm water pollution removal facilities; maintains bridges; and conducts snow removal and flood control operations. The Public Works Services Division coordinates with other City agencies and other divisions within T&ES to respond to weather and hurricanes, and assists in both emergency management and clean-up following these events.

The Standard Operation Procedures (SOP) is a guide for Public Works Services Division. The SOP outlines the rules and processes to be followed for administrative functions, field work, and the enforcement of regulations. Where a standard operation procedure is not applicable or does not exist, a Team Member should ask for guidance from his/her Supervisor or the Division Chief.

SECTION 1: PURPOSE

1.1 The Concrete Sidewalk Maintenance Team serves to repair and maintain concrete sidewalk infrastructure in the City of Alexandria public Right of Way (ROW).

- Provides immediate Traffic Control to ensure roadway and pedestrian safety
- Conducts assessments and inspections of concrete sidewalk infrastructure
- Determines and implements appropriate response
- Repairs and maintains concrete sidewalk infrastructure

1.2 The Concrete Sidewalk Maintenance Team Operations include the following elements:

a. Section 2: Roles and Responsibilities: Provides clear and concise direction on the roles and responsibilities of each Team Member assigned to Concrete Maintenance.
b. Section 3: Service Request Process: Identifies the process by which Cityworks Service Requests are processed to the Concrete Maintenance Team.

c. Section 4: Equipment List: Personal Protective Equipment (PPE), Traffic Control Devices (TCD), and Tools, all of which are mandatory maintenance crew equipment, have been listed.
d. Section 5: Concrete Sidewalk Installation Operation: Captures the efforts with standard procedure for responding to concrete sidewalk maintenance.
e. Section 6: Concrete Sidewalk Installation Reporting: Contains information required in creating/closing a Cityworks Work Order upon completion of repairs.
f. Section 7: Reference Material
g. Section 8: Document Changes

SECTION 2: ROLES AND RESPONSIBILITIES

2.1 Concrete Sidewalk Maintenance Team roles and responsibilities have been identified below:

- **Assistant Superintendent** is responsible for inspecting completed work, and updating and closing work orders in Cityworks.
- **Supervisor** is responsible for processing the maintenance ticket and verifying accurate information through Cityworks; reviews work of staff engaged in concrete sidewalk repair; maintains written and computerized records of repairs.
- **Repair Team** is responsible for reporting service levels to Supervisor; coordinating with Supervisor to establish maintenance and repair goals; performing field observations to ensure compliance with departmental policies, practices, and City ordinances.
- **Concrete Inspector** is responsible for identifying large area sidewalk projects; coordinating with the Superintendent to establish high volume requests areas; and monitoring contractor repair and costs to ensure compliance with departmental policies, practices, and City ordinances.

SECTION 3: SERVICE REQUEST PROCESS

3.1 Cityworks Work Management system is used to process services requested by customers within the City. Customers and Staff may submit requests by phone, online, or the social networking sites.

3.2 When a notification of services is received, it must first be reviewed by the Superintendents / Assistant Superintendents to verify the need for repair or maintenance on the request. This is accomplished by visiting the location, locating the problem or incident, and identifying the solution.

3.3 Once it has been determined the service request / incident location warrants repair, the Supervisor and Repair Team will be sure to take precautions and reasonable measures to render the location safe. At this point the Superintendent / Assistant Superintendents will create a work order and repair work can begin.

SECTION 4: EQUIPMENT LIST

3.1 Concrete Sidewalk Installation Team Equipment list has been identified below:

- **Personal Protective Equipment (PPE): Refer to PPE Matrix**
  - Safety Vest

- Hard Hats
- Government Issued Work Boots
- Gloves
- Protective Eyewear
- Protective Hearing Equipment
- Hand Sanitizer

- **Identification and Security**
  - Complete Uniform
  - Government Issue Identification (ID) Badge
- **Traffic Control Devices:**
  - Minimum of six (6) Orange Cones
  - Minimum of two (2) Flashlights
  - Flags
  - Sidewalk Repair Signs
- **Tools**
  - Maps (Sewer and City)
  - Pick
  - Shovel
  - Broom
  - Utility Contacts
  - Emergency Fire and Police Contacts
  - City Risk Management Handouts
  - Air Compressor
  - Jackhammer
  - Wheelbarrow
  - Utility Truck
  - Concrete truck

SECTION 5: CONCRETE SIDEWALK INSTALLATION OPERATION

4.1 Concrete Sidewalk Installation tickets are processed during normal business hours. Concrete Sidewalk Installation teams assemble out of 2900 Business Center Drive (BCD). When a Concrete Sidewalk Installation ticket is processed:

- Preparation
  - Work crew will arrive to the work site safely and immediately establish a safe work zone.
    - Establish signs stating that the sidewalk is closed and establish proper roadway signs to create buffer if needed
  - Store dry and wet materials under cover, away from drainage areas.
  - If existing sidewalk is being replaced.
    - Remove any damaged concrete that may need to be replaced
    - Use jackhammers or backhoe to break concrete into small chunks
    - Use wheelbarrows and tools to remove the broken chunks of concrete into a dump truck or other vehicle
  - Prepare and compact sub-base.

        - Dig the sub-base to the proper depth for the entire length of the sidewalk that is to be replaced
        - Pour the sub-base material evenly across the section of sidewalk to be replaced
        - Using a compacting tool, compact the section of sub-base so that it is level for the length of the sidewalk
        - Using a leveling tool, check that the sub-base maintains the standard depth for each section of sidewalk
    - Set forms and place any reinforcing steel that may be required.
        - Set the forms along the edges of the sidewalk with no gaps between the form and the sub-base so that the concrete mix maintains the same height and does not flow out under either side
    - Measure to determine how much concrete will be needed.
        - Include formula for determining how much concrete is needed and what measurements must be taken. The typical formula would be: length x width x depth divided by 27. This will equal the cubic yards needed for measure and repair.
    - Locate or construct approved concrete washout facility.
- Installation Process
    - Install inlet protection as needed.
        - Inlet protection will be needed if the sidewalk will be installed directly on top of storm water inlets
    - Moisten sub-base just prior to placing new concrete. This helps keep the soil from wicking the moisture out of the concrete into the ground.
    - Place new concrete in forms.
        - Pour concrete to the center of the form at a slow rate, so that the concrete is able to spread across the form properly and is not at risk of overflowing
    - Scrape off surface.
        - Scrape off excess concrete into the adjacent form, as to not waste excess concrete and to keep the sidewalk level
        - Level the surface to remove any obstructions before the concrete settles and will make repairs more costly and time consuming
    - Let concrete obtain its initial set.
    - Apply appropriate surface finish.
    - Remove forms when concrete will not slump.
        - This is typically about 24 hours after pour, but will be longer if weather is excessively humid, less if it is very hot and dry
- Site Cleanup
    - Sweep cement and concrete dust from grinding activities and load into a truck with a dump bed. Sweep all dirt and debris from the street and gutter and load it into utility vehicle.
    - Transport all waste and debris from job site to an appropriate waste disposal facility (aggregate yard) identified by the Superintendent.

- Once work area is cleared of all tools, debris and excess materials, open the sidewalk for pedestrian traffic.
- Return to Business Center Drive and complete work order form.

- Equipment Specific Cleaning
  - Perform washout of concrete trucks and equipment in designated areas only. Clear out any excess concrete mix from vehicle and make vehicle ready for next shift.

SECTION 6: CONCRETE SIDEWALK MAINTENANCE TEAM REPORTING

Concrete Sidewalk Maintenance Team Report

6.1 Once the Concrete Sidewalk Maintenance Team returns to BCD upon completion of the tasks, the Team Supervisor must report the details and efforts of the response in a Cityworks Work Order.

Items to be entered into Cityworks:

- Employee Name
- Department
- Job Title
- Supervisor
- Date
- Hours Worked
- Work site location
- Equipment/Vehicle
- Materials Used
- Assessment
- Unit Accomplished (indicate distance)
- Unit of Measure/Codes and Descriptions (indicate standard of measurement)
- Comments (may be used to indicate additional information for reporting)
- Attach Before and After Pictures (if applicable)
- Save all changes
- Close work order

SECTION 7: REFERENCE

- Safety and Personal Protective Equipment Specifications (S:\SAFETY Programs\Personal Protective Equipment\PPE Matrix by DIVISIONS\MAINTENANCE)

REV Level	Purpose of Change	Changes	Date of Previous Revision

Initial	New	None	NA

	TITLE	**Crack Sealing, Strip Patching, and Paving/Patching/Concrete Construction Maintenance**	
	Procedure #	TES-PWS-2015-27	
	Revision		**Date**
	Page	1 of 4	
ORIGINATOR Name / Title	Nikeya Cunningham / Program Analyst, Public Works Services	**SIGNATURE**	
APPROVED BY Name / Title	Jeffrey DuVal / Deputy Director, T&ES Operations	6.30.15	

OVERVIEW:

The City of Alexandria, Transportation and Environmental Services (T&ES), Public Works Services Division (PWS) provides maintenance and repairs for all City sewers, streets, sidewalks and fire hydrants; maintains stream beds, weirs and stream banks; maintains drainage tunnels, box culverts and storm water pollution removal facilities; maintains bridges; and conducts snow removal and flood control operations. The Public Works Services Division (PWS) coordinates with other City agencies and other divisions within T&ES to respond to weather and hurricanes, and assists in both emergency management and clean-up following these events.

The Standard Operation Procedures (SOP) is a guide for the PWS Division. The SOP outlines the rules and processes to be followed for administrative functions, field work, and the enforcement of regulations. Where a standard operation procedure is not applicable or does not exist, a Team Member should ask for guidance from his/her Supervisor or the Division Chief.

SECTION 1: PURPOSE

1.1 In accordance with Section II.B.6.a of the 2013-2018 MS4 Permit, the City developed written policies and standard operating procedures to address the daily practices that will minimize or prevent pollutant discharges from daily operations and municipal facilities.

1.2 The Team Operations include the following elements:

a. Section 2: Roles and Responsibilities: Provides clear and concise direction on the roles and responsibilities of each unit contributing to the Standby Response effort. Lists of potential response calls and efforts.
b. Section 3: Service Request Process: Identifies the process by which Cityworks Service Requests are processed to Team.
c. Section 4: Equipment List: Personal Protective Equipment (PPE) and Tools, all of which are mandatory have been listed.
d. Section 5: Operation: Captures the efforts with standard procedure for responding to crack sealing, strip patching, paving/patching construction maintenance, and concrete inspection/construction maintenance.

e. Section 6: Reporting: Contains information required in creating/closing a Cityworks Work Order
f. Section 7: Reference Material
g. Section 8: Document Changes

SECTION 2: ROLES AND RESPONSIBILITIES

2.1 Crack Sealing, Strip Patching, and Paving/Patching/Concrete Construction Maintenance roles and responsibilities have been identified below:

- **Supervisor** is responsible for processing the maintenance request from Cityworks and verifying the information is accurate; reviews work of staff engaged in repair and maintenance; maintains written and computerized records of repairs. The Assistant Superintendent is responsible for inspecting completed work, updating and closing work orders in Cityworks.
- **Repair Team** is responsible for reporting service levels to Supervisor; coordinate with Supervisor to establish maintenance and repair goals; perform field observation to ensure compliance with department policies, practices, and City ordinances.

SECTION 3: SERVICE REQUEST PROCESS

3.1 Cityworks Work Management system is used to process services requested by customers within the City. Customers and Staff may submit requests by phone, online, or the social networking sites.

3.2 When a notification of services is received, it must first be reviewed by the Superintendents / Assistant Superintendents to verify the need for repair or maintenance on the request. This is accomplished by visiting the location, locating the problem or incident, and identifying the solution.

3.3 Once it has been determined the service request / incident location warrants repair, the Supervisor and Repair Team will be sure to take precautions and reasonable measures to render the location safe. At this point the Superintendent / Assistant Superintendents will create a work order and repair work can begin.

SECTION 4: EQUIPMENT LIST

3.1 Equipment list has been identified below:

- **Personal Protective Equipment (PPE):**
  - Safety Vest
  - Hard Hats
  - Government Issued Work Boots
  - Gloves
  - Protective Eyewear
  - Protective Hearing Equipment
  - Hand Sanitizer

- **Identification and Security**
  - Complete City Issued Uniform
  - Government Issue Identification (ID) Badge

- **Tools**
  - Maps (Sewer and City)
  - Pick
  - Shovel
  - Broom
  - Utility Contacts
  - Emergency Fire and Police Contacts
  - City Risk Management Handouts

SECTION 5: OPERATION

4.1 The Team requests are processed during normal business hours at 2900 Business Center Drive (BCD). When a ticket is processed, the following is expected: (PROCEDURES WILL BE FULLY DEVELOPED AT A LATER TIME)

- Prevent disturbance of, or introduction of, polluted runoff to storm drain system. Use temporary sediment control measures, such as a silt fence or sock, as necessary.
- Stabilize any exposed ground, dirt, or soil.
- Use only the amount of repair material needed.
- Pick up litter and debris around the site prior to any repair activities.
- Avoid tracking mud and dust from work activities. Clean any tracked mud or dust using dry methods, such as sweeping.

SECTION 6: TEAM REPORTING

Team Report

5.1 Once the Team returns to BCD upon completion of the tasks, the Team Supervisor must report the details and efforts of the response in a Cityworks Work Order.

Items to be entered into Cityworks:

- Employee Name
- Department
- Job Title
- Supervisor
- Date
- Hours Worked
- Work site location
- Assessment
- Unit Accomplished (indicate distance)
- Unit of Measure/Codes and Descriptions (indicate standard of measurement)

- Comments (may be used to indicate additional information for reporting)
- Save all changes
- Close work order

SECTION 7: REFERENCE

7.1 Safety and Personal Protective Equipment Specifications (S:\SAFETY Programs\Personal Protective Equipment\PPE Matrix by DIVISIONS\MAINTENANCE)

SECTION 8: DOCUMENT CHANGES

REV Level	Purpose of Change	Changes	Date of Previous Revision
Initial	New	None	NA

	TITLE	**Pothole Patch Maintenance**	
	Procedure #	TES-2013-05	
	Revision	**Date**	
	Page	1 of 5	
ORIGINATOR Name / Title	Jeff DuVal / Division Chief, Maintenance	**SIGNATURE**	
APPROVED BY Name / Title	Yon Lambert / Deputy Director, T&ES Operations		

OVERVIEW:
The City of Alexandria, Transportation and Environmental Services (T&ES), Maintenance Division provides maintenance and repairs for all City sewers, streets, sidewalks and fire hydrants; maintains stream beds, weirs and stream banks; maintains drainage tunnels, box culverts and storm water pollution removal facilities; maintains bridges; and conducts snow removal and flood control operations. The Maintenance Division coordinates with other City agencies and other divisions within T&ES to respond to weather and hurricanes, and assists in both emergency management and clean-up following these events.

The Standard Operation Procedures (SOP) is a guide for Maintenance Division. The SOP outlines the rules and processes to be followed for administrative functions, field work, and the enforcement of regulations. Where a standard operation procedure is not applicable or does not exist, a Team Member should ask for guidance from his/her Supervisor or the Division Chief.

SECTION 1: PURPOSE
1.1 The Pothole Patch Repair Team serves to repair potholes in roadways that have been determined to pose a safety risk to motorists and pedestrians, or that compromise the integrity of roadway infrastructure in the City of Alexandria public Right of Way (ROW).

- Provides immediate Traffic Control to ensure roadway and pedestrian safety
- Determines and implements appropriate response
- Repairs / fills in pothole in roadway

1.2 The Pothole Patching Team Operations include the following elements:

a. Section 2: Roles and Responsibilities: Provides clear and concise direction on the roles and responsibilities of each unit contributing to the Standby Response effort. Lists of potential response calls and efforts.
b. Section 3: Service Request Process: Identifies the process by which Cityworks Service Requests are processed to Pothole Patching Maintenance Team.
c. Section 4: Equipment List: Personal Protective Equipment (PPE), Traffic Control Devices (TCD), and Tools, all of which are mandatory pothole patching equipment have been listed.
d. Section 5: Pothole Repair Operation: Captures the efforts with standard procedure for responding to pothole patching maintenance.

e. Section 6: Pothole Repair Maintenance Reporting: Contains information required in creating/closing a Cityworks Work Order
f. Section 7: Reference Material
g. Section 8: Document Changes

SECTION 2: ROLES AND RESPONSIBILITIES

2.1 Pothole Repair Operations roles and responsibilities have been identified below:

- **Supervisor** is responsible processing the maintenance request from Cityworks and verifying the information is accurate; reviews work of staff engaged in pothole patch repair and maintenance; maintain written and computerized records of repairs. The Assistant Superintendent is responsible for inspecting completed work, updating and closing work orders in Cityworks.
- **Repair Team** is responsible for reporting service levels to Supervisor; coordinate with Supervisor to establish maintenance and repair goals; perform field observation to ensure compliance with department policies, practices, and City ordinances.

SECTION 3: SERVICE REQUEST PROCESS

3.1 Cityworks Work Management system is used to process services requested by customers within the City. Customers and Staff may submit requests by phone, online, or the social networking sites.

3.2 When a notification of services is received, it must first be reviewed by the Superintendents / Assistant Superintendents to verify the need for repair or maintenance on the request. This is accomplished by visiting the location, locating the problem or incident, and identifying the solution.

3.3 Once it has been determined the service request / incident location warrants repair, the Supervisor and Repair Team will be sure to take precautions and reasonable measures to render the location safe. At this point the Superintendent / Assistant Superintendents will create a work order and repair work can begin.

SECTION 4: EQUIPMENT LIST

3.1 Pothole Repair Team Equipment list has been identified below:

- **Personal Protective Equipment (PPE):**
  - Safety Vest
  - Hard Hats
  - Government Issued Work Boots
  - Gloves
  - Protective Eyewear
  - Protective Hearing Equipment
  - Hand Sanitizer
- **Identification and Security**
  - Complete City Issued Uniform
  - Government Issue Identification (ID) Badge

- **Traffic Control Devices:**
  - Minimum of six (6) Orange Cones
  - Directional Signs
  - Minimum of two (2) Flashlights
  - Information signs
  - Arrow boards
  - Flags

- **Tools**
  - Maps (Sewer and City)
  - Pick
  - Shovel
  - Broom
  - Utility Contacts
  - Emergency Fire and Police Contacts
  - City Risk Management Handouts
  - UPM / Cold Patch Mix
  - Tamping tool
  - Buzz saw
  - Jackhammer
  - Air compressor

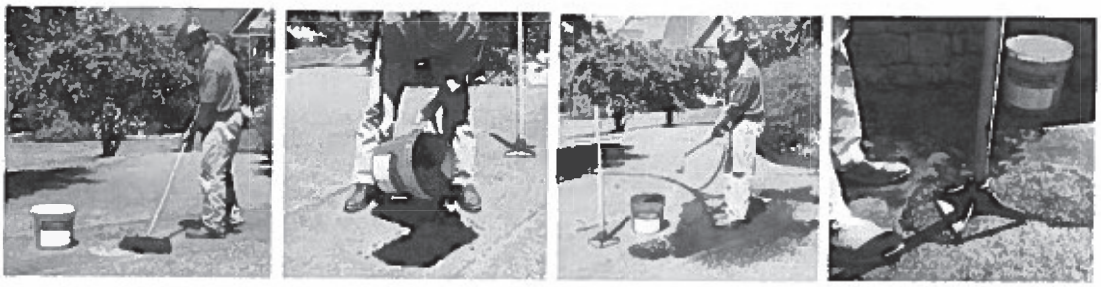
SECTION 5: POTHOLE REPAIR OPERATION

4.1 The Pothole Repair Team requests are processed during normal business hours at 2900 Business Center Drive (BCD). When a Pothole Repair ticket is processed, the following is expected:

- Operator/Support is responsible for operating the Crew Cab (or other vehicle as needed)
- Immediately set up Traffic Control Devices
- Assess the location
- Determine and implement appropriate response by following Pothole and Pavement Rating System. The Pothole and Pavement Rating System is used to determine whether a pothole patch is necessary, as well as which method of repair to use, if a repair is required. Potholes and pavement defects are classified by the Superintendent, who uses the following factors to determine repair priority: size, depth, location in the street, potential for damage to vehicles and injuries to residents. Work order priority levels can be modified in Cityworks to track response efforts.
  - Priority 1 poses a significant and imminent threat to vehicular and pedestrian traffic, including personal safety and damage to property. This level of repair requires a minimum of 5 business days, weather permitting.
  - Priority 2 poses a moderate threat to vehicular and pedestrian traffic, including personal safety and damage to property. This level of repair requires a minimum of 7-10 business days, weather permitting.

- Priority 3 poses a minimal threat to vehicular and pedestrian traffic, including personal safety and damage to property. This level of repair requires a minimum of 7-10 business days, weather permitting.

- The Supervisor will determine the appropriate Technique to use to patch potholes
  - Cold Mix Patching Technique (Non-summer months / cold weather)
    - Clean the pothole of any loose debris and standing water
    - Install cold mix to pothole and tamp material into pothole so it is even with the existing surface of the road.
    - If using Aquaphalt Material, place material in hole and level with a rake or shovel. Ensure that the material stands above the existing surface to allow for compaction. If the depth of the area to be patched is greater than 2.5 inches, place material in two layers. Soak material evenly with water; 1 quart of water per container is recommended. Excess water will not damage the material. Compact to a smooth finish with a hand-tamper or roller.



  - Hot Mix Patching Technique (Summer months)
    - Saw cut the pothole with saw or square cut the pothole with a jackhammer if the street is in good or fair condition. Cutting and squaring potholes is only done on an as needed basis. If the street is in poor condition remove loose debris, apply tack to pothole and fill with hot mix and tamp material into pothole so it is even with the existing surface of the road.
    - Spray hole with tack oil
    - Place hot mix in pothole in 2-3 inch layers
    - Compact hot mix material into hole with tamping device until material is level with road surface
- Clean work site of loose debris and return to operational status

SECTION 6: POTHOLE PATCH REPAIR TEAM REPORTING

Pothole Patch Repair Team Report

5.1 Once the Pothole Patch Repair Team returns to BCD upon completion of the tasks, the Team Supervisor must report the details and efforts of the response in a Cityworks Work Order.

Items to be entered into Cityworks:

- Employee Name
- Department
- Job Title
- Supervisor
- Date
- Hours Worked
- Work site location
- Assessment
- Unit Accomplished (indicate distance)
- Unit of Measure/Codes and Descriptions (indicate standard of measurement)
- Comments (may be used to indicate additional information for reporting)
- Save all changes
- Close work order

SECTION 7: REFERENCE

7.1 Personal Protective Equipment Specifications and Vendors (S:\SAFETY Programs\Personal Protective Equipment\PPE Matrix by DIVISIONS\MAINTENANCE)

SECTION 8: DOCUMENT CHANGES

REV Level	Purpose of Change	Changes	Date of Previous Revision
Initial	New	None	NA

	TITLE	**Bus Shelter and Bike Rack Installation and Maintenance**	
	Procedure #	TES-PWS-2015-28	
	Revision		**Date**
	Page	1 of 4	
ORIGINATOR Name / Title	Nikeya Cunningham / Program Analyst, Public Works Services	**SIGNATURE**	
APPROVED BY Name / Title	Jeffrey DuVal / Deputy Director, T&ES Operations	6.30.15	

OVERVIEW:

The City of Alexandria, Transportation and Environmental Services (T&ES), Public Works Services Division (PWS) provides maintenance and repairs for all City sewers, streets, sidewalks and fire hydrants; maintains stream beds, weirs and stream banks; maintains drainage tunnels, box culverts and storm water pollution removal facilities; maintains bridges; and conducts snow removal and flood control operations. The Public Works Services Division (PWS) coordinates with other City agencies and other divisions within T&ES to respond to weather and hurricanes, and assists in both emergency management and clean-up following these events.

The Standard Operation Procedures (SOP) is a guide for the PWS Division. The SOP outlines the rules and processes to be followed for administrative functions, field work, and the enforcement of regulations. Where a standard operation procedure is not applicable or does not exist, a Team Member should ask for guidance from his/her Supervisor or the Division Chief.

SECTION 1: PURPOSE

1.1 In accordance with Section II.B.6.a of the 2013-2018 MS4 Permit, the City developed written policies and standard operating procedures to address the daily practices that will minimize or prevent pollutant discharges from daily operations and municipal facilities.

1.2 The Team Operations include the following elements:

a. Section 2: Roles and Responsibilities: Provides clear and concise direction on the roles and responsibilities of each unit contributing to the Standby Response effort. Lists of potential response calls and efforts.
b. Section 3: Service Request Process: Identifies the process by which Cityworks Service Requests are processed to Team.
c. Section 4: Equipment List: Personal Protective Equipment (PPE) and Tools, all of which are mandatory have been listed.
d. Section 5: Operation: Captures the efforts with standard procedure for responding to bus shelter and bike rack installation and maintenance.
e. Section 6: Reporting: Contains information required in creating/closing a Cityworks Work Order
f. Section 7: Reference Material
g. Section 8: Document Changes

SECTION 2: ROLES AND RESPONSIBILITIES

2.1 Bus Shelter and Bike Rack Installation and Maintenance roles and responsibilities have been identified below:

- **Supervisor** is responsible for processing the maintenance request from Cityworks and verifying the information is accurate; reviews work of staff engaged in repair and maintenance; maintains written and computerized records of repairs. The Assistant Superintendent is responsible for inspecting completed work, updating and closing work orders in Cityworks.
- **Repair Team** is responsible for reporting service levels to Supervisor; coordinate with Supervisor to establish maintenance and repair goals; perform field observation to ensure compliance with department policies, practices, and City ordinances.

SECTION 3: SERVICE REQUEST PROCESS

3.1 Cityworks Work Management system is used to process services requested by customers within the City. Customers and Staff may submit requests by phone, online, or the social networking sites.

3.2 When a notification of services is received, it must first be reviewed by the Superintendents / Assistant Superintendents to verify the need for repair or maintenance on the request. This is accomplished by visiting the location, locating the problem or incident, and identifying the solution.

3.3 Once it has been determined the service request / incident location warrants repair, the Supervisor and Repair Team will be sure to take precautions and reasonable measures to render the location safe. At this point the Superintendent / Assistant Superintendents will create a work order and repair work can begin.

SECTION 4: EQUIPMENT LIST

3.1 Equipment list has been identified below:

- **Personal Protective Equipment (PPE):**
  - Safety Vest
  - Hard Hats
  - Government Issued Work Boots
  - Gloves
  - Protective Eyewear
  - Protective Hearing Equipment
  - Hand Sanitizer
- **Identification and Security**
  - Complete City Issued Uniform
  - Government Issue Identification (ID) Badge
- **Tools**
  - Maps (Sewer and City)
  - Pick

- Shovel
- Broom
- Utility Contacts
- Emergency Fire and Police Contacts
- City Risk Management Handouts

SECTION 5: OPERATION

4.1 The Team requests are processed during normal business hours at 2900 Business Center Drive (BCD). When a ticket is processed, the following is expected: (PROCEDURES WILL BE FULLY DEVELOPED AT A LATER TIME)

- Prevent disturbance of, or introduction of, polluted runoff to storm drain system. Use temporary sediment control measures, such as a silt fence or sock, as necessary.
- Stabilize any exposed ground, dirt, or soil.
- Use only the amount of repair material needed.
- Pick up litter and debris around the site prior to any repair activities.
- Avoid tracking mud and dust from work activities. Clean any tracked mud or dust using dry methods, such as sweeping.

SECTION 6: TEAM REPORTING

Team Report

5.1 Once the Team returns to BCD upon completion of the tasks, the Team Supervisor must report the details and efforts of the response in a Cityworks Work Order.

Items to be entered into Cityworks:

- Employee Name
- Department
- Job Title
- Supervisor
- Date
- Hours Worked
- Work site location
- Assessment
- Unit Accomplished (indicate distance)
- Unit of Measure/Codes and Descriptions (indicate standard of measurement)
- Comments (may be used to indicate additional information for reporting)
- Save all changes
- Close work order

SECTION 7: REFERENCE

7.1 Safety and Personal Protective Equipment Specifications (S:\SAFETY Programs\Personal Protective Equipment\PPE Matrix by DIVISIONS\MAINTENANCE)

SECTION 8: DOCUMENT CHANGES

REV Level	Purpose of Change	Changes	Date of Previous Revision
Initial	New	None	NA

	Standard Operating Procedures (SOP)			
	Title	**Water Disposal from Dewatering Activities During Utility Construction and Maintenance Activities**		
	Purpose	Pollution prevention		
	Revision	Initial	**Date**	September 29, 2020
	Page	1 of 2		
SOP Administrator: Name/Title	Mark Gundersen, Division Chief of Public Works Services	**SIGNATURE**		
Location of SOP:	2900-B Business Center Drive, Alexandria, VA 22314			

1) **Objective**: This Standard Operating Procedure (SOP) specifies responsibilities and procedures for water disposal from dewatering activities performed by City of Alexandria, VA, Transportation and Environmental Services (TES) Public Works Services (PWS). The scope of this procedure is to address the disposal of water pumped during maintenance or construction operations where that water could be discarded outdoors or directly to stormwater conveyances. This includes but is not limited to the dewatering of BMP Vaults and other Storm Structures by the City of Alexandria.

2) **Responsibilities**: TES PWS is responsible for publicly owned utilities (fire hydrants, storm sewer and sanitary sewer) maintenance activities in the City.

3) **Compliance / Regulations:** The following regulations are to follow the current Federal, Virginia Department of Environmental Quality (DEQ) and the City of Alexandria regulations.

4) **Best Management Practices:** These practices apply for dewatering and excavation of Tunnels, BMP Vaults, and other Storm Structures. This policy excludes any work for other than work directly performed by TES PWS.

BMP and Storm Structures

- Visually inspect the water to be removed. Water in excavations usually results from groundwater infiltration or rainfall. Determine if there are visible pollutants and/or contaminants in the water to be pumped and the potential sources of those pollutants on site.

- The following steps shall be taken based on the material found:

    - **Organic material, pollutants and/or contaminants** are found within the structure, a specialized contractor shall be contacted to remove the material prior to further actions. Further investigation and actions may be required by the City on proper removal and disposal.

    - **No sediment within the water** (clear water), which has been the result from rainwater or groundwater. Dewatering can be completed by either pumping the water into a vegetated area and/or pumped and hauled to an existing storm sewer for disposal.

- **Sediment within the water** is observed, TES PWS shall place erosion and sediment and control around existing storm structures downstream (current version of the DEQ Erosion and Sediment Control Handbook, or approved alternate). Water will be pumped using a submersible pump and discharged overland to the erosion and sediment control structure.

  Care is to be taken to prevent sediment from being discharged. As much sediment shall be removed by mechanical means and removed to an off-site site for further dewatering and disposal.

  When the operation is completed, the erosion and sediment control downstream devices shall be removed and disposed of.

- TES PWS will not be liable for third party discharges. Any discharge from a third party will be responsible for the maintenance, disposal of all material, and all costs involved.

5) Authority:

1. The TES PWS responsible staff member onsite has the authority to make changes onsite per changing site conditions. The staff member shall take necessary precautions to reduce and/or eliminate the discharge of sediment and other material from entering the environment.
2. The TES PWS responsible staff member has the authority to stop operations if there is an environmental and/or life safety risk that poses immediate danger.
3. The TES PWS responsible staff member has no authority of a Contractor's work and/or actions.
4. The TES PWS responsible staff member has no authority over other work performed by the City staff and/or departments.

6) Record of Changes

REV Level	Purpose of Change	Changes	Date of Previous Revision
Initial	New	None	N/A

	TITLE	**Hydrant Inspection and Maintenance**	
	Procedure #	TES-PWS-2013-12	
	Revision		**Date**
	Page	1 of 3	
ORIGINATOR Name / Title	Nikeya Cunningham / Program Analyst, Public Works Services	**SIGNATURE**	
APPROVED BY Name / Title	Jeffrey DuVal / Deputy Director, T&ES Operations	6.26.15	

OVERVIEW:

The City of Alexandria, Transportation and Environmental Services (T&ES), Public Works Services Division (PWS) provides maintenance and repairs for all City sewers, streets, sidewalks and fire hydrants; maintains stream beds, weirs and stream banks; maintains drainage tunnels, box culverts and storm water pollution removal facilities; maintains bridges; and conducts snow removal and flood control operations. The Public Works Services Division (PWS) coordinates with other City agencies and other divisions within T&ES to respond to weather and hurricanes, and assists in both emergency management and clean-up following these events.

The Standard Operation Procedures (SOP) is a guide for the PWS Division. The SOP outlines the rules and processes to be followed for administrative functions, field work, and the enforcement of regulations. Where a standard operation procedure is not applicable or does not exist, a Team Member should ask for guidance from his/her Supervisor or the Division Chief.

SECTION 1: PURPOSE

1.1 In accordance with Section II.B.6.a of the 2013-2018 MS4 Permit, the City developed written policies and standard operating procedures to address the daily practices that will minimize or prevent pollutant discharges from daily operations and municipal facilities.

1.2 The Team Operations include the following elements:

a. Section 2: Roles and Responsibilities: Provides clear and concise direction on the roles and responsibilities of each unit contributing to the Standby Response effort. Lists of potential response calls and efforts.
b. Section 3: Service Request Process: Identifies the process by which Cityworks Service Requests are processed to Team.
c. Section 4: Equipment List: Personal Protective Equipment (PPE) and Tools, all of which are mandatory have been listed.
d. Section 5: Operation: Captures the efforts with standard procedure for responding to hydrant inspection and maintenance.
e. Section 6: Reporting: Contains information required in creating/closing a Cityworks Work Order
f. Section 7: Reference Material
g. Section 8: Document Changes

SECTION 2: ROLES AND RESPONSIBILITIES

2.1 Hydrant Inspection and Maintenance roles and responsibilities have been identified below:

- **Supervisor** is responsible for processing the maintenance request from Cityworks and verifying the information is accurate; reviews work of staff engaged in repair and maintenance; maintains written and computerized records of repairs. The Assistant Superintendent is responsible for inspecting completed work, updating and closing work orders in Cityworks.
- **Repair Team** is responsible for reporting service levels to Supervisor; coordinate with Supervisor to establish maintenance and repair goals; perform field observation to ensure compliance with department policies, practices, and City ordinances.

SECTION 3: SERVICE REQUEST PROCESS

3.1 Cityworks Work Management system is used to process services requested by customers within the City. Customers and Staff may submit requests by phone, online, or the social networking sites.

3.2 When a notification of services is received, it must first be reviewed by the Superintendents / Assistant Superintendents to verify the need for repair or maintenance on the request. This is accomplished by visiting the location, locating the problem or incident, and identifying the solution.

3.3 Once it has been determined the service request / incident location warrants repair, the Supervisor and Repair Team will be sure to take precautions and reasonable measures to render the location safe. At this point the Superintendent / Assistant Superintendents will create a work order and repair work can begin.

SECTION 4: EQUIPMENT LIST

3.1 Equipment list has been identified below:

- **Personal Protective Equipment (PPE):**
  - Safety Vest
  - Hard Hats
  - Government Issued Work Boots
  - Gloves
  - Protective Eyewear
  - Protective Hearing Equipment
  - Hand Sanitizer
- **Identification and Security**
  - Complete City Issued Uniform
  - Government Issue Identification (ID) Badge
- **Tools**
  - Maps (Sewer and City)
  - Pick
  - Shovel
  - Broom
  - Utility Contacts
  - Emergency Fire and Police Contacts
  - City Risk Management Handouts

SECTION 5: HYDRANT OPERATION AND INSPECTION

4.1 The Team requests are processed during normal business hours at 2900 Business Center Drive (BCD). When a ticket is processed, the following is expected: (PROCEDURES WILL BE FULLY DEVELOPED AT A LATER TIME)

- Pick up litter and debris around the site prior to any inspection and maintenance activities.
- Use temporary sediment control measures, such as a silt sock, around storm drains located near hydrant inspection and maintenance activities.

SECTION 6: TEAM REPORTING

Team Report

5.1 Once the Team returns to BCD upon completion of the tasks, the Team Supervisor must report the details and efforts of the response in a Cityworks Work Order.

Items to be entered into Cityworks:

- Employee Name
- Department
- Job Title
- Supervisor
- Date
- Hours Worked
- Work site location
- Assessment
- Unit Accomplished (indicate distance)
- Unit of Measure/Codes and Descriptions (indicate standard of measurement)
- Comments (may be used to indicate additional information for reporting)
- Save all changes
- Close work order

SECTION 7: REFERENCE

7.1 Safety and Personal Protective Equipment Specifications (S:\SAFETY Programs\Personal Protective Equipment\PPE Matrix by DIVISIONS\MAINTENANCE)

SECTION 8: DOCUMENT CHANGES

REV Level	Purpose of Change	Changes	Date of Previous Revision
Initial	New	None	NA

	TITLE	**Jet Truck Operations**	
	Procedure #	TES-PWS-2013-06	
	Revision		**Date**
	Page	1 of 4	
ORIGINATOR Name / Title	Nikeya Cunningham / Program Analyst, Public Works Services	**SIGNATURE**	
APPROVED BY Name / Title	Jeffrey DuVal / Deputy Director, T&ES Operations	6.26.13	

OVERVIEW:

The City of Alexandria, Transportation and Environmental Services (T&ES), Public Works Services Division (PWS) provides maintenance and repairs for all City sewers, streets, sidewalks and fire hydrants; maintains stream beds, weirs and stream banks; maintains drainage tunnels, box culverts and storm water pollution removal facilities; maintains bridges; and conducts snow removal and flood control operations. The Public Works Services Division (PWS) coordinates with other City agencies and other divisions within T&ES to respond during weather events, and assists in both emergency management and clean-up following these events.

The Standard Operation Procedures (SOP) is a guide for the PWS Division. The SOP outlines the rules and processes to be followed for administrative functions, field work, and the enforcement of regulations. Where a standard operation procedure is not applicable or does not exist, a Team Member should ask for guidance from his/her Supervisor or the Division Chief.

SECTION 1: PURPOSE

1.1 The Jet Truck Crew serves to clean sewer infrastructure that is owned by the City of Alexandria.

- Provides immediate Traffic Control to ensure roadway and pedestrian safety
- Determines and implements appropriate response
- Cleans and clears sewer infrastructure

1.2 The Jet Truck Crew operations include the following elements:

a. Section 2: Roles and Responsibilities: Provides clear and concise direction on the roles and responsibilities of each unit contributing to the Standby Response effort. Lists of potential response calls and efforts.
b. Section 3: Equipment List: Personal Protective Equipment (PPE), Traffic Control Devices (TCD), and Tools, all of which are mandatory Jet Truck equipment have been listed.
c. Section 4: Service Request Process: Identifies the process by which Cityworks Service Requests are processed to the Jet Truck Team.
d. Section 5: Jet Truck Operation: Captures the response efforts with standard procedure for each ticket response.
e. Section 6: Jet Truck Reporting: Contains information to report to Cityworks after response to tickets.
f. Section 7: Reference Materials
g. Section 8: Document Changes

SECTION 2: ROLES AND RESPONSIBILITIES

2.1 Jet Truck Crew roles and responsibilities have been identified below:

- **Supervisor** is responsible for processing maintenance ticket and verifying accurate information from Cityworks, as well as operating the Jet Truck.
- **Operator/Support** is responsible for assisting with Traffic Control Devices and other equipment.

SECTION 3: EQUIPMENT LIST

3.1 Jet Truck Cleaning Team equipment list has been identified below:

- **Personal Protective Equipment (PPE):**
  - Complete Uniform
  - Safety Vest
  - Hard Hats
  - Government Issued Work Boots
  - Gloves
  - Protective Eyewear
  - Protective Hearing Equipment
  - Government Issue Identification (ID) Badge
  - Hand Sanitizer
- **Traffic Control Devices:**
  - Minimum of six (6) Orange Cones
  - Minimum of two (2) Flashlights
  - Flags
- **Tools**
  - Maps (Sewer and City)
  - Pick
  - Shovel
  - Broom
  - Utility Contacts
  - Emergency Fire and Police Contacts
  - City Risk Management Handouts
  - Jet Truck
  - Manhole Tool
  - 4328 CCTV (if needed)

SECTION 4: SERVICE REQUEST PROCESS

4.1 Cityworks Work Management system is used to process services requested by customers within the City. Customers and Staff may submit requests by phone, online, or the social networking sites.

4.2 When a notification of services is received, it must first be reviewed by the Superintendents / Assistant Superintendents to verify the need for repair or maintenance on the request. This is accomplished by visiting the location, locating the problem or incident, and identifying the solution.

4.3 Once it has been determined the service request / incident location warrants repair, the Supervisor and Repair Team will be sure to take precautions and

reasonable measures to render the location safe. At this point the Superintendent / Assistant Superintendents will create a work order and repair work can begin.

SECTION 5: JET TRUCK OPERATION

5.1 The Jet Truck Operation Team is responsible for meeting during normal working hours at 2900 Business Center Drive (BCD) and cleaning assigned sewer infrastructure in the City of Alexandria. When the Jet Truck Cleaning Team processes a sewer maintenance ticket, the following is expected:

- Supervisor is responsible for operating the Jet Truck
- Operator/Support is responsible for operating the Crew Cab (or other vehicle as needed)
- Perform pre-trip equipment check
    - Check quantity of water in tank, fill if necessary.
    - Start truck and extend the hose reel in order to open hood
    - Finish under the hood components of pre-trip check
- The Team must report safely to the work location
- Upon arrival on location, set truck close to manhole and have laborer guide truck into final position. Team must then create safe work zone.
    - Create work zone with cones
    - Open manhole lid and check the direction of water flow
    - Send the nozzle up-stream
    - When cleaning storm sewers, place a bladder downstream to collect water, sediment, and debris. This ensures that excess sediment is not released into the receiving water.
- Prepare by
    - Attaching the correct nozzle to the hose, then adjust hose reel over manhole
    - Lower hose into hole and set footage counter on the hose reel when hose enters pipe
    - Slide tiger tail into hole to prevent chaffing
- Begin pumping by
    - Switching the rodder pump on
    - Switching the engine RPM on
    - Adjusting the engine RPM to achieve 1,000 psi
    - Send the Support to next manhole to watch for the hose
    - Operator of truck must know when hose enters manhole
    - Document footage
- Finish by
    - Reel in hose while maintaining pressure of 1000 psi
    - Watching the water at bottom of manhole for debris
    - When hose nozzle is almost back at the start manhole, reduce RPM and shut off rodder pump switch
    - Remove tiger tail and rest of hose
    - If cutter is needed to cut roots, utilize 4328 CCTV to place cutter exactly on the root
    - Use dry methods, such as sweeping, to clean up any sediment around the work site.
- Upon return to BCD

- Check water level at end of shift, tank must be topped off for stand-by crew
- Clean filters if scheduled, replace if needed
- Store Jet Truck inside 133 Quaker Lane building if temperature is close to freezing (overnight temperature is expected to be below 40 degrees Fahrenheit)

SECTION 6: JET TRUCK CLEANING TEAM REPORTING

Jet Truck Cleaning Team Report

6.1 Once the Jet Truck Cleaning Team returns to 2900 Business Center Drive, the Team supervisor must report the details of the response on the Jet Truck Cleaning Form. The Team supervisor will then record the details into Cityworks.

Items to be completed on Jet Truck Cleaning Report:

- Employee Name
- Department
- Job Title
- Supervisor
- Date
- Hours Worked
- Work site location
- Equipment/ Vehicle
- Materials Used
- Assessment
- Responsibility
- Description (indicate materials used)
- Measurement (indicate amount of materials used)
- Comments (may be used to indicate additional information for reporting)
- Attach Before and After Pictures (if applicable)

SECTION 7: REFERENCE

- Safety and Personal Protective Equipment Specifications (S:\SAFETY Programs\Personal Protective Equipment\PPE Matrix by DIVISIONS\MAINTENANCE)

SECTION 8: DOCUMENT CHANGES

REV Level	Purpose of Change	Changes	Date of Previous Revision
Initial	New	None	NA

	TITLE	**Brine System and Application: Pollution Prevention Measures**	
	Procedure #	TES-2013-11	
	Revision		**Date**
	Page	1 of 2	
ORIGINATOR Name / Title	Nikeya Cunningham / Program Analyst, Public Works Services	**SIGNATURE**	
APPROVED BY Name / Title	Jeffrey DuVal / Deputy Director, T&ES Operations	6.26.15	

OVERVIEW:
The City of Alexandria, Transportation and Environmental Services (T&ES), Public Works Services Division (PWS) provides maintenance and repairs for all City sewers, streets, sidewalks and fire hydrants; maintains stream beds, weirs and stream banks; maintains drainage tunnels, box culverts and storm water pollution removal facilities; maintains bridges; and conducts snow removal and flood control operations. The Public Works Services Division (PWS) coordinates with other City agencies and other divisions within T&ES to respond during weather events, and assists in both emergency management and clean-up following these events.

The Standard Operation Procedures (SOP) is a guide for the PWS Division. The SOP outlines the rules and processes to be followed for administrative functions, field work, and the enforcement of regulations. Where a standard operation procedure is not applicable or does not exist, a Team Member should ask for guidance from his/her Supervisor or the Division Chief.

SECTION 1: PURPOSE
1.1 The Snow Pretreatment Operator Team serves in pretreatment of roadways when conditions warrant application in response to an impending snow event in the City of Alexandria. Pretreatment helps to minimize the formation of snow and ice in order to keep roadways clear and safe for motorist and pedestrian travel. This task is completed by:

SECTION 2: EQUIPMENT LIST
2.1 Pretreatment equipment is identified below:

- **Personal Protective Equipment (PPE): Refer to PPE Matrix**
  - Safety Vest
  - Government Issued Work Boots
  - Gloves
  - Protective Eyewear (ANSI Z87 with side shields)
  - Protective Hearing Equipment (HPD with minimum 20 dB NRR)
  - Hand Sanitizer
- **Identification and Security**
  - Complete City Issued Uniform
  - Government Issue Identification (ID) Badge

- **Tools**
  - Snow Zone Maps
  - Emergency Fire and Police Contacts
  - City Risk Management Handouts
  - Radio
- **Vehicles**
  - Utility Vehicle (F-450 with snowplow and spreader)
- **Deicing Materials**
  - Brine
  - Sand

SECTION 3: PRETREATMENT PROCEDURE

3.1 Pretreating important roadways prior to an impending snow event that warrants application is vital to snow removal operations. Pretreatment minimizes the accumulation of hard snow, but more importantly, minimizes the bond between the snow and the roadway, assisting in plowing efforts. Additionally, pretreatment helps to minimize refreezing of slush on road surfaces.

Procedures for applying deicing materials are as follows:
(PROCEDURES WILL BE FULLY DEVELOPED AT A LATER TIME)

SECTION 4: POLLUTION PREVENTION MEASURES

4.1 Pollution prevention procedures must be followed to minimize or prevent impacts to the Municipal Separate Storm Sewer System (MS4) from pretreatment operations. Deicing agents must not contain urea or other forms of nitrogen or phosphorus to parking lots, roadways, sidewalks, or other paved surfaces.

Sand/Aggregate Storage and Loading

- Ensure that sand/aggregate is stored under the designated shelter
- When loading, take care to not overload
- Sweep the area frequently to prevent buildup and runoff of material

Brine Storage and Loading

- Store brine in designated containers, with secure covers/lids
- Ensure that plumbing and delivery equipment are not leaking and in proper working order
- Ensure emergency shutoff in working order
- Ensure inlet protection is readily available to block off inlet in case of accidental release
- Use the lowest concentration that remains effective

Application

- Use designated amounts on roadway surfaces

Equipment Cleanup

- Recover wash water generated from equipment cleaning

	Standard Operating Procedures (SOP)			
	TITLE	**Fleet and Vehicle Maintenance**		
	Purpose	**Stormwater Pollution Prevention**		
	Revision	Initial	**Date**	June 4, 2015
	Page	1 of 2		
SOP Administrator: Name / Title	**Alfred Coleman / Deputy Director, Administration**	**SIGNATURE**		
Location of SOP:	3550 Wheeler Avenue, Alexandria, VA			

I. Purpose

The Fleet Services Division within the Department of General Services is responsible for maintaining the City's vehicles, specialty, and major construction equipment. The City has approximately 900 units in its fleet, which includes police cruisers, pickup trucks, sedans, SUVs, dump trucks, hybrid fuel vehicles, construction equipment, refuse trucks, and street sweepers. Fleet Services performs maintenance and repairs on these City-owned units at the fleet maintenance facility located at 3550 Wheeler Avenue. This SOP provides pollution prevention and good housekeeping written procedures for daily activities related to Fleet and Vehicle Maintenance to address the applicable Municipal Separate Storm Sewer System (MS4) General Permit requirement in Section II B. 6 a.

II. Roles and Responsibilities

The Fleet Services Division Team roles and responsibilities have been identified below:

- **Supervisor** is responsible for ensuring that this SOP is followed.
- **Team** is responsible for following the SOP.

III. Process

- Conduct maintenance work indoors to the greatest extent possible.
- When maintenance work is conducted outdoors, use an impervious surface and protect storm drains from spills and leaks.
- Clean up any spills or leaks promptly using dry methods, such as adsorbent pads or sweeping.
- Do not clean any vehicles or equipment, including lawn care equipment, near a storm drain. Use designated wash racks that drain to sanitary sewers to wash vehicles and equipment.
- Clean grass from lawn care equipment using dry methods, such as brooms, preferably on grassed surfaces. If lawn care equipment is cleaned on impervious surfaces, clean-up all materials using dry methods, such as sweeping.
- Use drip pans for vehicles that are stored outside.
- Do not leave drip pans outside during rain. Properly dispose of any liquid that collects in drip pans. Do not dispose of liquid in storm drains.
- Never leave vehicles/equipment unattended while fueling.

IV. Training and Documentation

- **Training**
  - The MS4 permit requires that employees are trained in stormwater pollution prevention and good housekeeping, and how to recognize and report illicit discharges.
- **Documentation**
  - Maintain a record of all employees trained and training topics.
  - Maintain documentation of maintenance and inspection activity.

V. References

- Pollution Prevention/Good Housekeeping for Municipal Operations: Standard Operating Procedures for Erie County Department of Environment and Planning Division of Environmental Compliance Services (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Resources\StwtrPPGH_SOP.pdf)
- Fleet and Vehicle Maintenance Standard Operating Procedure for City of Boulder, Colorado (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Resources\fleetvehicle_maint_sops.pdf)
- Street Maintenance Standard Operating Procedure for Storm Water Control for Municipality of Anchorage Watershed Management Program (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Resources\App E1 St Maint SOPs for SW Control.pdf)

VI. Record of Changes

REV Level	Purpose of Change	Changes	Date of Previous Revision
Initial	New	None	N/A

	Standard Operating Procedures (SOP)			
	TITLE	**Fleet and Vehicle Washing**		
	Purpose	**Stormwater Pollution Prevention**		
	Revision	Initial	**Date**	June 4, 2015
	Page	1 of 3		
SOP Administrator: Name / Title	**Alfred Coleman / Deputy Director, Administration**	**SIGNATURE**		
Location of SOP:	3550 Wheeler Avenue, Alexandria, VA			

I. Purpose

The Fleet Services Division within the Department of General Services is responsible for maintaining the City's vehicles, specialty, and major construction equipment. The City has approximately 900 units in its fleet, which includes police cruisers, pickup trucks, vans, sedans, dump trucks, hybrid fuel vehicles, construction equipment, refuse trucks, and street sweepers. Fleet Services performs maintenance and repairs on these City-owned units at the fleet maintenance facility located at 3550 Wheeler Avenue. This SOP provides stormwater pollution prevention procedures relating to fleet and vehicle washing. The City's Municipal Separate Storm Sewer System (MS4) permit issued by the Virginia Department of Environmental Quality (DEQ) prohibits the discharge of vehicle and equipment wash water to the storm sewer system. In accordance with Section II.B.6.a of the 2013-2018 MS4 Permit, the City developed written policies and standard operating procedures to address the daily practices that will minimize or prevent pollutant discharges from daily operations and municipal facilities.

II. Roles and Responsibilities

The Fleet Services Division Team roles and responsibilities have been identified below:

- **Supervisor** is responsible for ensuring that this SOP is followed.
- **Team** is responsible for following the SOP.

III. Process

- Wash water is prohibited from entering the storm sewer system.
- Do not clean or wash vehicles or equipment, including lawn care equipment, near a storm drain. If washing vehicles outdoors, use designated wash racks that drain to sanitary sewers to wash vehicles and equipment or use a system that contains wash water and properly dispose of it.
- Minimize soap and water use when washing vehicles.
- Clean grass from lawn care equipment using dry methods, such as brooms, preferably on grassed surfaces. If lawn care equipment is cleaned using brooms on impervious surfaces, clean-up all materials using dry methods, such as sweeping.
- Keep vehicles and other equipment clean, and do not allow a build-up of oil or grease.

Vehicles and equipment may be cleaned using one of the following methods that prevent wash water from entering the storm sewer system:

- **Washrack**
  - When using the dedicated washrack at 133 Quaker Lane, ensure that the grate inlet at the washrack is draining to the sanitary sewer by engaging the valve that switches from the storm sewer to the sanitary sewer.
  - When done using the washrack, ensure the valve to the sanitary sewer has been disengaged and that the drain is now draining to the storm sewer.
- **Contain / Capture Wash Water**
  - When using a system that contains all wash water, such as blocking storm drains or using a wash kit, absorbent boom, or berm, collect and dispose of all wash water in the sanitary sewer.
  - Follow the manufacturers' directions for all proprietary systems and kits that capture wash water ("Read the Label").
  - Do not dispose of any wash water in the storm sewer or on grassed areas.
  - Clean wash equipment on grassed surfaces or in areas that drain directly to the sanitary sewer.
- **Car Wash Vendor**
  - Wash City-owned vehicles at the commercial car wash facility under contract with the City.

IV. Training and Documentation

- **Training**
  - The MS4 permit requires that employees are trained in stormwater pollution prevention and good housekeeping, and how to recognize and report illicit discharges.
- **Documentation**
  - Maintain a record of all employees trained and training topics.

V. References

- Standard Operating Procedures for Weber County Storm Water Coalition (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Resources\SOPs_Weber_County.pdf)
- Street Maintenance Standard Operating Procedure for Storm Water Control for Municipality of Anchorage Watershed Management Program (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Resources\App E1 St Maint SOPs for SW Control.pdf)
- Vehicle Wash Compliance for City of Alexandria Fire Department (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Fire Dept\GO 13-030 Vehicle Wash Compliance 8-7-13.pdf)

- Vehicle Wash Compliance Certification Form for Prohibition of Municipal Vehicle Washawater Discharge to Storm Drain System, City of Alexandria (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Vehicle_Wash_Compliance_Certification_Form_Final_07.01.2013.docx)

VI. Record of Changes

REV Level	Purpose of Change	Changes	Date of Previous Revision
Initial	New	None	N/A

	Standard Operating Procedures (SOP)			
	TITLE	**Bulk Material Storage**		
	Purpose	**Stormwater Pollution Prevention**		
	Revision	Initial	**Date**	June 4, 2015
	Page	1 of 3		
SOP Administrator: Name / Title	**James Nichols / Division Chief, Park Operations & Maintenance**	**SIGNATURE**		
Location of SOP:	2900 Business Center Drive, Alexandria, VA			

OVERVIEW:

The City of Alexandria, Recreation, Parks and Cultural Activities (RPCA) Department, Park Operations, manages the City's numerous parks, natural areas, facilities and equipment, medians and rights-of-way, and the grounds of many public buildings. Park Operations includes three Divisions:

- Natural Resources – Urban Forestry (street trees), Environmental Education (Buddie Ford Nature Center), and Natural Lands Management (invasive plant mgt.)
- Park Maintenance – Maintenance of all City Parks (grounds maintenance, ball fields, restrooms, pavilions, trails, open spaces areas)
- Facility and Operation Support – Equipment and vehicle maintenance, irrigation systems, fixed assets, and Horticulture

Park Operations also responds to weather emergencies, including snow and ice control at Metro stations, schools, recreation centers, and many of the City's walkways and overpasses.

The Standard Operation Procedures (SOP) is a guide for RPCA and Park Operations. The SOP outlines the rules and processes to be followed for administrative functions, field work, and the enforcement of regulations. The City's Municipal Separate Storm Sewer System (MS4) permit issued by the Virginia Department of Environmental Quality (DEQ) requires the development and implementation of this SOP. Where a standard operation procedure is not applicable or does not exist, a Team Member should ask for guidance from his/her Supervisor or the Division Chief.

SECTION 1: PURPOSE

1.1 In accordance with Section II.B.6.a of the 2013-2018 MS4 Permit, the City developed written policies and standard operating procedures to address the daily practices that will minimize or prevent pollutant discharges from daily operations and municipal facilities. This SOP focuses on the proper storage procedures for bulk materials.

1.2 The Bulk Material Storage SOP includes the following elements:

a. Section 2: Roles and Responsibilities: Provides clear and concise direction on the roles and responsibilities of each Team Member assigned to Bulk Material Storage.

b. Section 3: Bulk Material Storage: Identifies the appropriate process for Sand, Salt, Dirt, or Gravel, and Liquid Storage.
c. Section 4: Training and Documentation: Contains guidelines for employee Training and Record Keeping and Documentation.
d. Section 5: Reference Materials
e. Section 6: Record of Document Changes

SECTION 2: ROLES AND RESPONSIBILITIES

2.1 Bulk Material Storage Team roles and responsibilities have been identified below:

- **Supervisor** is responsible for ensuring that this SOP is followed.
- **Team** is responsible for following the SOP.

SECTION 3: BULK MATERIAL STORAGE

- **Sand, Salt, Dirt, or Gravel**
  - Store piles under a roof, inside a building, or covered with a tarp.
  - Store piles on a flat, impervious surface.
  - Contain stormwater run-on and runoff with barriers or berms.
  - Clean-up "track out" using dry cleaning methods, such as brooms.
  - Never dispose of wash water from sand/salt trucks into storm drains.
- **Liquid**
  - Provide secondary containment for all above-ground storage tanks (ASTs). Secondary containment can include double-walled tanks, or impervious containment outside of the tank that can contain the entire contents of the largest tank plus an additional 4 inches of rainfall.
  - Properly dispose of liquid that is drained from secondary containment for ASTs.
  - Have a spill kit available in case of a spill, leak, or accidental discharge. Immediately clean all spills, leaks, or accidental discharges.

SECTION 4: TRAINING AND DOCUMENTATION

- **Training**
  - The MS4 permit requires that employees are trained in stormwater pollution prevention and good housekeeping, and how to recognize and report illicit discharges.
  - Employees who handle bulk materials should be trained on the safest way to store the materials.
- **Record Keeping and Documentation**
  - Maintain a record of all employees trained and training topics.
  - Maintain an inventory of bulk materials storage amounts and locations.

SECTION 5: REFERENCES

- Operation and Maintenance Plan for Port of Skagit, Washington (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for

Daily Operations\Resources\ PortofSkagitOPERATIONmAINTENANCEplanupdated.pdf)

- Guidelines and Standard Operating Procedures: Illicit Discharge Detention and Elimination and Pollution Prevention/Good Housekeeping for Stormwater Phase II Communities in New Hampshire (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Resources\NH_IDDE_SOP.pdf)

SECTION 6: RECORD OF DOCUMENT CHANGES

REV Level	Purpose of Change	Changes	Date of Previous Revision
Initial	New	None	N/A

	Standard Operating Procedures (SOP)			
	Title	**Disposal of Landscape Organic Waste**		
	Purpose	Prevent landscape organic waste from entering the storm sewer system		
	Revision	Initial	**Date**	September 9, 2020
	Page	1 of 2		
SOP Administrator: Name/Title	Bob Williams, Division Chief, Park Operations & Natural Resources	**SIGNATURE**		
Location of SOP:	2900-B Business Center Drive, Alexandria, VA 22314			

1) **Objective**: This Standard Operating Procedure (SOP) provides an overview of landscape organic waste disposal best practices with the goal of preventing waste from entering the storm drain inlet and the storm sewer system. The Department of Recreation, Parks & Cultural Activities (RPCA) at the City of Alexandria, VA, provides landscape maintenance services across the City.

2) **Responsibilities**: RPCA and its contractors are responsible for landscape organic waste disposal to minimize potential stormwater impacts.

3) **Procedures**
   a. All vegetation shall be maintained in such a way as keeps stormwater conveyances including drains, clear and free of vegetative debris.
   b. Any organic, plant or soil wastes generated as a result of landscape maintenance, including but not limited to leaves, soil cores, grass clippings, or other debris shall be handled in an environmentally responsible manner to reduce likelihood of this material entering stormwater conveyances or local streams.
      i. Grass Clippings: Grass clippings shall be collected or blown back on to grassed areas. In no cases shall grass clippings be blown onto pavement, where they can then be washed down a storm drain.
      ii. Soil Cores: Soil cores shall be collected for proper disposal or shall remain on grassed areas so that any soil runoff remains on the landscaped areas.
      iii. Leaves: Leaves shall be picked from storm drains up as promptly as practical to keep storm drains clear from obstruction, which could cause damaging flooding, and keep leaves from entering the storm sewer system. In the event leaves cannot be picked up in a timely manner, they should be blown back onto vegetated surfaces. Fall leaf program includes the mulching of leaves and leaving this material on vegetative surfaces.
      iv. Sticks, limbs, or whole vegetation: Limbs, sticks, or other vegetative debris generated either as a result of maintenance activities or from natural causes should be cleaned up immediately upon generation or discovery. If vegetative debris cannot be removed from a site in a timely manner, it should be moved to a vegetated area where it cannot block stormwater conveyances or storm drains. Not intended for entire park areas.

4) **Proper Disposal**: Coordinate with Transportation & Environmental Services for disposal at the Leaf Mulch Facility as appropriate or COVANTA if not appropriate for the Leaf Mulch Facility.

5) **Dissemination and Training**: Park Operations will conduct a minimum of two times per year discussion on stormwater, including a spring session. Also included with on-boarding new staff. For contractors, this language will be included in the ITB. However, RPCA is not responsible for contractor training.

6) **Record of Changes**

REV Level	Purpose of Change	Changes	Date of Previous Revision
Initial	New	None	N/A

	Standard Operating Procedures (SOP)			
	TITLE	**Pesticide, Herbicide, and Fertilizer Application**		
	Purpose	**Stormwater Pollution Prevention**		
	Revision	Initial	**Date**	June 4, 2015
	Page	1 of 4		
SOP Administrator: Name / Title	**James Nichols / Division Chief, Park Operations & Maintenance**	**SIGNATURE**		
Location of SOP:	2900 Business Center Drive, Alexandria, VA			

OVERVIEW:
The City of Alexandria, Recreation, Parks and Cultural Activities (RPCA) Department, Park Operations, manages the City's numerous parks, natural areas, facilities and equipment, medians and rights-of-way, and the grounds of many public buildings. Park Operations includes three Divisions:

- Natural Resources – Urban Forestry (street trees), Environmental Education (Buddie Ford Nature Center), and Natural Lands Management (invasive plant mgt.)
- Park Maintenance – Maintenance of all City Parks (grounds maintenance, ball fields, restrooms, pavilions, trails)
- Facility and Operation Support – Equipment and vehicle maintenance, irrigation systems, fixed assets, and Horticulture

Park Operations also responds to weather emergencies, including snow and ice control at Metro stations, schools, recreation centers, and many of the City's walkways and overpasses.

The Standard Operation Procedures (SOP) is a guide for RPCA and Park Operations. The SOP outlines the rules and processes to be followed for administrative functions, field work, and the enforcement of regulations. The City's Municipal Separate Storm Sewer System (MS4) permit issued by the Virginia Department of Environmental Quality (DEQ) requires the development and implementation of this SOP. Where a standard operation procedure is not applicable or does not exist, a Team Member should ask for guidance from his/her Supervisor or the Division Chief.

SECTION 1: PURPOSE
1.1 In accordance with Section II.B.6.a of the 2013-2018 MS4 Permit, the City developed written policies and standard operating procedures to address the daily practices that will minimize or prevent pollutant discharges from daily operations and municipal facilities. This SOP focuses on the proper handling, mixing, application, clean-up, and storage procedures for pesticides, herbicides, and fertilizers (landscape chemicals).

1.2 The Pesticide, Herbicide, and Fertilizer Application SOP include the following elements:

a. Section 2: Roles and Responsibilities: Provides clear and concise direction on the roles and responsibilities of each Team Member assigned to Pesticide, Herbicide, and Fertilizer Application.
b. Section 3: Preparation: Identifies the appropriate preparation for Pesticide, Herbicide, and Fertilizer Application.
c. Section 4: Equipment List: Includes a list of mandatory equipment that is needed for Personal Protective Equipment (PPE), Identification and Security, and Tools.
d. Section 5: Process: Identifies the appropriate process for Pesticide, Herbicide, and Fertilizer Application.
e. Section 6: Training and Documentation: Contains guidelines for employee Training and Record Keeping and Documentation.
f. Section 7: Reference Materials
g. Section 8: Record of Document Changes

SECTION 2: ROLES AND RESPONSIBILITIES

2.1 Pesticide, Herbicide, and Fertilizer Application Team roles and responsibilities have been identified below:

- **Supervisor** is responsible for ensuring that this SOP is followed.
- **Team** is responsible for following the SOP.

SECTION 3: PREPARATION

- Always follow the manufacturers' recommendations for use of pesticide, herbicide, and fertilizer ("Read the Label").
- Fertilizer applications must be based on recommendations in the Nutrient Management Plan if applicable, and/or Virginia Nutrient Management Standards and Criteria (latest) to avoid economic costs and environmental impacts associated with excess fertilizer use.
- Use herbicides and pesticides only if there is an actual pest problem.
- Do not apply pesticides, herbicides, or fertilizers if rain is expected within a 24-hour period.
- Only apply pesticides, herbicides, or fertilizers if wind speeds are low (less than 5 mph).
- Have a spill kit available in case of a spill.

SECTION 4: EQUIPMENT LIST

4.1 equipment list has been identified below:

- **Personal Protective Equipment (PPE):**
  - Safety Vest
  - Government Issued Work Boots
  - Rubber gloves
  - Protective Eyewear
  - Hand Sanitizer
- **Identification and Security**
  - Government Issue Identification (ID) Badge
- **Tools**

- ANSI approved sprayers
- Plastic pallets and pails for secondary containment
- Spill kit
- Absorbent pads
- Broom
- Dust pan
- Manufacturers' instructions for use and disposal of materials
- MSDS sheets for all chemicals
- Emergency Fire and Police Contacts
- City Risk Management Handouts

SECTION 5: PROCESS

When pesticide, herbicide, and/or fertilizer are applied the following is expected:

- **Mixing**
  - Always follow the manufacturers' recommendations for mixing of pesticide, herbicide, and fertilizer ("Read the Label").
  - Do not mix, prepare, transfer, or pour landscape chemicals outdoors or near or in storm drains. Use a protected area with impervious secondary containment, preferably indoors, to mix, prepare, transfer, and pour landscape chemicals.
- **Application**
  - Always follow the manufacturers' recommendations for application of pesticide, herbicide, and fertilizer ("Read the Label").
  - Only apply the recommended amounts of the landscape chemicals.
  - Do not overspray the landscape chemicals onto an impervious surface, such as a sidewalk or driveway.
  - Do not apply landscape chemicals to frozen ground.
  - Do not overwater areas recently treated with landscape chemicals to minimize the amount of runoff into storm drains.
- **Clean-Up**
  - Always follow the manufacturers' recommendations for clean-up and disposal of pesticide, herbicide, and fertilizer ("Read the Label").
  - Clean up any spills or leaks promptly using dry methods, such as sweeping.
  - Triple rinse pesticide and herbicide containers and use the rinse water as product or as dilution for the next batch.
  - Recycle or dispose of all spent or excess landscape chemicals properly and promptly.
  - Dispose of any excess, unused, expired, or waste pesticide, herbicide, and/or fertilizer as hazardous waste.
  - Keep application equipment clean; do not allow a buildup of chemicals.
  -
- **Storage**
  - Always follow the manufacturers' recommendations for storage of pesticide, herbicide, and fertilizer ("Read the Label").

- All pesticide and herbicide storage should be kept to a minimum. Any pesticides that are stored should be stored in secured area, preferably indoors so that spills and leaks will not contact soils.
- All containers must be clearly and correctly labeled.

SECTION 6: TRAINING AND DOCUMENTATION

- **Training**
  - The MS4 permit requires that employees are trained in stormwater pollution prevention and good housekeeping, and how to recognize and report illicit discharges.
  - Employees who handle pesticides should be trained on the safest way to mix, apply, store, and handle the chemicals.
- **Record Keeping and Documentation**
  - Maintain a record of all employees trained and training topics.
  - Maintain an inventory of pesticide, herbicide, and/or fertilizer application activities.
  - Maintain an inventory of pesticide, herbicide, and/or fertilizer expiration dates.

SECTION 7: REFERENCES

- Fertilizer, Herbicide, and Pesticide Application Standard Operating Procedure for City of Westminster, Colorado (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Resources\fertilizer application_Westminster.pdf)
- Fertilizer, Herbicide, and Pesticide Application Standard Operating Procedure for City of Boulder, Colorado (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Resources\01638_BoulderColoradoChemical.pdf)
- Chemical Application Pesticides, Herbicides, Fertilizers (Parks and Recreation) Standard Operating Procedure for Sandy City, Utah (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Resources\SOPs_Storm_Water_2011.pdf)

SECTION 8: RECORD OF DOCUMENT CHANGES

REV Level	Purpose of Change	Changes	Date of Previous Revision
Initial	New	None	NA

	Standard Operating Procedures (SOP)			
	TITLE	**Garbage Storage**		
	Purpose	**Stormwater Pollution Prevention**		
	Revision	Initial	**Date**	June 4, 2015
	Page	1 of 3		
SOP Administrator: Name / Title	**James Nichols / Division Chief, Park Operations & Maintenance**	**SIGNATURE**		
Location of SOP:	2900 Business Center Drive, Alexandria, VA			

OVERVIEW:
The City of Alexandria, Recreation, Parks and Cultural Activities (RPCA) Department, Park Operations, manages the City's numerous parks, natural areas, facilities and equipment, medians and rights-of-way, and the grounds of many public buildings. Park Operations includes three Divisions:

- Natural Resources – Urban Forestry (street trees), Environmental Education (Buddie Ford Nature Center), and Natural Lands Management (invasive plant mgt.)
- Park Maintenance – Maintenance of all City Parks (grounds maintenance, ball fields, restrooms, pavilions, trails)
- Facility and Operation Support – Equipment and vehicle maintenance, irrigation systems, fixed assets, and Horticulture

Park Operations also responds to weather emergencies, including snow and ice control at Metro stations, schools, recreation centers, and many of the City's walkways and overpasses.

The Standard Operation Procedures (SOP) is a guide for RPCA and Park Operations. The SOP outlines the rules and processes to be followed for administrative functions, field work, and the enforcement of regulations. The City's Municipal Separate Storm Sewer System (MS4) permit issued by the Virginia Department of Environmental Quality (DEQ) requires the development and implementation of this SOP. Where a standard operation procedure is not applicable or does not exist, a Team Member should ask for guidance from his/her Supervisor or the Division Chief.

SECTION 1: PURPOSE
1.1 In accordance with Section II.B.6.a of the 2013-2018 MS4 Permit, the City developed written policies and standard operating procedures to address the daily practices that will minimize or prevent pollutant discharges from daily operations and municipal facilities. This SOP focuses on the proper storage procedures for garbage.

1.2 The Bulk Material Storage SOP includes the following elements:

a. Section 2: Roles and Responsibilities: Provides clear and concise direction on the roles and responsibilities of each Team Member assigned to Garbage Storage.

b. Section 3: Garbage Storage: Identifies the appropriate process for Garbage Storage.
c. Section 4: Training and Documentation: Contains guidelines for employee Training and Record Keeping and Documentation.
d. Section 5: Reference Materials
e. Section 6: Record of Document Changes

SECTION 2: ROLES AND RESPONSIBILITIES

2.1 Garbage Storage Team roles and responsibilities have been identified below:

- **Supervisor** is responsible for ensuring that this SOP is followed.
- **Team** is responsible for following the SOP.

SECTION 3: GARBAGE STORAGE

- Cover dumpsters located outside.
- Place dumpsters and trash cans on a flat, impervious surface that does not drain directly to a storm drain.
- Locate dumpsters and trash cans in convenient, easily observable areas.
- Regularly inspect trash cans and dumpsters for leaks. Repair immediately if any are found.
- Never dispose of wash water from dumpsters or trash cans into storm drains.
- Do not put hazardous materials or oils in dumpsters or trash cans.

SECTION 4: TRAINING AND DOCUMENTATION

- **Training**
  - The MS4 permit requires that employees are trained in stormwater pollution prevention and good housekeeping, and how to recognize and report illicit discharges.
- **Record Keeping and Documentation**
  - Maintain a record of all employees trained and training topics.

SECTION 5: REFERENCES

- Operation and Maintenance Plan for Port of Skagit, Washington (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Resources\ PortofSkagitOPERATIONmAINTENANCEplanupdated.pdf)
- Guidelines and Standard Operating Procedures: Illicit Discharge Detention and Elimination and Pollution Prevention/Good Housekeeping for Stormwater Phase II Communities in New Hampshire (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Resources\NH_IDDE_SOP.pdf)

SECTION 6: RECORD OF DOCUMENT CHANGES

REV Level	Purpose of Change	Changes	Date of Previous Revision
Initial	New	None	NA

Environmental Sustainability Management System

City of Alexandria - RPCA

Verification	Originator	Revised	Approved	Issued
Initials Date	RHS 04/4/2014	RHS 03/12/2015	Core Team 03/13/2015	RPCA 03/16/2015

RPCA Standard Operating Procedures (SOP) for Invasive Species Control and Herbicide Use in the City of Alexandria

Description

This work shall consist of activities to control or eradicate invasive vegetation within a given project area. All project areas and work sites must be pre-approved by RPCA, Natural Resources Division.

Control areas typically include upland forested areas, woodland edges, tidal wetlands, emergent fringe wetlands, rip-rap side slopes, trails, medians, right-of-ways, and other sites. These efforts include the application of approved herbicides and may include hand extraction in combination with the herbicide application throughout the duration of the contract.

All work shall be performed in accordance with this specification, specific plans, and as directed by Natural Resources Division. Invasive vegetation control shall only include those species designated by Natural Resources Division.

Materials

All herbicides shall be EPA registered chemicals, including those that are approved for use in or adjacent to waterways where applicable, to control and prevent re-growth of undesirable vegetation. All herbicides proposed for use require prior approval by Natural Resources Division. Contractors shall select herbicides appropriate to the species being managed and shall submit the selection(s) to Natural Resources Division for written approval prior to the use of such chemicals. Manufacturer's specification sheets (labels) for herbicide, wetting agent, basal oil, and dyes shall also be submitted to Natural Resources Division. Also, a colorant shall be added to the herbicide in order to easily identify plants that have been treated.

In addition, where foliar application of a glyphosate herbicide is indicated, we require that Roundup or other glyphosate products formulated with reportedly environmentally damaging surfactants not be used,

but rather a 53.8% non-surfactant glyphosate herbicide (in the form of its isopropylamine salt), such as Rodeo, AquaNeat, Accord Concentrate, Foresters Non Selective, or comparable product, that is mixed with an environmentally safe surfactant such as Agri-Dex.

Procedures

Herbicide application is strictly regulated, and the Contractor must ensure that all regulations are followed. Application equipment, personal protective equipment, and application rates of the herbicide shall be in conformance with manufacturer's recommendations as shown on the product label and in accordance with federal and state pesticide application laws.

In addition, all tanks, backpack sprayers, hand sprayers, and containers holding herbicides shall have the contents visibly and legibly written and displayed on the container (product or trade name and active ingredients and percent).

1) **Pre-Application Meeting:** A pre-application meeting shall be scheduled prior to commencement of invasive plant control operations. Meeting shall include Natural Resource Division staff.

2) **Qualifications of Herbicide Operator**: The Contractor shall submit qualifications of key personnel who will be performing and/or supervising work on site, including a copy of the herbicide applicator's license. Only certified pesticide technicians and applicators are authorized to apply herbicides on City lands (except those in training under the direct supervision of certified applicators on-site).

3) **Notification:** The Contractor shall notify Natural Resources Division at least 48 hours prior to all herbicide applications.

4) **Flagging:** The areas planned for treatment shall be clearly flagged in the field and reviewed by Natural Resources Division Staff prior to commencement of treatment activities. The Contractor shall be prepared to discuss invasive species control and native plant preservation methodologies during this field review.

5) **Timing of Herbicide Application**: Herbicide applications shall only be applied during appropriate periods of the growing season, typically between May and October, or as approved by Natural Resources Division. Herbicide application shall only be conducted during appropriate weather conditions as indicated on the product label. The herbicide shall not be applied when it is raining or if rain is forecasted within 24 hours of the planned application. The wind speed cannot be greater than 10 mph at the time of application.

6) **Application Method:** Herbicide application shall be selective low volume treatments with a backpack sprayer, truck mounted spray rig with low volume pump and spray gun, squirt bottle, injection gun, paint brush, or other methods, as approved by Natural Resources Division. Broadcast

high volume applications will not be permitted, except in certain, pre-approved situations. The herbicide shall be applied with approved spraying apparatus directly to the target plant. Extreme caution shall be used when spraying adjacent to off-target, non-invasive vegetation or directly adjacent to any waterways/wetlands. Overspray of herbicide onto non-target plants shall be avoided to the greatest extent possible. The Contractor shall be responsible for any act of negligence in applying and handling of the herbicide on the project.

Operating motorized vehicles along any natural area trails, except for rare emergency situations, is prohibited, unless pre-approved by Natural Resources Division. This is highly damaging to fragile soils, vegetation, and wildlife, and creates an active disturbance mechanism for the spread of non-native invasive species.

Digging woody plants from wooded and riparian sites is not allowed, except in special, pre-approved cases, because it creates soil disturbance and causes an increase of non-native invasive species, damages native vegetation, de-stabilizes slopes and stream banks, and causes erosion. Instead, it is advised to saw down the targeted vegetation and immediately treat the fresh cut with the appropriate herbicide.

7) **Pre-Application Invasive Plant Eradication:** The Contractor shall conduct a field walk of the project area to identify the location and density of the invasive plant species to be managed. Once the Contractor has identified these areas and approved the locations and methods to be used, he will manage the invasive plants as here described.

8) **Upland slopes with dense stands of invasive plants:** Reduce growth layers and damage leaves with a string trimmer to improve herbicide uptake. Thoroughly wet all leaves with approved herbicides. Cut large stems or trunks and apply approved herbicides to cut surfaces immediately (within seconds) using a spray bottle or paint brush.

9) **Wetland fringe areas and upland slopes with individual plants or small patches of invasive plants:** Utilize spot treatment methods while being sure to minimize over spray onto surrounding desirable plants. Cut large stems and apply approved herbicides to cut surfaces immediately using a spray bottle or paint brush.

10) **Post-Application Invasive Plant Eradication:** Some contracts are negotiated to have the Contractor responsible for post-application management of invasive plants for a designated period of time after the completion of first-phase applications.

11) **Upland slopes**: Identify and flag individual plants and areas dominated by invasive plants. Spot treat individual invasive plants while being sure to minimize over spray onto surrounding desirable plants. Cut large stems and apply approved herbicides to cut surfaces immediately using a spray bottle or paint brush.

12) **Created wetland vegetation fringe along the stream:** Identify and flag individual plants and areas dominated by invasive plants. Spot treat individual invasive plants while being sure to minimize over spray onto surrounding desirable plants.

13) **Herbicide Handling:** The Contractor shall store, transport, and handle the herbicide in accordance with the manufacturer's recommendations. Materials shall be stored in the original container at a secured location. Any spills or leaks must be cleaned up immediately.

14) **Site Cleanup:** During the execution of invasive vegetation control measures, all areas shall be kept neat and clean and free of trash and debris. Final cleanup shall be the responsibility of the Contractor and shall consist of the removal of all trash and materials incidental to the project to an approved off-site disposal location.

15) **Replacement of Native Plants Damaged:** The Contractor shall be responsible for replacing (or suitable in-kind restitution) of any native plant material that is killed or damaged through any act of negligence by the Contractor in applying and handling of the herbicide on the project.

16) **Final Inspection:** The Contractor shall be responsible for correcting all deficiencies within seven (7) calendar days of inspection. Natural Resources Division and the Contractor shall perform a final inspection and any corrective actions at the close-out of the contract.

Measurement and Payment

The Invasive Species Control will be measured and paid for at the contract unit price of square yards of surface area of herbicide applied. Hand extraction prior to or following herbicide application will be considered part of the contract unit. Any additional work required to ensure invasive vegetation control during the duration of the contract, including hand pulling, will be measured on a per square yard basis. This work will only be undertaken as approved or directed by RPCA/Natural Resources Division, and price and payment will constitute full compensation for furnishing all materials, labor, tools, equipment, and incidentals necessary to complete the work.

	Standard Operating Procedures (SOP)			
	TITLE	**Equipment Maintenance**		
	Purpose	**Stormwater Pollution Prevention**		
	Revision	Initial	**Date**	June 4, 2015
	Page	1 of 3		
SOP Administrator: Name / Title	**James Nichols / Division Chief, Park Operations & Maintenance**	**SIGNATURE**		
Location of SOP:	2900 Business Center Drive, Alexandria, VA			

I. Purpose

The City of Alexandria, Recreation, Parks and Cultural Activities (RPCA) Department, Park Operations, manages the City's numerous parks, natural areas, facilities and equipment, medians and rights-of-way, and the grounds of many public buildings. Park Operations includes three Divisions:

- Natural Resources – Urban Forestry (street trees), Environmental Education (Buddie Ford Nature Center), and Natural Lands Management (invasive plant mgt.)
- Park Maintenance – Maintenance of all City Parks (grounds maintenance, ball fields, restrooms, pavilions, trails)
- Facility and Operation Support – Equipment and vehicle maintenance, irrigation systems, fixed assets, and Horticulture

Park Operations also responds to weather emergencies, including snow and ice control at Metro stations, schools, recreation centers, and many of the City's walkways and overpasses.

This SOP provides pollution prevention and good housekeeping written procedures for daily activities related to Fleet and Vehicle Maintenance to address the applicable Municipal Separate Storm Sewer System (MS4) General Permit requirement in Section II B. 6 a.

II. Roles and Responsibilities

The Equipment Maintenance Team roles and responsibilities have been identified below:

- **Supervisor** is responsible for ensuring that this SOP is followed.
- **Team** is responsible for following the SOP.

III. Process

- Conduct maintenance work indoors to the greatest extent possible.
- When maintenance work is conducted outdoors, use an impervious surface and protect storm drains from spills and leaks.
- Clean up any spills or leaks promptly using dry methods, such as adsorbent pads or sweeping.
- Do not clean any vehicles or equipment, including lawn care equipment, near a storm drain. Use designated wash racks that drain to sanitary sewers to wash vehicles and equipment.

- Clean grass from lawn care equipment using dry methods, such as brooms, preferably on grassed surfaces. If lawn care equipment is cleaned on impervious surfaces, clean-up all materials using dry methods, such as sweeping.
- Use drip pans for vehicles that are stored outside.
- Do not leave drip pans outside during rain. Properly dispose of any liquid that collects in drip pans. Do not dispose of liquid in storm drains.
- Never leave vehicles/equipment unattended while fueling.

IV. Training and Documentation

- **Training**
  - The MS4 permit requires that employees are trained in stormwater pollution prevention and good housekeeping, and how to recognize and report illicit discharges.
- **Documentation**
  - Maintain a record of all employees trained and training topics.
  - Maintain documentation of maintenance and inspection activity.

V. References

- Pollution Prevention/Good Housekeeping for Municipal Operations: Standard Operating Procedures for Erie County Department of Environment and Planning Division of Environmental Compliance Services (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Resources\StwtrPPGH_SOP.pdf)
- Fleet and Vehicle Maintenance Standard Operating Procedure for City of Boulder, Colorado (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Resources\fleetvehicle_maint_sops.pdf)
- Street Maintenance Standard Operating Procedure for Storm Water Control for Municipality of Anchorage Watershed Management Program (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Resources\App E1 St Maint SOPs for SW Control.pdf)

VI. Record of Changes

REV Level	Purpose of Change	Changes	Date of Previous Revision
Initial	New	None	N/A

	Standard Operating Procedures (SOP)			
	TITLE	**Snow Operations**		
	Purpose	**Stormwater Pollution Prevention**		
	Revision	Initial	**Date**	June 4, 2015
	Page	1 of 3		
SOP Administrator: Name / Title	**James Nichols / Division Chief, Park Operations & Maintenance**	**SIGNATURE**		
Location of SOP:	2900 Business Center Drive, Alexandria, VA			

OVERVIEW:

The City of Alexandria, Recreation, Parks and Cultural Activities (RPCA) Department, Park Operations, manages the City's numerous parks, natural areas, facilities and equipment, medians and rights-of-way, and the grounds of many public buildings. Park Operations includes three Divisions:

- Natural Resources – Urban Forestry (street trees), Environmental Education (Buddie Ford Nature Center), and Natural Lands Management (invasive plant mgt.)
- Park Maintenance – Maintenance of all City Parks (grounds maintenance, ball fields, restrooms, pavilions, trails)
- Facility and Operation Support – Equipment and vehicle maintenance, irrigation systems, fixed assets, and Horticulture

Park Operations also responds to weather emergencies, including snow and ice control at Metro stations, schools, recreation centers, and many of the City's walkways and overpasses.

The Standard Operation Procedures (SOP) is a guide for RPCA and Park Operations. The SOP outlines the rules and processes to be followed for administrative functions, field work, and the enforcement of regulations. The City's Municipal Separate Storm Sewer System (MS4) permit issued by the Virginia Department of Environmental Quality (DEQ) requires the development and implementation of this SOP. Where a standard operation procedure is not applicable or does not exist, a Team Member should ask for guidance from his/her Supervisor or the Division Chief.

SECTION 1: PURPOSE

1.1 In accordance with Section II.B.6.a of the 2013-2018 MS4 Permit, the City developed written policies and standard operating procedures to address the daily practices that will minimize or prevent pollutant discharges from daily operations and municipal facilities. This SOP focuses on pollution prevention and good housekeeping procedures associated with snow removal.

1.2 The Snow Operations SOP includes the following elements:

a. Section 2: Roles and Responsibilities: Provides clear and concise direction on the roles and responsibilities of each team member during snow operations.

b. Section 3: Snow Operations: Identifies the appropriate process for pollution prevention and good housekeeping for snow operations.
c. Section 4: Training and Documentation: Contains guidelines for employee Training and Record Keeping and Documentation.
d. Section 5: Reference Materials
e. Section 6: Document Changes

SECTION 2: ROLES AND RESPONSIBILITIES

2.1 Snow Response Operator Team roles and responsibilities have been identified below:

- **Supervisor** is responsible for ensuring that this SOP is followed.
- **Team** is responsible for following the SOP.

SECTION 3: SNOW OPERATIONS

- Inspect vehicles and equipment
  - Check vehicle for operational condition, to include lights, fuel and leaks; and use drip pans for leaking equipment or vehicles
- Piling and Storage of Snow
  - Avoid plowing, pushing, blowing or storing excess snow and street debris in front of storm drain inlets
  - Do not dispose of snow in wetlands, stormwater BMPs, ditches with open water, or on top of storm drains
  - Store snow on gravel or grass where snow can melt and infiltrate
- Salt / Deicing Materials
  - Take precaution to avoid overloading the application equipment and vehicles

SECTION 4: TRAINING AND DOCUMENTATION

- **Training**
  - The MS4 permit requires that employees are trained in stormwater pollution prevention and good housekeeping, and how to recognize and report illicit discharges.
- **Record Keeping and Documentation**
  - Maintain a record of all employees trained and training topics.

SECTION 7: REFERENCE

- Safety and Personal Protective Equipment Specifications (S:\SAFETY Programs\Personal Protective Equipment\PPE Matrix by DIVISIONS\MAINTENANCE)
- Master Snow Plow (S:\maint\FILES\SNOW REMOVAL)

SECTION 8: DOCUMENT CHANGES

REV Level	Purpose of Change	Changes	Date of Previous Revision
Initial	New	None	NA

	TITLE	**Vehicle and Equipment Washing (Resource Recovery)**	
	Procedure #	TES-RR-2015-22	
	Revision		**Date**
	Page	1 of 5	
ORIGINATOR Name / Title	Nikeya Cunningham / Program Analyst, Public Works Services	**SIGNATURE**	
APPROVED BY Name / Title	Jeffrey DuVal / Deputy Director, T&ES Operations	6.30.15	

OVERVIEW:

The City of Alexandria, Transportation and Environmental Services (T&ES), Resource Recovery (RR) Division is responsible for refuse and recycling collection, street sweeping, and curbside recycling programs. The Resource Recovery (RR) Division provides comprehensive, cost-effective solid waste management to residents and businesses in an environmentally sound manner, while incorporating state-of-the-art methods and technology, and educating the public on responsible resource management. The RR Division coordinates with other City agencies and other divisions within T&ES to respond during weather events and assists in both emergency management and clean-up following these events.

The Standard Operation Procedures (SOP) is a guide for the RR Division. The SOP outlines the rules and processes to be followed for administrative functions, field work, and the enforcement of regulations. Where a standard operating procedure is not applicable or does not exist, a Team Member should ask for guidance from his/her Supervisor or the Division Chief.

SECTION 1: PURPOSE

1.1 The purpose of this procedure is to provide operational best management practices (BMPs) to control pollutant discharges by promoting a conscious effort when washing City vehicles and equipment to reduce the amount of sediment, antifreeze, heavy metals, oil and other materials that may runoff from the wash rack. Uncontrolled washing activities have a potential to produce a high concentration of pollutants in runoff wash water to the storm water system. These procedures are critical steps that must be included in every vehicle washing activity at the 133 South Quaker Lane wash rack.

1.2 Vehicle and Equipment Washing include the following elements:

a. Section 2: Equipment List: Personal Protective Equipment (PPE) and mandatory equipment have been listed.
b. Section 4: Refuse Container Management Process: Captures the efforts and description with standard procedure for vehicle and equipment washing.
c. Section 5: Pollution Prevention
d. Section 6: Training and Documentation
e. Section 7: Reference Materials
f. Section 8: Document Changes

SECTION 3: EQUIPMENT LIST

3.1 The Vehicle and Equipment Washing equipment list has been identified below:

- **Personal Protective Equipment (PPE):**
  - Safety Vest
  - Work Boots
  - Protective Eyewear (ANSI Z87 with side shields)

- **Vehicle Washing Equipment:**
  - Biodegradable/ Phosphate free Detergents
  - Pump Sprayer
  - Vehicle Wash Brush
  - Automotive Degreaser
  - City Vehicle Wash Rack

- **Identification and Security:**
  - Complete City Issued Uniform
  - Government Issue Identification (ID) Badge

SECTION 4: VEHICLE AND EQUIPMENT WASHING PROCESS

4.1 State and Federal regulations require local ordinances to prohibit unauthorized discharges to the storm drainage system and local water ways. One of the most common "prohibited discharges" is wastewater from commercial vehicle washing. The City of Alexandria takes every precautionary measure to ensure no runoff enters the storm drainage systems.

4.2 All vehicles and equipment must be washed in a designated area, located in the rear of 133 S. Quaker Lane. Vehicle washing is conducted twice a month on bi-weekly Mondays (weather permitting). To begin the process, the Superintendent of the Public Works Services (PWS) Sewer Section, must be notified in order to change the sewer drain from *storm* to *sanitary* prior to vehicle washing.

- Vehicle/Equipment Prewash
  - Using the pre-wash degreasing agent, starting with the lower portion working upwards, mist the degreaser onto the vehicle. Allow the product to dwell on the vehicle (usually 30 seconds – 5 minutes) as it works to break up and loosen any contaminants from the vehicle.
  - Choose a wash media (sponge or mitt) to use and soak it in clean water for a few seconds. Working in small areas, wipe the area you are degreasing with the wash media, using as little pressure as possible. Be sure to repeat these steps until each area of the vehicle has been agitated with the wash media and water.
- Interior Trim
  - Empty vehicle of all debris, trash and recyclables and take out any floor mats and lay them aside.

- Vacuum the floorboards, under the seats, around the pedals, the upholstery, rear deck, and top of the dashboard. Be sure to use any brush attachments and crevice tools available to get between and beside seats.
- Spray vinyl cleaner onto a cloth and wipe methodically over the vinyl surfaces in the vehicle and buff the surfaces with a clean, soft cloth.
- Spray window cleaner on a cloth or paper towel and methodically clean the windows.

- Traditional Power Wash Cleaning
  - Poor roughly an ounce (or as directed on the bottle) of shampoo into the pump sprayer. Spray the bucket with water to generate some lather and suds.
  - Take the vehicle wash brush, starting from the top of your vehicle, gently guide your brush across a section of the vehicle, using little to no added pressure. Be sure to repeat these steps until your entire vehicle has been washed.
  - All vehicles are to be air dried after wash. After wash is complete, the sewer drain must then be switched back to storm from sanitary.
- Cleaning Truck Hopper
  - Lock Out/Tag Out – *Lockout* is the isolation of energy from any system (a machine, equipment, or process) which physically locks the system in a safe mode. *Tagout* is a labelling process that is always used when lockout is required. The process of tagging out a system involves attaching or using an indicator that includes information on why the lockout is needed.
  - At this time the hopper is now ready to be cleaned. Follow the steps for *Vehicle/Equipment Prewash* followed by steps for *Traditional Power Wash Cleaning.*
- Wash Rack Clean-up
  - Once all vehicles have been washed thoroughly, all debris must be removed and the area is then power washed to remove all sediments.

SECTION 5: POLLUTION PREVENTION MEASURES

5.1 In accordance with Section II.B.6.a of the 2013-2018 MS4 Permit, the City developed written policies and standard operating procedures to address the daily practices that will minimize or prevent pollutant discharges from daily operations and municipal facilities.

- Wash water is prohibited from entering the storm sewer system.
- Do not clean or wash vehicles or equipment, including lawn care equipment, near a storm drain. If washing vehicles outdoors, use designated wash racks that drain to sanitary sewers to wash vehicles and equipment or use a system that contains wash water and properly dispose of it.
- Use biodegradable, phosphate free soap when washing vehicles.
- Minimize soap and water use when washing vehicles.

- Clean grass from lawn care equipment using dry methods, such as brooms, preferably on grassed surfaces. If lawn care equipment is cleaned using brooms on impervious surfaces, clean-up all materials using dry methods, such as sweeping.
- Keep vehicles and other equipment clean, and do not allow a build-up of oil or grease.

5.2 Vehicles and equipment may be cleaned using one of the following methods that prevent wash water from entering the storm sewer system:

- **Washrack**
  - When using the dedicated washrack at 133 Quaker Lane, ensure that the grate inlet at the washrack is draining to the sanitary sewer by engaging valve that switches from the storm sewer to the sanitary sewer.
  - When done using the washrack, ensure the valve to the sanitary sewer has been disengaged and that the drain is now draining to the storm sewer.
- **Contain / Capture Wash Water**
  - When using a system that contains all wash water, such as blocking storm drains or using a wash kit, adsorbent boom, or berm, collect and dispose of all wash water in the sanitary sewer.
  - Follow the manufacturers' directions for all proprietary systems and kits that capture wash water ("Read the Label").
  - Do not dispose of any wash water in the storm sewer or on grassed areas.
  - Clean wash equipment on grassed surfaces or in areas that drain directly to the sanitary sewer.
- **Car Wash Vendor**
  - Wash vehicles at the commercial car wash facility under contract with the City.

SECTION 6: TRAINING AND DOCUMENTATION

Training

- The MS4 permit requires that employees are trained in stormwater pollution prevention and good housekeeping, and how to recognize and report illicit discharges.

Documentation

- Maintain a record of all employees trained and training topics.

SECTION 6: REFERENCE

- Standard Operating Procedures for Weber County Storm Water Coalition (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Resources\SOPs_Weber_County.pdf)
- Street Maintenance Standard Operating Procedure for Storm Water Control for Municipality of Anchorage Watershed Management Program (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Resources\App E1 St Maint SOPs for SW Control.pdf)
- Vehicle Wash Compliance for City of Alexandria Fire Department (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Fire Dept\GO 13-030 Vehicle Wash Compliance 8-7-13.pdf)
- Vehicle Wash Compliance Certification Form for Prohibition of Municipal Vehicle Washawater Discharge to Storm Drain System, City of Alexandria (\\Tes01\DeptFiles\Tes\envqlty\Stormwater\MS4 Permit\2013-2018 MS4 Permit Cycle\Program Plan Update FY15\PY2 Program Plan Updates\SOPs for Daily Operations\Vehicle Wash Compliance Certification Form Final 07.01.2013.docx)
- Safety and Personal Protective Equipment Specifications (S:\SAFETY Programs\Personal Protective Equipment\PPE Matrix by DIVISIONS\MAINTENANCE)

SECTION 7: DOCUMENT CHANGES

REV Level	Purpose of Change	Changes	Date of Previous Revision
Initial	New	None	NA

Alexandria Fire Department

General Order		
Subject:	**Stormwater Pollution Prevention**	**GO # 15-003**
Approved:	**Dwayne Bonnette, Assistant Chief**	**Date: 6/30/2015**

1.0 BACKGROUND

1.1 Discharges into waterways from storm sewer systems are regulated under the Virginia Stormwater Management Act, the Virginia Stormwater Management Program (VSMP), and the Clean Water Act. The Virginia Department of Environmental Quality (VDEQ) issues and regulates these discharges throughout the State by issuing Municipal Separate Storm Sewer System (MS4) permits to local and municipal jurisdictions with compliance requirements. Failure of local and municipal governments to comply with the terms of their permits will result in fines from VDEQ and/or the Environmental Protection Agency (EPA).

1.2 The provisions of the MS4 permit require local and municipal governments to develop, maintain and enforce a program that includes six control areas, including detection and elimination of illicit discharges; controlling construction stormwater runoff; post-construction stormwater management; and pollution prevention and good housekeeping policies for government processes and employees.

1.3 The City's permit explicitly requires the city to "Prevent the discharge of municipal vehicle wash water into the Municipal Separate Storm Sewer System (MS4) by July 2013." Vehicle wash discharge contains metals and asbestos from brake dust, grease and oils from the vehicle, and other pollutants that become attached to the vehicle from road grime. Stormwater filter systems that have been installed at some Fire Department facilities only filter sediment, they do not filter oils, metals, and other pollutants from the water.

2.0 PURPOSE

2.1 This policy establishes pollution prevention and good housekeeping practices to support the City's compliance of the MS4 permit.

3.0 APPLICABILITY

3.1 This policy applies to all Fire Department employees.

4.0 DEFINITIONS

4.1 **Vehicle Wash:** any fixed or mobile facility where the manual, automatic, or self-service exterior washing of vehicles is conducted. It includes, but is not limited to, automobiles, trucks, motor homes, buses, motorcycles, ambulances, fire trucks, tractor trailers, and other devices that convey passengers or goods on streets or highways (9VAC25-194-10)

4.2 **Heavy Duty Vehicle:** larger apparatus, such as engines, trucks, rescue squads, medic units, and other large specialty vehicles.

4.3 **Light Duty Vehicle:** cars, pickup trucks, and sport utility vehicles.

4.4 **Nonpoint Source Pollution:** pollution caused by rainfall, snowmelt, and other water sources that carry natural and man-made pollutants. These pollutants include: oils, grease, toxic chemicals and metals, soap and cleaning chemicals, fertilizers, insecticides, pesticides, sediment, etc.

4.5 **Vehicle Wash Containment System:** A deployable system that is placed around a vehicle to collect all vehicle wash water. The wash water is collected and disposed of through the sanitary sewer system.

4.6 **Sanitary Sewer System:** Any drain that discharges into the sewer system that is used to dispose of sewage.

5.0 POLICY

5.1 During non-emergency operations, all personnel will take necessary measures to prevent Nonpoint Source Pollution runoff from entering the storm water system.

5.2 Heavy Duty Vehicles will be rinsed or washed inside a fire station's apparatus bay with a floor drain that discharges to the sanitary sewer system. If the fire station does not have a floor drain that discharges to the sanitary sewer, or the drain is inoperative, a Vehicle Wash Containment System will be deployed to contain and properly dispose of the vehicle wash water.

5.3 Light Duty Vehicles will utilize the current City contracted car wash vendor.

5.4 Fuel dispensing stations will be provided with spill containment supplies and emergency pump shut-offs. All spills will be treated immediately. The hazardous materials team will be called for any spill greater than the local resources are capable of handling.

5.5 Vehicles and equipment must be attended during active fueling.

6.0 RESPONSIBILITIES

6.1 All personnel are responsible for ensuring their non-emergency work does not result in Nonpoint Source Pollution.

6.2 Station Managers are responsible for establishing specific housekeeping and vehicle wash procedures for their facility.

7.0 PROCEDURE

7.1 Vehicle maintenance and repair will be conducted indoors to the greatest extent possible.

7.2 When vehicle maintenance or repair is performed outdoors, use an impervious surface and protect storm drains from spills and leaks. Vehicle maintenance and repair will not be performed during a rain event.

7.3 Clean up spills and leaks promptly using dry methods, such as absorbent pads, loose absorbent and sweeping.

7.4 Do not wash equipment, including lawn care equipment, on any impervious surface that leads to the storm drain system.

7.5 Remove grass from lawn care equipment using dry methods, such as a broom, preferably while on grassed surfaces.

7.6 Use oil drip pans underneath the motor area of Heavy Apparatus Vehicles that are stored indoors and outdoors. Properly dispose of all liquids, oils, and grease collected in drip pans. The pans shall be cleaned in a manner that prevents Nonpoint Source Pollution.

7.7 Vehicles washed at fire stations will only be washed using biodegradable soap.

7.8 Vehicles washed using a Vehicle Wash Containment System must deploy the system prior to use of any water or soap products. Any wash water collected must be disposed of through the Sanitary Sewer System.

8.0 CANCELLATIONS

8.1 This policy cancels Standard Operating Procedure #13-030, Vehicle Wash Compliance issued on August 8, 2013.

City of Alexandria

Municipal Separate Storm Sewer System (MS4) Program Plan

Attachment 1 – Phase III Chesapeake Bay TMDL Action Plan

City of Alexandria, Virginia

Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan for 100% Compliance

Original Submission November 2024
Revised March 2025

Prepared by: City of Alexandria, Virginia, Department of Transportation and Environmental Services
Infrastructure and Environmental Quality, Stormwater Management Division



For compliance with 9VAC25-890-30 General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems, Permit No. VAR040057

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Summary of Revisions

Date	Summary	Name
11.1.2024	Original Submission	J. Lassetter
3.18.2025	Revised Four Mile Run Stream Restoration reductions (Phase 1) and revised anticipated redevelopment reductions (Phase 3) as follows: Sub-section 10.6 added narrative and a new table, 17(b); sub-section 10.10 updated table 22; sub-section 11.4 updated table 27; section 12 updated table 28; sub-section 12.3 updated narrative and updated table 31; sub-section 12.4 updated table 32.	J. Lassetter

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City of Alexandria, Virginia

Phase 3 Chesapeake Bay TMDL Action Plan for 100% Compliance

Executive Summary

The purpose of this Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan (Phase 3 Action Plan) is to comply with the Registration Statement requirements in the 2023 – 2028 General Virginia Pollution Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4), No. VAR040057.

The City's Phase 1 Chesapeake Bay TMDL Action Plan documenting the City's proposed strategies to achieve 5% of the overall goals for total nitrogen, total phosphorus, and total suspended solids (sediment) goals, respectively, by June 30, 2018, was approved by Virginia Department of Environmental Quality (DEQ) on January 12, 2016. The City's Phase 2 Chesapeake Bay TMDL Action Plan documenting the City's proposed strategies to achieve 40% of the overall goal for total nitrogen, total phosphorus, and total suspended solids (sediment) goals, respectively, by June 30, 2018, was approved by DEQ September 24, 2019.

Total suspended solids was removed as a pollutant of concern from the MS4 general permit by DEQ and is no longer includes a required pollution targets for Phase 3. EPA evaluated Virginia's Phase III Watershed Implementation Plan December 19, 2019, and noted that the "sediment targets will not affect the BMPs called for in the WIP [Watershed Implementation Plan] and are not intended to be the driver for implementation moving forward…". This was incorporated into the updated 2023-2028 MS4 general permit through the removal of sediment as a pollution target under Part II TMDL Special Conditions A. Chesapeake Bay TMDL special condition.

This Phase 3 Action Plan has been developed to document preliminary sufficient measures to be implemented to meet the 100% compliance targets identified in the 2023-2028 MS4 general permit. The focus of this Action Plan is to provide the means and methods and a general level of effort that will be needed for the City to meet the 100% cumulative Chesapeake Bay TMDL reduction targets in the MS4 permit for phosphorus and nitrogen developed by the United States Environmental Protection Agency (EPA) in December 2010.

During the Phase 1 Action Plan, the following tasks were completed and/or documented:

- Delineation of the MS4 service area including the breakdown of pervious and impervious area;
- Calculation of the pollutant baseline loads for MS4 service area;
- Calculation of the increased pollutant loads from redevelopment projects during July 1, 2009, to June 30, 2014 where an average land cover condition greater than 16% impervious cover was used;
- Calculation of pollutant loads from Grandfathered projects that are required to be offset prior to project completion;
- Mean and methods to meet the Phase 1 target pollutant load reductions;
- Calculation of the total pollutant reductions required for Phase 1; and

- Calculation of the pollutant reductions associated with the proposed strategies and corresponding costs.

The Phase 2 Action Plan addressed pollutant reductions to meet or exceed 40% of the L2 scoping run in addition to the offsets required from July 1, 2009, to June 30, 2019 redevelopment projects and grandfathered projects. Table E1 provides a summary of the required pollutant load reductions during Phase 2.

Table E1 – Summary of Required Reductions for Existing Sources

Pollutant	40% Cumulative L2 Reduction (lbs/yr)	2009-2019 New Sources Offsets	Grandfathered Offsets (lbs/yr)	Total Phase 2 Reductions[1]
TN	3,038.8	13.0	-30.6	**3,021.3**
TP	401.8	2.3	-8.7	**395.4**
TSS	344,775	1,911	-3,676	**343,010**

[1] *Total reductions to be addressed by the end of the second permit cycle.*

The City has an "all of the above" strategy, which is an iterative, adaptive approach that considers a range of potential strategies based on extant conditions, which enables the City to ramp up planning and design to increase the likelihood of success in achieving the reduction goals required in the third MS4 permit cycle.

Means and methods to meet the target pollutant load reduction are described in Section 9 and include the following:

- Credits for January 1, 2006, to July 1, 2009, stormwater BMPs
- Credit for post July 1, 2009, stormwater BMPs
- Projected Redevelopment
- New Regional Facilities and Retrofits
- Retrofits on City Properties
- Retrofits of City Rights-of-Way
- Tree Planting
- Urban Stream Restoration
- Public-Private Partnerships (P3s)
- Urban Nutrient Management
- Land Use Change
- Forest Buffers
- Nutrient Trading
- Bi-Lateral Trading with AlexRenew

In addition to the strategies listed above, two specific projects have been identified to meet the required reductions for the Phase 2 permit cycle. The Lake Cook Retrofit project was substantially complete in September 2018; therefore, it was moved from the end of the Phase 1 permit cycle to the Phase 2 cycle. The Ben Brenman Pond Retrofit also was completed during the Phase 2 cycle and includes modifying an existing wet pond to meet the Virginia BMP Clearinghouse guidance for a Level 2 wet pond and increasing the acreage draining to the pond. This allowed the City to take credit for the variation in the pollutant removal.

How is pollution removed through Best Management Practices?

Best management practices (BMPs), also known as Stormwater Management Facilities (SMFs), remove pollution by allowing rainwater and snowmelt to soak into the system which helps to filter out pollutants, such as nutrients and sediment, and allow 'treated' water to return to waterways. Each type of BMP (i.e., wet pond, green roof, infiltration practices, etc.) uses different processes engineered to treat stormwater and are defined in the Virginia BMP Clearinghouse. Each BMP type has a specific removal efficiency assigned to it based on several factors and the associated removals are calculated using the Virginia Runoff Reduction Method which is based on the acres treated, type of area draining to the BMP, and type of practice.

Phase 2 reductions were met through the projects listed in Table E2, which includes associated pollutant reductions and estimated costs. Due to the progress made during Phase 1, the reductions in Phase 2 exceeded the required reductions as indicated in Table E3. In addition to the projects and BMPs that helped to achieve pollution reductions, three BMPs had to be removed from the City's inventory because they were found to be removed or in major disrepair during Phase 2. These are: 1) Vegetated Roof; 2) 2010 developer-lead stream restoration on the lower portion of Strawberry Run; and 3) a StormFilter™ Stormwater Treatment System that was no longer in operation and not able to be repaired. The Credits received for these facilities were removed from BMP Warehouse; the Bay TMDL calculations; and reflected in this Phase 3 Bay TMDL Action Plan.

Table E2 – Phase 2 Permit Cycle Pollutant Reductions and Costs

Project or BMPs	TN Removed (lbs/yr)	TP Removed (lbs/yr)	TSS Removed (lbs/yr)	Approximate City Cost
FY2019-FY2024 BMPs[1]	124	44	20,499	$0
2009-2019 New Sources Offsets[2]	-13	-2.3	-1,911	$0
Grandfathered Offsets	30.6	8.7	3,676	$0
Lake Cook Retrofit	1,587	163.3	131,334	$4.5M
Ben Brenman Pond Retrofit	946.4	151.3	87,734	$3.75M
TOTAL PHASE 2	**2,675**	**365**	**241,332**	**$8.25M**

[1]*Developer bears installation and long-term operation and maintenance costs for private facilities.*
[2]*Negative values indicate net pollutant reductions.*

Table E3 summarizes the progress achieved at the end of the Phase 2 permit cycle. Based on progress made in the first and second permit cycles, the City far exceeded the 40% pollutant reduction requirement and made substantial progress towards meeting the 100% reduction goal. This is consistent with the City's internal goal to exceed the mandated targets to smooth the ascent of the ramp up towards the third permit cycle's 100% cumulative reductions.

Table E3 summarizes the final progress at the end of the Phase 2 permit cycle:

Table E3 – Phase 1 and 2 Progress

Pollutant of Concern	City Phase 1 & 2 Actual Reductions (lbs/yr)	L2 Total Required Reductions (lbs/yr)	Percent of L2 Total Required Reductions Met
TN	5,284	7,597.03	70%
TP	707	1,004.40	70%
TSS	576,801	861,937	67%

The City anticipates meeting the required reduction goals by the end of the permit cycle per the strategies provided herein. This Phase 3 Action Plan details how the City will meet these goals through credits obtained from redevelopment along with the "all of the above" strategy, an iterative, adaptive approach that considers a range of potential strategies based on extant conditions. The main strategy to meet the reminder of the nitrogen and phosphorus targets are through the anticipated availability of pollution reduction credits generated from the Alexandria Renew Enterprises – the City's wastewater treatment authority – River Renew Combined Sewer Overflow (CSO) mitigation project (River Renew) through the use of bi-lateral trading consistent with the executed agreement between the City and Alexandria Renew. This project will capture and store combined stormwater runoff and sanitary flows during wet weather and send the captured flow to the advanced wastewater treatment plant to be treated prior to discharge.

Though there are no direct City costs associated with the Project or BMPs indicated in Table E4 for the Phase 3 pollution reduction activities, there are still associated costs. For example, the Bi-Lateral Trading project cost $615 million and the majority will be paid for by rate payers in the City over time, in addition

to funds secured at the state-level. The City is also sharing in the funding of the Landmark Redevelopment and the North Potomac Yard Redevelopment through land leases, tax incentives, Metro funding, transportation upgrades, and other means. So while there is no cost listed in the table due to the lack of direct funding, the City does provide funding and proffers to fund these projects for the pollution reduction credits.

The City continues to explore opportunities to meet the requirements of the 2028 deadline through redevelopment and retrofits and plans to utilize bi-lateral trading on an annual basis, as needed.

Table E4 – Phase 3 Permit Cycle Anticipated Pollutant Reductions

Project or BMPs	TN Removed (lbs/yr)	TP Removed (lbs/yr)	Approximate City Cost
Lucky Run Stream Restoration	658	257	$1.8M
Bi-Lateral Trading	1,500	500	$0
Anticipated Annual Redevelopment through FY2028	778	163	$0
TOTAL PHASE 3	2,936	920	$1.8M

[1]*Numbers are estimated and dependent on the performance of the tunnel and storage system.*

As mentioned above, the 2023 – 2028 MS4 permit removed total suspended solids/sediment from the Chesapeake Bay TMDL special conditions. Table E5 summarizes the Phase 3 expected reductions, which account for 100% of the TN and TP goal.

Table E5 – Phase 3 Anticipated Reductions

Pollutant of Concern	Total Phase 1 & Phase 2 Reductions (lbs/yr)	Anticipated Phase 3 Reductions (lbs/yr)	Total Phase 1 through 3 Reductions (lbs/yr)	Total Required Reductions (lbs/yr)	Percent of Total
TN	5,284	2,936	8,220	7,597.03	108%
TP	707	920	1,627	1,004.40	162%

Introduction

The purpose of this Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan is to comply with Part II A "Chesapeake Bay TMDL special condition" of the 2023 – 2028 General Virginia Pollution Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4), No. VAR040057 issued to the City of Alexandria (City) effective November 1, 2023. Virginia Department of Environmental Quality (DEQ) also requested a draft of Action Plan be submitted with the MS4 Permit Registration Statement that has been revised into this current version.

Effective June 31, 2024, the City achieved 101% of the 100% pollution reduction target through stormwater best management practices based on tracking phosphorus pollution (TP). This Phase 3 Action Plan provides an outline of the City's path to achieve 100% pollution reduction goals. This action plan process began with the issuance of the 2013 – 2018 MS4 permit which required the submission and approval of a Phase 1 Chesapeake Bay TMDL Action Plan (approved by DEQ in 2016) to meet at least 5% of the targeted pollutant reductions and the subsequent issuance of the 2018 – 2023 MS4 permit requiring the submission and approval of a Phase 2 Action Plan (approved by DEQ in 2019) to meet at least a cumulative 40% of the targeted pollutant reductions.

The Phase 3 Action Plan is developed to document that sufficient measures will be implemented to meet the compliance targets identified in the 2023 – 2028 MS4 permit to demonstrate compliance with the required final 60% reductions (for a total of 100%) from existing sources as of June 30, 2009, increased loads from 20092019 New Sources, and increased loads from Grandfathered projects (9VAC25-870-48). The Phase 3 Action Plan includes the requisite planning items found in the 2023-2028 Permit Part II A and is developed according to the procedures provided in Virginia DEQ Guidance Memo No. 15-2005 dated May 18, 2015 (Phase 1 Guidance). In a letter dated May 2, 2018, regarding the reissuance of VPDES General Permit No. VAR040057, it was stated that while the Action Plan guidance is currently being updated, the most current guidance document is still Guidance Memo No. 15-2005.

The focus of the Phase 3 Action Plan is to provide the means and methods and a general level of effort that will be needed for the City to meet the final 60% Chesapeake Bay TMDL reduction targets in the current MS4 general permit for phosphorus and nitrogen developed by the United States Environmental Protection Agency (EPA) in December 2010. Due to the City's approach to front load achievement through an aggressive water quality program, 70% of the TMDL targets for phosphorus and nitrogen, respectively, have been accounted for during Phase 1 and 2. While DEQ removed the requirement to continue to report on sediment removal in the 2023-2028 MS4 general permit, based on the guidance from EPA, it is of note that sixty-four (64%) of the sediment target was achieved through the Phase 2 Action Plan. This Phase 3 Action Plan focuses on the remaining pollution reduction requirements for phosphorus and nitrogen.

The TMDL contains aggregate wasteload allocations (WLAs) for regulated stormwater with no specific WLAs for the City's MS4 service area. The Virginia Chesapeake Bay TMDL Phase I Watershed Implementation Plan (WIP I) submitted by the Commonwealth to EPA on November 29, 2010, contains general requirements for permittees. The Phase II Watershed Implementation Plan (WIP II) submitted to EPA on March 20, 2012, builds on the WIP I as the state's primary planning tool to establish strategies, targets, and expectations for different sectors, including urban stormwater for local governments. The Phase

II WIP requires the implementation of urban stormwater controls to meet specific nutrient and sediment reductions – Level 2 (L2) scoping implementation – to address the TMDL. The Draft Phase III Watershed Implementation Plan (WIP III) submitted April 5, 2019, includes new state initiatives as well as existing federal, state and local programs, and local area planning goals for unregulated areas provided by the planning district commissions and soil and water conservation districts and augmented by DEQ. The WIPs identify the use of state-issued stormwater permits – such as MS4 permits – as the tool for compliance by requiring target reductions for the TMDL.

The MS4 general permit reissued by DEQ, effective July 1, 2013, contained special conditions which required the implementation of strategies to meet 5% reductions of the overall L2 scoping for nitrogen, phosphorus and sediment, along with offsets for new sources and grandfathered projects. This 5% goal (Phase I) was to be implemented no later than June 30, 2018. The 2018-2023 MS4 general permit, effective November 1, 2018, requires implementation of strategies to meet an additional 35% of the L2 scoping run for a total reduction at the end of the permit term of 40% of L2. The 2023-2028 MS4 general permit, effective November 1, 2023, requires the implementation of strategies to meet the final 60% of the L2 scoping run for the final reduction at the end of 2028 of 100% of L2. Of note is the requirement to reduce total suspended solids has been removed from the permit.

According to the WIP II, WIP III, and MS4 general permit, the City would get three full MS4 general permit cycles to implement the required L2 scoping reductions (Phase 1: 2013-2018; Phase 2: 2018-2023; and Phase 3: 2023-2028). During the first cycle (Phase 1), the City was required to implement practices sufficient to achieve 5% of the reduction targets. During the second cycle (Phase 2), the City was required to implement additional practices sufficient to achieve 35% reductions for a total of 40%. Finally, the remaining 60% for the total reduction target must be achieved by 2028 (Phase 3). Pursuant to the permit, this Phase 3 Action Plan is required to address the final 60%, or Phase 3, reductions required during the permit term. While the WIP II and WIP III contain a range of strategies applicable to urban land uses, the City can only be required to implement strategies that are enforceable through the MS4 general permit based on the City's regulated land contained in the MS4 service area as defined.

The technical and fiscal challenges of meeting the Chesapeake Bay TMDL as required in the MS4 general permit are significant. Since the development of the TMDL and WIPs, the City engaged internal and external support to assist in an analysis to meet the reduction requirements and to develop a better overall understanding of the potential cost and feasibility of different combinations of stormwater best management practices (BMPs). This Phase 3 Action Plan builds on the previous technical and planning-level work, to include the previous action plans, and refines previous analysis of the potential strategies discussed by the City's internal stakeholders – the Water Quality Steering Committee and Water Quality Work Group – and external stakeholders to meet the MS4 general permit target reductions.

The "means and methods" or reduction strategies discussed require significant resources. This report focuses on strategies to meet the total 100% reduction goals that must be implemented by October 31, 2028. To get ahead of this large final push, the City set an internal goal to go beyond the permit requirements for the first and second permit cycles to achieve the escalating total reductions in the required timeframe towards meeting the overall total. Concrete strategies to achieve the final 60% are presented, with the flexibility to choose from a menu of options as contingency measures. The City's "all of the above" strategy

is an iterative, adaptive approach that considers a range of potential strategies based on extant conditions, which enables the City to ramp up planning and design to increase the likelihood of success in achieving the reduction goals required in the third MS4 permit cycle.

Following development of the Bay TMDL and during the development of the WIPs, the City engaged in the process of planning and analyses of potential strategies, including the implementation of structural stormwater quality BMPs, towards meeting the target pollutant reductions. The first official planning-level exercise in development of the Phase 1 Action Plan began in fall 2011 with the first draft of the "Chesapeake Bay TMDL Analysis and Options" in February 2012 and the final draft in August of 2012. This planning effort focused first on the overall requirements by examining potential strategies, identifying potential gaps, and order of magnitude costs to implement the reductions. The City's Phase 1 Action Plan – approved by DEQ on January 12, 2016 – outlined means and methods to not only meet the required 5% reduction targets but to make substantial progress in meeting the Phase 2 reduction targets. The City's Phase 2 Action Plan (approved 2019) focused on meeting the 40% requirements in the 2018-2023 MS4 general permit. The Phase 3 Action Plan focuses on meeting 100% of the total pollution reduction goals.

The Phase 3 Action Plan:

1. Documents the progress made during the first and second permit cycles including updated calculations based on final project data;
2. Provides general information regarding the City's process for the L2 required reductions; and
3. Outlines potential strategies that may be implemented in the 2023 – 2028 permit cycle.

This Phase 3 Action Plan includes the following sections:

- Current Program and Legal Authority
- Delineation of the MS4 Service Area
- Existing Source Loads and Calculating Target Reductions
- Increased Loads from 2009 – 2019 New Sources
- Increased Loads from Grandfathered Projects
- Estimated Future Grandfathered Projects
- Phase 1 Action Plan and Progress
- Phase 2 Action Plan and Progress
- Means and Methods to Meet Target Reductions
- Estimated Cost of Implementation

1. Current Program and Legal Authority

The City takes pride in being a waterfront community on the Potomac River – the nation's river – and understands the integral part that our water resources play in our economy, our environment and the social well-being of our community. Being a waterfront community in the Chesapeake Bay, the City has long enacted local environmental ordinances to protect our water resources. In 1992, the City incorporated requirements of the Chesapeake Bay Act for protection of land in the watershed and stormwater quality into local ordinance through Article XIII of the Zoning Ordinance – the Environmental Management Ordinance. During the process of adopting Bay Act requirements, the City took a more conservative route

and chose to be more protective by implementing 100-foot Resource Protection Area (RPA) requirements in the City, and designating all other non-RPA land acreage as Resource Management Areas (RMAs). The City exceeded the Bay Act requirements by implementing a 50-foot buffer requirement for natural intermittent streams and isolated wetlands. In addition to meeting the minimum water quality requirements for development and redevelopment, the City adopted a more stringent requirement to provide stormwater treatment for the first one-half-inch of runoff from all onsite impervious surfaces, known as the "water quality volume default", which provides reductions beyond those mandated. The City adopted amendments to the Environmental Management Ordinance that incorporate the Virginia Stormwater Management Program (VSMP) regulations, while retaining the more stringent water quality volume default requirements and 50-foot buffer application, and currently operates the VSMP locally.

The City was initially issued an MS4 general permit in 2003 to regulate stormwater discharges. Successive five-year permits have been reissued, with the City currently regulated under the 2018-2023 MS4 general permit and the 2023-2028 MS4 general permit effective November 1, 2023. Since the Phase 2 Action Plan, there have not been any new or modified legal authorities that have been implemented to meet the City's Chesapeake Bay required pollutant reductions.

2. Delineation of the MS4 Service Area

The City's MS4 general permit is the regulatory mechanism used to require implementation of stormwater quality BMPs or other strategies necessary to meet the Chesapeake Bay TMDL. The permit requires the City to define the size and extent of the MS4 service area, to include the existing impervious and pervious area within the service area – the regulated area. Areas of the City 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 – the unregulated area. Properties within the jurisdictional boundary that are regulated under a separate VPDES stormwater permit, forested areas, wetlands, and open waters are also not considered part of the MS4 service area.

As part of the Phase 1 Action Plan, areas were distinguished between regulated and unregulated land areas to define the MS4 service area. To perform this analysis, the City utilized local ArcGIS data and tools, a review of other state stormwater permits under the VPDES program, and discussions with regulating agencies. A digital elevation model (DEM) for the entire City was built using two-foot contour data. Storm sewer pipes, represented as lines, were burned into the DEM. MS4 outfall locations, stored as points in ArcGIS, were treated as small watershed outlets and the ArcGIS Desktop Hydrology toolset was utilized to generate small watersheds draining to each MS4 outfall. These small watersheds were manually reviewed and edited for greater accuracy. Finally, the breakdown of impervious and pervious area was determined by clipping the impervious surface cover to the MS4 service area, with the assumption that all non-impervious areas were pervious.

The above approach coupled with GIS impervious surface data rendered a delineation of impervious versus pervious areas within the regulated and unregulated areas. Unregulated areas include land with direct drainage to surface waters with no connection to the MS4, stream corridors, and areas covered under separate MS4 or VPDES industrial stormwater permits. The exclusion of these categories from the MS4 regulated area was initially confirmed by the Virginia Department of Conservation and Recreation (DCR) during their previous administration of the MS4 program. Additional confirmation of this approach

is provided in the Phase 1 Guidance and current 2013-2018 MS4 general permit. Federal lands not covered under a separate stormwater permit were not simply excluded but were categorized as regulated or unregulated based on this above approach. The Combined Sewer System (CSS) in the Old Town area is covered under a separate non-stormwater related VPDES permit and is considered independently of the MS4 in the Chesapeake Bay TMDL.

Lands associated with separate individual or general MS4 or industrial stormwater permits were removed from the Alexandria MS4 service area totals and are listed in Table 1.

Table 1 – Permit Holders Excluded from MS4 Service Area

Permit Holder	Permit
National Park Service: George Washington Parkway & Jones Point Park	MS4
Northern Virginia Community College	MS4
VDOT	MS4
United Parcel Service - Alexandria	Industrial
US Postal Service - Alexandria Vehicle Maintenance Facility	Industrial
Covanta Alexandria Arlington Incorporated	Industrial
WMATA - Alexandria Metro Rail Yard	Industrial
Virginia Paving Company Alexandria Plant	Industrial
Alexandria Renew Enterprises Wastewater Treatment Plant	Industrial
NS Thoroughbred Bulk Terminal Alexandria	Industrial

Based on the above analysis, the estimated land areas draining to the Alexandria MS4 service area, non-Alexandria MS4, and CSS is presented in Table 2. Figure 1 shows the size and extent of the delineated pervious and impervious land uses for the MS4 service area in green. A map of the MS4 service area is also available online via the "Sewer Viewer".

Table 2 – Alexandria MS4, Non-Alexandria MS4, and CSS Land Area[1]

Land Area	Impervious (ac)	Pervious (ac)	Totals (ac)
Alexandria MS4 Service Area (regulated)	3417.24	3991.57	7408.81
CSS (regulated)	398.75	177.85	576.60
Non-Alexandria MS4 (unregulated)	452.17	1387.68	1839.85

[1]*Approximate acreage in Old Town – the historic portion of the City.*

Figure 1 – Regulated City of Alexandria MS4 (in Green)



3. Existing Loads and Compliance Reductions

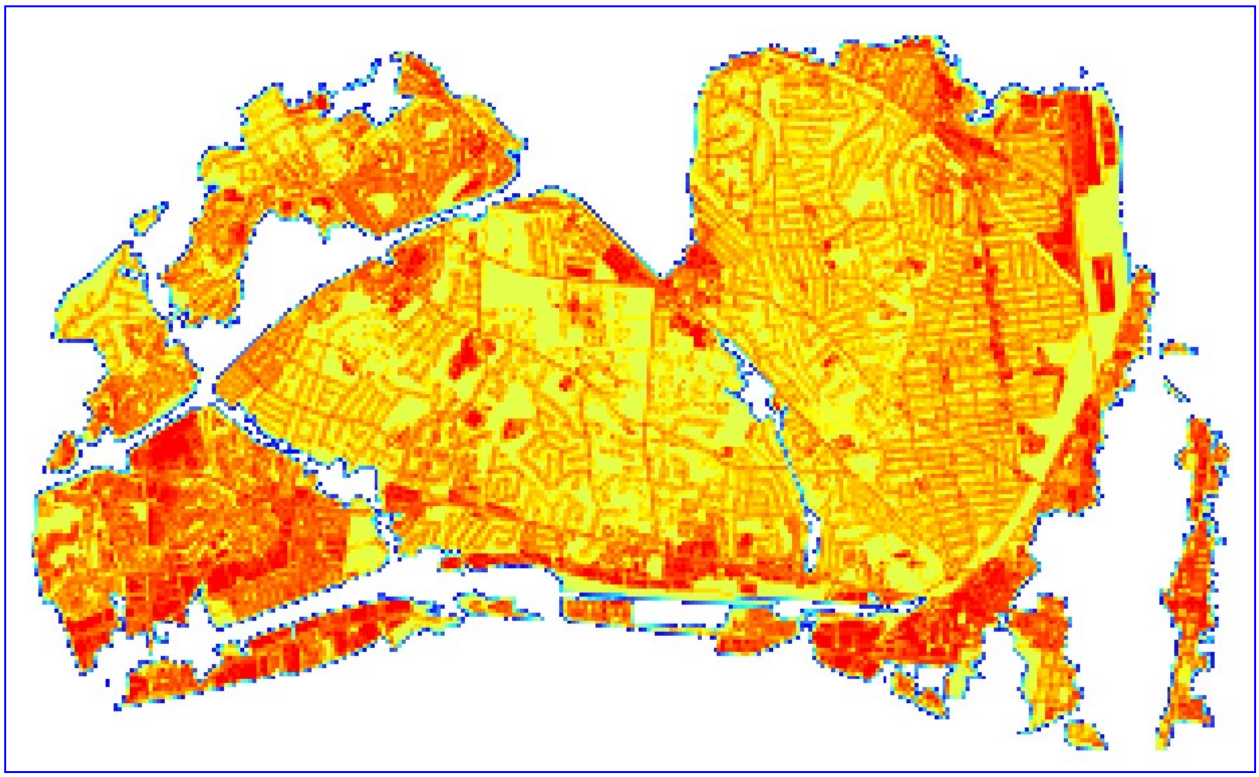
Baseline loads for nitrogen, phosphorus, and sediment were established using the City's impervious surface GIS data that represent the best available data for total existing acres served by the MS4 as of June 30, 2009, along with loading rate data for each pollutant of concern found in Table 2b (Potomac River Basin) of the 2013-2018 MS4 general permit. In working with the City's consultant, AMEC Environment and Infrastructure, ALERT (AMEC Loading Estimation and Reduction Tool) was used to calculate total loads from the MS4 service area and generate spatial data to help visualize areas of higher and lower loading rates.

Total loads from existing impervious and pervious sources are presented in Table 3. Figure 2 is a "heat map" that presents existing nitrogen loads in a graphic format that was generated using ALERT. Existing loads for phosphorus and sediment will generally show similar intensity differentials. The gradient of the colors presented on the map represent the estimated intensity of nitrogen loads across the City with the darker, red color showing areas of more intense loading and lighter yellow color being less intense.

Table 3 – Existing Source Loading Rates for Nitrogen, Phosphorus, and Sediment

Subsource	Pollutant of Concern	Est. MS4 Service Area (ac)	Loading Rates (lbs/ac)	Load per Land Cover (lbs.)	Total Existing Load (lbs.)
Regulated Impervious	Nitrogen	3417.24	16.86	57,614.67	**97,809.78**
Regulated Pervious		3991.57	10.07	40,195.11	
Regulated Impervious	Phosphorus	3417.24	1.62	5,535.93	**7,172.47**
Regulated Pervious		3991.57	0.41	1,636.54	
Regulated Impervious	Total Suspended Solids	3417.24	1,171.32	4,002,681.56	**4,704,399.56**
Regulated Pervious		3991.57	175.8	701,718.01	

Figure 2 – Graphic Representation of Existing Nitrogen Loads



The Phase I WIP and MS4 general permit special conditions state that MS4 permittees will need to meet L2 scoping reduction requirements for existing sources. During the first MS4 general permit cycle (2013-2018), the L2 reduction requirements were 5% while during the second cycle, 35% reductions are required, for a total of 40%. This report focuses on the final 60%, or Phase III, reductions. The L2 reductions for total nitrogen (TN), total phosphorus (TP), and total suspended solids (TSS) applied to the regulated MS4 service area are presented in Table 4.

Table 4 – Level 2 Reduction Requirements

Land Cover Type	Required Reduction		
	TN	TP	TSS
Regulated Impervious	9.00%	16.00%	20.00%
Regulated Pervious	6.00%	7.25%	8.75%

Table 5 presents the total required reductions through all three permit cycles. The total loads were calculated using 2018-2023 MS4 general permit Table 3b loading rates for the Potomac River Basin and the impervious and pervious areas within the MS4 service area. Estimated total required reductions were calculated using the total L2 scoping requirements in the Phase I WIP (Table 4, above). These represent the estimated 100% target reductions to be met by the end of the third MS4 general permit cycle.

Table 5 – Existing Source Loads and Total L2 Pollutant Reductions[1]

Land Cover Type	Pollutant	Total Existing Loads (lbs)	Estimated Total Required Reductions (lbs/yr)
Regulated Impervious	TN	97,809.78	**7,597.03**
Regulated Pervious			
Regulated Impervious	TP	7,172.47	**1,004.40**
Regulated Pervious			
Regulated Impervious	TSS	4,704,399.56	**861,936.64**
Regulated Pervious			

[1]*Approximate L2 scoping total reductions.*

Table 6a presents the final estimated pollutant reductions broken out by MS4 general permit cycle based strictly on meeting 5%, 35%, and 60% (or total) of the L2 scoping requirements.

Table 6a – Estimated Pollutant Reductions Broken Out by MS4 Permit Cycle[1]

Permit Cycle	TN (lbs/yr)	TP (lbs/yr)	TSS (lbs/yr)
First MS4 Cycle Target (5%)	379.85	50.21	43,096.83
Second MS4 Cycle Target (35%)	2,658.96	351.54	301,677.82
Third MS4 Cycle Target (60%)	4,558.22	602.64	517,161.98[2]
TOTAL REDUCTION (100%)	**7,597.03**	**1,004.40**	**861,936.64**

[1]*These estimates are based on percentages of the L2 requirements.*
[2]*The 2023-2028 MS4 general permit removed the TSS requirement from the Third MS4 Cycle Target.*

The 2018-2018 MS4 general permit requires the City to use permit Table 3b for the Potomac River Basin to determine the reductions required by the end of the permit cycle. For reference purposes, the 5% reduction requirements associated with the first permit cycle were TN = 379.9 lbs/ac; TP = 50.2 lbs/ac; and TSS = 43,097 lbs/ac. The second permit cycle 40% reductions can be seen in Table 6b. It should be

noted that for the City, the 2010 Census urbanized area did not change from the 2000 nor the 2020 Census urban area.

Table 6b – Second Permit Cycle Pollutant Reductions Calculated per the MS4 Permit[1]

Permit Table 3b Calculation Sheet for Estimating Existing Source Loads and Reduction Requirement for the Potomac River Basin								
		A	B	C	D	E	F	G
Pollutant	**Subsource**	**Loading rate (lbs/ac/yr)[1]**	**Existing developed lands as of 6/30/09 served by the MS4 within the 2010 CUA (acres)[2]**	**Load (lbs/yr)[3]**	**Percentage of MS4 required Chesapeake Bay total L2 loading reduction**	**Percentage of L2 required reduction by 3/30/2023**	**40% cumulative reduction required by 6/30/2023 (lbs/yr)[4]**	**Sum of 40% cumulative reduction (lbs/yr)[5]**
Nitrogen	Regulated urban impervious	16.86	3417.24	57,614.7	9%	40%	2,074.1	3,038.8
	Regulated urban pervious	10.07	3991.57	40,195.1	6%	40%	964.7	
Phosphorus	Regulated urban impervious	1.62	3417.24	5,535.9	16%	40%	354.3	401.8
	Regulated urban pervious	0.41	3991.57	1,636.5	7%	40%	47.5	
Total suspended solids	Regulated urban impervious	1171.32	3417.24	4,002,682	20%	40%	320,215	344,775
	Regulated urban pervious	175.8	3991.57	701,718	9%	40%	24,560	

[1]Edge of stream loading rate based on Chesapeake Bay Watershed Model Progress Run 5.3.2
[2]To determine the exiting developed acres required in Column B, permittees should first determine the extent of their regulated service area based on the 2010 Census Urbanized Area (CUA). Next permittees will need to delineate the lands within the 2010 CUA served by the MS4 as pervious or impervious as of the baseline date of June 30, 2009.
[3]Column C = Column A x Column B
[4]Column F = Column C x (Column D /100) x (Column E /100)
[5]Column G = The sum of the subsource cumulative reduction required by 6/30/23 (lbs/yr) as calculated in Column F.

The 2023-2028 MS4 general permit requires the City to use permit Table 3b for the Potomac River Basin to determine the final 100% reductions required by the end of the permit cycle (see Table 6c). It should be noted that the Census urbanized area did not change for the City. Further, total suspended solids was removed from the MS4 general permit as a pollutant of concern and is no longer includes a required pollution target. EPA evaluated Virginia's Phase III Watershed Implementation Plan December 19, 2019[1] and notes that the "sediment targets will not affect the BMPs called for in the WIP [Watershed Implementation Plan] and are not intended to be the driver for implementation moving forward…".

[1] EPA Letter to DEQ, December 19, 2019. Available at https://www.epa.gov/sites/default/files/2019-12/documents/va.pdf

Table 6c – Third Permit Cycle Pollutant Reductions Calculated per the MS4 Permit[1]

		A	B	C	D	F	G
Pollutant	**Subsource**	**Loading rate (lbs/ac/yr)[1]**	**Existing developed lands as of 6/30/09 served by the MS4 within the 2010 CUA (acres)[2]**	**Load (lbs/yr)[3]**	**Percentage of MS4 required Chesapeake Bay total L2 loading reduction**	**100% cumulative reduction required by 10/31/2028 (lbs/yr)[4]**	**Sum of 100% cumulative reduction (lbs/yr)[5]**
Nitrogen	Regulated urban impervious	16.86	3417.24	57,614.7	9%	5185.32	7,597
	Regulated urban pervious	10.07	3991.57	40,195.1	6%	2411.71	
Phosphorus	Regulated urban impervious	1.62	3417.24	5,535.9	16%	885.74	1,004
	Regulated urban pervious	0.41	3991.57	1,636.5	7.25%	118.65	

[1]Edge of stream loading rate based on Chesapeake Bay Watershed Model Progress Run 5.3.2
[2]The exiting developed acres are lands served by the MS4 (pervious or impervious) as of June 30, 2009.
[3]Column C = Column A x Column B
[4]Column E = Column C x Column D

4. Increased Loads from 2009 – 2019 New Sources

The City first adopted the Chesapeake Bay Act requirements into local ordinance in 1992. This included land protection and water quality requirements being adopted locally. The Bay Act required that post-construction stormwater quality requirements be calculated based on an average land cover condition. While localities were required to adopt the new stormwater quality requirements, they were given the option of setting the average land cover condition at 16% impervious – the calculated average for the Bay watershed – or using the existing average impervious area for a local watershed. Using the average impervious land cover condition existing in the City at that time was the most feasible alternative for urbanized communities like Alexandria. Requiring development to go back to 16% impervious cover would be overly burdensome given the existing urbanized conditions. Consistent with the Act, the City adopted a local average land cover condition of 41% impervious for post-construction stormwater quality design and required development to meet these criteria. This represented the existing condition, so that new development and redevelopment projects could not increase the pollutant load above this average. However, in addition to meeting the Bay Act stormwater requirements the City went a step further and adopted the more stringent "water quality volume default" requirements for development and redevelopment projects to also treat the first one-half inch depth of stormwater runoff over the site's entire impervious surface – "first flush" – for post-construction stormwater design. This more stringent requirement reduced pollution beyond the 41% impervious land cover condition. The City amended Article XIII of the Zoning Ordinance (the Environmental Management Ordinance) effective July 1, 2014, to incorporate the water quality technical criteria in the Virginia Stormwater Management Regulations

(formerly 9VAC25-870, revised to 9VAC25-875). The 2018-2023 MS4 general permit Part II.A.4 requires the City to offset increased loads from new sources initiating construction between July 1, 2009 and June 30, 2019, that disturb one acre or greater and result in a total phosphorous load greater than 0.45 lbs/ac/yr. With the implementation of the July 1, 2014, stormwater regulations and the Virginia Runoff Reduction Method, the target total phosphorous loading after construction is 0.41 lbs/ac/yr or less, which is more conservative than the 0.45 lbs/ac/yr requirement. Therefore, there have been no increased loads from new sources initiating construction between July 1, 2014, to June 30, 2019. Please note that the majority of land-disturbing activities in the City do not reach the one acre or greater threshold.

The increased loads from projects that initiated construction between July 1, 2009, to June 30, 2014, were calculated for the Phase 1 Action Plan. The City used the aggregate approach discussed in the Phase 1 Guidance to determine the increased loads from projects disturbing greater than one acre. Loading rates in permit Table 3b were used to calculate the existing (pre-site) and resultant (post-site) loads for changes in impervious and pervious area as a result of these projects. The estimated full offset was calculated by subtracting the pre-site from the post-site loadings. Since 40% reductions need to be addressed during Phase 2, the required offsets were calculated as 40% of the total. Table 7 provides net change in pollutant load, required reduction for this permit cycle, and total required offset. Detailed supporting calculations for the net load change was submitted with the Phase 1 Action Plan. It should be noted that credits from BMPs installed as part of the July 1, 2009, to June 30, 2014, projects are included in the Post-2009 BMPs in Section 9.2 and are not reflected in Table 7.

Table 7 – Increased Loads and Pollutant Reductions 2009-2019 New Sources

Pollutant	Net Load Change (lbs/yr)*	Required Reduction during second permit cycle	Additional Red. Reqd. by the end of second permit cycle (lbs/yr)
Nitrogen	32.6	40%	13.0
Phosphorus	5.8	40%	2.3
Total Suspended Solids	4,778	40%	1,911

**Reductions for BMPs related to development and/or redevelopment projects during this time are included in the July 1, 2009 to June 30, 2014 BMP Credits.*

5. Increased Loads from Grandfathered Projects

The Virginia Stormwater Management Regulations (9VAC25-870-48) provides the opportunity for qualifying development and redevelopment projects to calculate post-construction stormwater quality requirements in accordance with the old water quality technical criteria in place in the City prior to the implementation of the new state stormwater requirements effective July 1, 2014. However, 2013-2018 MS4 general permit Section I.C.2.a.(8) required the City to offset increased loads from grandfathered projects disturbing one acre or greater that initiate construction after July 1, 2014.

As discussed in the previous section, the City implemented the Chesapeake Bay Act stormwater quality requirements utilizing an average land cover condition of 41% impervious. Additionally, the City continues to retain the more stringent requirement for projects to treat the first one-half inch of runoff associated with impervious surfaces – the water quality volume default. The permit requires that the City

offset the difference between the existing impervious condition of the project and the final impervious condition when applying the 41% land cover condition requirement. The City maintains a BMP database in a Microsoft Access format. Required BMP information and additional pertinent information is added to the database during the plan and construction record drawings review and approval processes. Projects where post-construction stormwater quality requirements were calculated using the old technical criteria and have not commenced construction but are certain to initiate construction during this MS4 general permit term, are labeled in the database as "planned." Increased loads associated with planned projects disturbing equal to or greater than one acre must be offset by the City prior to completion of the grandfathered project. Given that the permit and Phase 1 Guidance do not provide details regarding what constitutes completion, this plan assumes that approval of as-built plans and certification by a professional engineer that the stormwater management BMP is functioning properly is a reasonable measure of completion for each project.

Appendix II of the Phase 1 Guidance was followed to calculate the offsets. The simple method was used to determine the loading rate from the existing pre-site impervious cover. The simple method was also used to determine the loading rate from the final or post-site impervious cover condition. The pre-site loading rate (lbs/ac/yr) was subtracted from the post site loading rate (lbs/ac/yr), and the difference was multiplied by the post site area (ac) to yield the increased load (lbs/yr). As instructed in the 2018-2023 MS4 general permit, Table 4 was used to develop the equivalent pollutant loads for nitrogen and total suspended solids. These are the loads that must be offset prior to applying the credit received for BMPs implemented for these projects. The credits for installed BMPs were calculated according to Part III of the Phase 1 Guidance using the Chesapeake Bay Program BMP efficiencies in Table V.C.1.

These Grandfathered projects generate minimal offsets, due in large part to the existing impervious cover of the site and the City's more stringent requirements to treat the water quality volume default. Considering the most aggressive scenario that all the projects are completed before October 31, 2023, the minimal loads requiring offsetting would be in place through other strategies such as credit generated from 2006-2009 BMPs or Post-2009 BMPs discussed in Section 10. For the Phase 1 Action Plan, the City identified 14 projects implementing 25 BMPs to meet the old water quality technical criteria and the more stringent Alexandria water quality volume default. For the Phase 2 update, the City reviewed the list of these grandfathered projects and potential grandfathered projects and updated and refined the project list and corresponding pollutant calculations. There have only between two grandfathered projects been constructed thus far. As often seen with development projects, many were not built due to funding issues or other complications and others lost grandfathering status. Summary calculations are presented in Table 8.

Table 8 – Summary of Remaining Offset Loads from Grandfathered Projects

	TN (lbs/yr)	TP (lbs/yr)	TSS (lbs/yr)
Offset Loads to Reduce	20.4	3.0	1,390
Loads Removed by BMPs[1]	51.0	11.6	5,066
Total Load Remaining[2]	**-30.6**	**-8.7**	**-3,676**

[1]*These BMP reductions are not included in Post-2009 BMP credits.*
[2]*Negative values indicate net pollutant credit.*

6. Estimated Future Grandfathered Projects

Estimated future grandfathered projects may disturb greater than one acre and qualify as future grandfathered in accordance with 9VAC25-870-48. These projects have been approved or have an obligation of funding prior to July 1, 2012, but have not received coverage under the VPDES Construction General Permit prior to July 1, 2019. It is uncertain if or when these projects may initiate construction as they all have been delayed or on hold for a significant period. The City documents six projects associated with 47 acres are considered as grandfathered and have yet to begin construction. It is likely that many of these projects will never be constructed, but the City will maintain a list of these projects until the grandfathering status expires in 2024. The list of future grandfathered projects is provided in Appendix A.

7. Summary of Required Phase 2 Reductions

The 2018-2023 MS4 general permit contains special conditions requiring the implementation of strategies to meet 40% reductions of the overall L2 scoping for nitrogen, phosphorus and sediment, along with offsets for new sources and grandfathered projects. This 40% goal (Phase 2) was to be implemented no later than the end of the permit cycle. Appendix B includes the BMP calculations.

Table 9 presents a summary of the required total reductions for each pollutant of concern (POC), 2009-2019 offsets, grandfathered projects, and 40% required reductions.

Table 9 – Summary of Required Reductions for Existing Sources

Pollutant	40% cumulative L2 reduction (lbs/yr)	2009-2019 New Sources Offsets	Grandfathered Offsets (lbs/yr)	Total Phase 2 Reductions[1]
TN	3,038.8	13.0	-30.6	**3,021.3**
TP	401.8	2.3	-8.7	**395.4**
TSS	344,775	1,911	-3,676	**343,010**

[1] *Total reductions addressed by the end of the second permit cycle.*

8. Summary of Required Phase 3 Reductions

The 2023-2028 MS4 general permit contains special conditions requiring the implementation of strategies to meet 100% reductions of the overall L2 scoping for nitrogen and phosphorus. This 100% goal (Phase 3) is to be implemented no later than the end of the permit cycle.

Table 10 presents a summary of the required total reductions for each pollutant of concern (POC) in the permit. TSS pollution reduction requirements were removed from the 2023-2028 MS4 general permit.

Table 10 – Summary of Required Phase 3 Reductions

Pollutant	100% cumulative L2 reduction (lbs/yr)
TN	7,597
TP	1,004

9. Means and Methods to Meet Target Reductions

The BMP strategies discussed in this Action Plan are part of the City's "means and methods" to meet target pollutant reductions. While the WIP II and WIP III contain a range of strategies applicable to urban land uses, the City can only be required to implement strategies that are enforceable through the MS4 general permit based on the City's regulated land contained in the MS4 service area. This Action Plan focuses specifically on means and methods to meet the 100% reduction goals that must be implemented by the end of the permit cycle.

The City has used an iterative approach in continually refining the list of potential pollutant reduction strategies through a series of planning level exercises to address meeting the TMDL target reductions. In addition to this Action Plan, this includes the following documents:

1. Chesapeake Bay TMDL Analysis and Options - Final Draft August 2012
2. The City's February 1, 2012, response to the Virginia Department of Conservation and Recreation (DCR) "local letter" - November 9, 2011
3. Draft Chesapeake Bay TMDL Phase 1 (5%) Action Plan - June 26, 2014
4. Feasibility Study for Retrofit of Existing Ponds and Construction of New Stormwater Management Ponds" – Final December 2014
5. Final Chesapeake Bay TMDL Phase 1 (5%) Action Plan with updated attachments – February 2016
6. Draft Chesapeake Bay TMDL Phase 2 (40%) Action Plan
7. Final Chesapeake Bay TMDL Phase 2 (40%) Action Plan with updated attachments – September 2019

The City will employ a wide variety of means and methods to meet the required target pollutant for reductions total nitrogen, total phosphorus, and total suspended solids. This includes reductions to meet pollution related to:

1. Existing Sources
2. New Sources
3. Increased Loads from 2009 – 2019 New Sources
4. Increased Loads from Grandfathered Projects.

The Phase 1 Guidance stipulates BMPs implemented for credit should be in the Virginia Stormwater BMP Clearinghouse or be approved by the Chesapeake Bay Program. The City is using a menu of means and methods that fit this stipulation to meet the reduction requirements for each of the categories listed above. This type of adaptive management approach is an iterative "all of the above" strategy to identify likely

candidate projects for implementation. This approach puts the greatest number of strategies on the table and allows the City to consider all of the strategies based on conditions present at the time.

The means and methods in this Action Plan represent the synthesis of analysis and options reports, planning-level exercises, feasibility studies, and historical staff knowledge regarding project needs. In considering an iterative approach that employs adaptive management principles and retains maximum flexibility in choosing the appropriate means and methods, the City has identified numerous potential strategies to reach target reduction goals. A mix of the following strategies will be implemented, where practicable, to address the reductions due by the end of the final permit cycle.

Projected redevelopment requiring the implementation of stormwater management BMPs meeting the new technical criteria for projects initiating construction after July 1, 2014, can be credited towards reductions and reported as credits following implementation. Structural BMPs such as retrofitting existing facilities and implementing new facilities to retrofit existing impervious areas are included in the means and methods to meet reductions.

Focus on Green Infrastructure

The City recognizes that Green Infrastructure (GI) can reduce stormwater runoff volumes, peak flow, and pollutant loads. As such, GI practices is the first option in selecting BMPs to retrofit existing impervious areas. Retrofits of City properties or rights-of-way will be considered using GI approaches, including but limited to, urban bioretention, bio-swales, permeable pavers, and vegetated green roofs. The City also requires development and redevelopment projects to implement GI practices through small area planning (Old Town North Small Area Plan, Eisenhower West Small Area Plan, etc.) and through the January 2018 release of a Memorandum to Industry requiring all new development and redevelopment to use non-proprietary surface BMPs approved by the Virginia Stormwater BMP Clearinghouse (Clearinghouse) to treat a minimum of 65% of the TP removal required by the VSMP regulations incorporated into the City's zoning ordinance. The memo also prohibits MTDs from being used on single-family detached residential projects. The City continues to look for targets of opportunity to incorporate additional GI into City projects. The City's "all of the above" approach is focused on strategies that are complete, under construction, or in the design phase are listed below. However, other strategies not listed below may also be implemented.

- ***Redevelopment.*** Stormwater quality BMPs implemented to meet the new VSMP regulations, as adopted into the City's Environmental Management Ordinance effective July 1, 2014, and the City's more stringent ordinance. Note that new development also must comply with the more stringent water quality volume default and treat at least 65% of the TP removal requirement through non-proprietary surface BMPs.
- ***New Regional Facilities and Retrofits.*** Installing new facilities to treat stormwater and retrofitting existing facilities originally installed with the primary purpose of addressing stormwater quantity to enhance their ability to improve water quality.
- ***Retrofits on City Properties.*** Retrofitting City-owned properties that are currently undertreated or not treated by stormwater quality BMPs and overtreating redevelopment.
- ***Right-of-Way Retrofits.*** Retrofitting public streets, especially in coordination with Capital Improvement Program (CIP) road projects where implementation is deemed feasible.

- ***Tree Planting.*** Planting trees on developed land to increase tree canopy but not to mimic forest-like conditions or to plant trees within a contiguous area.
- ***Urban Stream Restoration.*** Restoration using natural channel design methods for urban streams.
- ***Public Private Partnerships (P3).*** May consist of (1) an informal arrangement for implementation of regional facilities during the development process that provide for treatment of impervious area beyond the required site area, in exchange for other onsite consideration as well as treating offsite stormwater; or (2) an agreement between the City and a private owner to construct a BMP on private property.
- ***Bi-Lateral Trading.*** Applying credits generated through the implementation of combined sewer overflow and wet-weather treatment controls implemented by Alexandria Renew Enterprises – the River Renew project mandated through Virginia's 2017 CSO Law – to address the VPDES Combined Sewer System (CSS) permit requiring bacteria reductions that will also generate total nitrogen and total phosphorus credits that can be applied towards addressing MS4 general permit requirements.

The following additional strategies may be pursued by the City to address the targeted reductions; however, these are currently not part of the core strategies anticipated for Phase 3 but may be investigated during this phase.

- ***Urban Nutrient Management.*** Pollutant reductions from nutrient management plans implemented beyond those required by law or statute.
- ***Land Use Change.*** Credit for converted lands to a land use with a lower associated pollutant load.
- ***Forest Buffers.*** Implementing buffers and enhancing RPAs to protect local waterways and receive pollutant reduction credits.
- ***Nutrient Trading.*** Purchasing pollutant credits through the expanded nutrient credit exchange.

Acknowledging the significantly higher reduction requirements for the 2018-2023 and 2023-2028 permit cycles, the City set an internal planning goal for the first permit cycle that extended beyond the 5% target to approximately 15-20% of the anticipated total reductions. Similarly, the City set an internal goal for the second permit cycle that extended beyond the required 40% target. The City's adaptive management approach allows the City to realize efficiencies through maximization of benefits and minimize of cost and external impacts. Due to the higher internal goals, the City is on track to reach the required 100% target reductions prior to the deadline of 2028. The mix of potential strategies presented above are discussed in further detail in the following sections.

9.1 Projected Redevelopment

Redevelopment over time is a significant opportunity for the City to achieve pollutant reductions, since corresponding pollutant reductions will be credited towards Bay TMDL targeted reductions. The City is almost completely built out and was done so largely prior to stormwater quality regulations adopted in 1992. The Virginia Stormwater Management Regulations, implemented by the City on July 1, 2014, through the updated Environmental Management Ordinance, require that all redevelopment greater than or equal to one acre must achieve a 20% reduction in phosphorus from existing site conditions. Redevelopment less than an acre must reduce phosphorus 10% from existing conditions. New development and redevelopment that is subject to these stormwater management regulations have to meet nitrogen and phosphorus loading rates associated with pervious area, or a 0.41 lbs/ac/yr TP loading rate. The City has adopted the updated Virginia Erosion and Stormwater Management Regulations into the local ordinance effective July 1, 2024 has updated this loading rate. However, this updated loading rate continues to equate to no net pollution increase and is therefore considered neutral with respect to loads. However, in addition to the state water quality standards, the City has retained the more stringent requirement of treating the first one-half inch of runoff associated with all the impervious area of the site – the water quality volume default. This more stringent requirement will continue to translate to increased reductions beyond the state minimum water quality requirements for both development and redevelopment projects.

9.2 New Regional Facilities and Retrofits

Several existing and potential stormwater pond sites were considered to evaluate planning-level retrofit feasibility for new or enhanced water quality benefits. The viability of retrofitting existing regional ponds and potential construction of new stormwater management ponds was addressed through a multi-year "*Feasibility Study for Retrofit of Existing Ponds and Construction of New Stormwater Management Ponds*" that was finalized December 2014. That report represents a refinement from the previous planning-level exercise for large regional projects, and provides more specificity based on the City's Water Quality Steering Committee and Water Quality Work Group internal stakeholder discussions about viability and potential for these projects to go forward. Some barriers to implementation included minimal water quality benefits and site-specific restraints which included lack of available area, ownership and competing interests, among others. The potential strategy involves the retrofit of existing water quantity-only facilities (detention ponds) to provide water quality benefits by, enhancing the pollutant removal of an existing pond, or increasing the amount of treated impervious area draining to the facility.

For regional facilities that provide no effective water quality benefit, the improved stormwater treatment would provide a removal efficiency, and the entire associated pollutant reduction will be credited. For existing regional BMPs that are enhanced to provide an extra water quality benefit, the increased pollutant reductions will be credited. In the Phase 1 Action Plan, potential regional facilities were identified for retrofits. Five projects were completed during Phase 1 and 2 and described in Section 10 and 11. These are Four Mile Run wetland, Windmill Hill living shoreline, Lake Cook, Eisenhower Block 19 Pond, and Ben Brenman Pond (previously referred to as Cameron Station Pond). The Lucky Run stream restoration was completed during the first year of Phase 3.

9.3 Retrofits on City Property

This strategy involves retrofits on City properties to treat existing impervious areas that are not currently treated by stormwater quality BMPs and overtreating when redevelopment occurs. Even prior to the Bay TMDL reduction requirements, the City actively sought opportunities to retrofit existing impervious areas on City properties to provide water quality benefits for local streams, the Potomac River, and the Chesapeake Bay. A number of these retrofits were implemented prior to June 30, 2009, and cannot be credited towards the current reduction targets. However, the City continues to look for opportunities to retrofit City properties. Treatment of these previously untreated areas are strictly retrofits and generate credits towards meeting the required reductions. During earlier planning exercises, the City refined a list of existing properties as candidates for BMP retrofits. This list of potential projects was based on the following criteria:

1) Greater than one-acre of untreated impervious area; and
2) No planned redevelopment for the property in the near term.

For planning purposes, the list of potential City properties was assumed to be retrofitted with an average type of technology for the range of BMPs that may be installed to generate pollutant reductions. For planning purposes, it is assumed that approximately 50% of existing untreated impervious area could be treated by retrofits. Also, for planning and discussion purposes, a range of technologies was assumed for implementation. Pollutant removal efficiencies for this range of technologies were derived by averaging the efficiencies for several types of BMPs that would be likely candidates for this application on City properties: Filtering Practices, Bioretention, Dry Swale and Grass Channel. The resulting average efficiencies assigned to this range of technologies is: 30% TN, 50% TP, and 60% TSS. These were used to generate possible pollutant reductions for this range of technologies that may be implemented. The identification of specific practices can then be refined during subsequent onsite planning and design when the project becomes feasible. Final retrofits implemented and the associated removal efficiencies will determine the reductions achieved.

The City is currently evaluating conducting a green infrastructure assessment for projects on City properties which would build on the analyses already completed. The study would assess, evaluate, and rank potential project sites for implementation of green infrastructure. Section 10 includes a list of completed retrofits on City properties and corresponding pollutant removals.

9.4 Retrofits of City Rights-of-Way

City right-of-way retrofits is a potential strategy for treating smaller areas with each practice, but collectively may net large areas of impervious surface cover being treated. This approach has the benefit of using public property, which avoids the cost of land acquisition. These retrofits treat public spaces such as public streets and medians. Retrofits may include low impact development (LID) such as bioretention for the medians and sidewalks, inlet tree box filters or various manufactured BMPs such as hydrodynamic or filters to treat roadways. These retrofits tend to treat relatively small areas due to size constraints and gradient changes. As a result, many facilities are required to achieve meaningful reductions. Considering median retrofits in conjunction with inlet retrofits generally provides for the treatment of a greater contiguous area.

The City has identified possible medians and nearby stormwater inlets as retrofit candidates. Potential medians considered as likely candidates for retrofit were wide enough to accommodate the typical dimensions of a bioretention facility. Inlets considered were located in the vicinity of the potential median projects. The location of utilities and mature street trees were not considered and must be taken into consideration when performing more in-depth onsite investigations.

Pursuant to the City's memo to industry No. 04-2014 issued on June 1, 2014, entitled 'Treatment of Roadway Runoff Associated with Development Projects', projects are required to install BMPs to treat runoff from any new public roadways created as a consequence of development or redevelopment. This requirement serves to treat new roadways. For existing roadways within a project limit or adjacent to a project are often treated by the developer to comply with the City's more stringent water quality requirement in Sec. 13-110 of the Alexandria zoning ordinance that development and redevelopment projects must treat the first one-half inch of runoff from all impervious surfaces within the project by installing BMPs. If drainage patterns make this impractical, the project may treat adjacent existing roadways to meet this local more stringent requirement. Because of these requirements, new roadways associated with development and adjacent roadways are often treated during development and redevelopment. Additionally, based on input provided by a convened stakeholder group comprised of staff and the development community, the City's memo to industry No. 01-18 requires that at least 65% of the state's phosphorus reduction requirements be met through implementation of green infrastructure practices.

For planning purposes, acres treated and the impervious acres treated may vary since it may not be practical that the entire median area can be directed to a BMP and treated. Average efficiencies assigned to this range of technologies is: 30% TN, 50% TP, and 60% TSS. These efficiencies consider a range of technologies that may be implemented. The identification of specific practices and the target locations will be further refined during subsequent onsite planning and design. The most advantageous time to implement such practices is during planned transportation improvements. The City continues to look for ways to implement these types of retrofits through coordination with other departments and divisions during the internal planning and review process for CIP transportation projects. Implementation of retrofit practices will determine the actual pollutant loads removed to be reported.

9.5 Tree Planting

The "Final Recommendation of the Expert Panel to Define BMP Effectiveness for Urban Tree Canopy Expansion" was approved in September 2016. This report includes two different implementation options for determining pollutant credits.

- Urban Tree Canopy Expansion BMP – Tree plantings on developed land (impervious or turfgrass) that result in an increase in tree canopy but are not intended to result in forest-like conditions. The pollutant reduction associated with the tree is dependent on the underlying land use.
- Urban Forest Planting BMP – Trees planted in a contiguous area with the intent of establishing a forest or similar ecosystem processes and function.

The City currently has a tree planting program and property owner can receive a tree planting credit or a tree preservation credit as part of the Stormwater Utility. The City anticipates using the expert panel guidance for the Urban Tree Canopy Expansion BMPs for pollution reductions.

9.6 Urban Stream Restoration

The *Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects* (Expert Panel Report) contains the pollutant removal computation methodologies accepted by the Chesapeake Program to address Bay TMDL reductions enforced through the City's MS4 general permit

The Four Mile Run Stream Restoration project was substantially completed in the summer of 2016 and brought online in the Phase 2 PY4 reporting period. Additional details can be found in Section 10.6 and a memorandum documenting the associated pollutant removal credits was submitted with the Phase 1 Action Plan.

Lucky Run Stream Restoration

The City received a FY2017 SLAF grant for the Lucky Run Stream Restoration project which involved restoring 950 linear feet of stream. The project is bounded by residential developments to the north and east, West Braddock Road to the west, and by Interstate 395 to the south. Lucky Run eventually outfalls to Four Mile Run, which ultimately outfalls to the Potomac River, and then the Chesapeake Bay. Approximately 224 acres of highly urban land drains to Lucky Run. The restoration reestablished a stable pattern and profile in the stream and addressed areas of severe erosion near a sanitary line and nature trail. The project was considered substantially complete in December 2023 and the pollution removals are included in Phase 3.

Strawberry Run and Taylor Run Stream Restoration

In 2018, the City completed a study to assess, evaluate, and rank five potential stream restoration projects using a decision matrix with a comprehensive list of criteria to prioritize the projects. The two top ranking projects were segments along Strawberry Run (900 feet) and Taylor Run (1,800 feet). These projects would mitigate channel and bank erosion, preventing sediment and phosphorous associated with that erosion from being delivered downstream from an actively incising urban stream. The City applied for and was awarded FY2019 SLAF grants for these two projects.

It was anticipated that the Taylor Run and Strawberry Run stream restorations would be part of the strategies to meet the 100% target reductions in the 2023 – 2028 MS4 general permit. However, in response to community pushback, the City Council 'paused' the projects in April 2021 to perform extended public engagement based on the community's concerns. The City brought in a neutral third-party to lead extended public engagement to build a consensus on the design approach for these two stream restoration projects. Each stream had a tailored list of consensus derived recommendations that went before City Council in June 2023. City Council decided to adopt the consensus approach to stabilize the exposed sanitary sewer infrastructure using a minimal approach that did not comport to the Expert Panel stream restoration approach and therefore would not earn credits towards the Bay goals. Additionally, at the June 2023 meeting, City Council decided to 'table' the Strawberry Run stream restoration project with no further action. These actions removed the projects from the planned reductions.

9.7 Public-Private Partnerships

The use of public-private partnerships (P3) can optimize all available technical and financial resources to reduce the cost burden borne by the City. These partnerships are often used to provide more cost-effective financial strategy to build and manage public infrastructure that can carry huge financial obligations. Examples include toll roads, military housing, and wastewater and recycling services. Historically, wastewater has been the leader in this arena related to water quality. Today, governments at all levels are considering public-private partnerships to address fiscal challenges related to the construction, operation, and maintenance of infrastructure, expansion of services, and repair of aging infrastructure. However, stormwater retrofits to meet the Bay TMDL has provided a new set of financial concerns.

Municipalities are considering this approach to help reduce costs and risks related to retrofits. Prince George's County, Maryland is pioneering this P3 effort in the region to address Bay TMDL requirements. The County has established an innovative P3 pilot program to help fund projects to retrofit of about 8,000 acres of existing impervious surfaces at an estimated cost of $1.2B. The private partners will get paid from stormwater utility fees collected by the County that are based on impervious area, while the County may reduce its costs of the retrofit program by 40%.

While the P3 for stormwater retrofits and infrastructure is modeled on past approaches, a related but somewhat different approach being promoted by EPA through their Green Infrastructure initiative is Community Based Public-Private Partnerships (CBP3s). While a CBP3 uses many of the same financial and procurement arrangements as a traditional P3, there are differences as well. The nature of the contract, wider range of retrofit opportunities and the flexibility of the adaptive management approach are a few of the key differences. The biggest difference is the optimization of equity and the focus on the community inherent in the approach. In a CBP3, conditions must be appropriate for the community and the contractor so that both receive equitable benefits for all actions and gains from efficiencies. (EPA Region 3, April 2015)

The Prince George's P3 pilot program and the CBP3 may prove to be the most efficient and equitable models for localities trying to meet the overwhelming cost of the retrofits required by the Bay TMDL. This program is complicated, and processes are still being defined; however, these P3 and CBP3 strategies are being considered to help achieve reductions required in Phases II and III. The City will continue to monitor the effectiveness of Prince George's P3 program and stay abreast of other cases that may materialize.

Until further consideration provides for information on the suitability of a P3 or CBP3 approach, the City has taken a less formal collaborative approach. Negotiations between the City and developers may produce reduction credits beyond those required in local ordinance. This strategy may include the implementation of regional facilities during the development process that provide for treatment of impervious area beyond the required site area in exchange for other onsite considerations as well as treating offsite water. Credits generated under this strategy would be negotiated during construction and be the property of the City. Based on desktop analyses and current conditions, it was concluded that private parcels with greater than five acres of untreated impervious area could be potential candidates for the program. This threshold was chosen because the level of effort would outpace the

return on investment for parcels with smaller untreated areas. Projects which had a significant possibility of being developed between 2015 and 2028 were identified. The City may enter into discussions with these properties to determine if over treatment of the site is a possibility.

9.8 Urban Nutrient Management

According to Section II.B.6.c of the MS4 general permit, the City is required to develop and implement nutrient management plans (NMPs) for lands owned and operated by the City which receive nutrients and are greater than one contiguous acre. The Commonwealth has also implemented the ban of use phosphorus-containing fertilizers during routine applications. The City does not receive pollutant reduction credits for reductions required by Virginia statute or law. However, the City can receive pollution reduction credits for the development and implementation of NMPs for unregulated lands outside the MS4 service area, on public lands less than one contiguous acre, and on private lands, other than golf courses, where nutrients are applied. (Expert Panel, March 2013)

The City has developed all necessary NMPs according to the MS4 general permit and continues to update and implement them. Following the Phase 1 Guidance and the Expert Panel report, the City is considering the feasibility for the implementation of NMPs on unregulated lands, private lands, and City lands receiving nutrients that are less than one contiguous acre. The option for residential condominiums to develop NMPs has been included as a method to receive stormwater utility fee credit. The City can receive pollution reduction credit for these non-MS4 general permit required NMPs. If additional NMPs are developed, they will be included in the City's annual report.

9.9 Land Use Change

As part of the "all of the above" approach, the City will look for opportunities to receive credit for land use change conversions and apply the appropriate credit per Appendix V.G of the Guidance. This may include converting impervious to forest, impervious to grass, impervious to pervious, pervious to forest, or pervious to grass. Upon completion of a land use change BMP, the City will use the Table V.G.1 Land Use Change Conversion Efficiency table found in the Phase 1 Guidance to calculate the reductions. Pollutant reductions credited will be reported in the annual report for the appropriate period.

9.10 Forest Buffers

This BMP is another tool in the "all of the above" approach and similar to the previous BMP. The City will look for opportunities to protect local waterways and create credits by implementing forest buffer BMPs and/or providing enhancements to existing RPAs. Focus will be placed on identifying areas on City properties. Credits will be calculated using the efficiencies found in Table V.H.1 of the Phase 1 Guidance and will be reported with the appropriate annual report.

9.11 Nutrient Trading

The Commonwealth of Virginia allows urban stormwater to be included in the sectors that may trade nutrient credits to meet reduction requirements. The City has identified nutrient trading as a potential strategy to meet target reductions. Nutrient credits to meet overall stormwater reductions must be kept in perpetuity to meet final goals. However, wastewater dischargers currently use the program to trade

credits annually. This annual trading can also be a valuable tool to assist localities in complying with their MS4 general permits while working to implement the required reductions.

Likewise, urban stormwater pollutant reduction practices functioning beyond the pollutant reductions required in each MS4 general permit cycle generate credits in advance of permitted requirements. These credits should be available for "annual" trading in the expanded nutrient credit exchange. For instance, if the City exceeds the 40% pollutant reduction requirements for 2023, these credits should be available for the City to trade in 2023 to other permittees that may need more time to reach the required June 30, 2023 pollutant reductions. The pollutant credits would be purchased by another MS4 permittee until the City is required to use the credits per the MS4 general permit. This approach protects water quality by incentivizing early implementation of urban stormwater reduction practices and helping to ensure that the largest number of MS4 permittees are in compliance. This expansion of the program would complement the current nutrient trading program which allows for annual trading and provide sediment credits for trading.

9.12 Bi-Lateral Trading

A Combined Sewer System (CSS) exists in the older historic district of the City and includes four combined sewer outfalls. The Bay TMDL assigns a wasteload allocation (WLA) to these four combined sewer overflow (CSO) outfalls (CSO 001 at Oronoco Bay, CSO 002 at Hunting Creek, and CSOs 003 and CSO 004 at Hooffs Run) for nutrients and sediment. Additionally, the Hunting Creek Bacteria TMDL assigns a WLA to three (CSO 002, CSO 003, and CSO 004) of the four CSO outfalls and requires substantial reductions that are enforced through CSO legislation enacted in 2017 (2017 CSO Law). The Virginia General Assembly enacted the 2017 CSO Law on April 26, 2017, which requires the implementation of CSO controls to address the Hunting Creek Bacteria TMDL and reduction of overflows at CSO 001 to meet the EPA CSO Control Policy Presumption Approach by July 1, 2025. In 2024, the General Assembly extended the deadline to July 1, 2026.

In response to the 2017 CSO Law, the City and AlexRenew developed a revised long term control plan update (LTCPU) to comply with the CSO reduction requirements and compliance deadline. AlexRenew owns and operates the Water Resource Recovery Facility (WRRF) which provides sanitary and combined sewage treatment services to the City and parts of Fairfax County. The LTCPU, currently known as the RiverRenew project, is constructing new sewer infrastructure to meet CSO control requirements, which includes storage and conveyance tunnels strategically coupled with AlexRenew's WRRF, to maximize the volume of CSO flow receiving treatment. The LTCPU was approved by City Council in April 2018 and subsequently by DEQ in June 2018. The controls implemented as the result of the LTCPU will achieve substantial nitrogen, phosphorus and sediment reductions and are on schedule to be constructed by July 1, 2026.

AlexRenew and the City are working together to leverage the WRRF to achieve CSO control requirements by the extended legislative deadline and have made significant progress towards meeting this overall water quality goal. On June 6, 2018, City Council approved the Outfall Transfer Agreement between the City of Alexandria, Virginia and the City of Alexandria Sanitation Authority Concerning Wet Weather Wastewater Storage and Conveyance Facilities (Outfall Transfer Agreement). The Outfall Transfer Agreement makes AlexRenew responsible for the financing, design, construction, operation and maintenance of the RiverRenew project. (However, note that the City's rate payers are

funding the project through increased fees.) Additionally, the Outfall Transfer Agreement outlined "Secondary Benefits" following the implementation of CSO controls with respect to the Chesapeake Bay TMDL.

On July 1 2018, the City transferred ownership of these outfalls to AlexRenew, who is now the VPDES permit holder for the outfalls. Section 15 of the Outfall Transfer Agreement states that AlexRenew will apply the Bay TMDL CSO WLAs that are in effect for nitrogen, phosphorus and sediment to any CSO overflows and to combined sewer flows that are measured, captured, and treated through AlexRenew's WRRF once the RiverRenew project is complete. If after this analysis, allocation of nitrogen, phosphorus, and sediment remains unapplied, such credits will be calculated using AlexRenew's actual previous year annual reported nitrogen, phosphorus and sediment performance and traded to the City for its use. As such, the City may use these credits towards meeting the Bay TMDL pollutant reductions in the MS4 general permit.

The cost of the RiverRenew project is currently $615M, while infrastructure investments for compliance with the MS4 general permit are estimated at $100 - $200M. Note that the same ratepayers in the City fund the RiverRenew project as well as the MS4 capital costs to mitigate stormwater discharges. By integrating these two water quality efforts to help identify efficiencies in how to best prioritize capital investments and facilitate the use of sustainable and comprehensive solutions, the City can minimize the overall additive cost to the City ratepayers as well as funding for the Stormwater Utility fee that was adopted to fund costly stormwater infrastructure retrofits to meet MS4 general permit requirements and the Bay TMDL. Therefore, this bi-lateral trading approach will provide water quality benefits to the City's local streams, the Potomac River and the Chesapeake Bay through maximizing the economic benefits to the City's rate payers through the most cost-effective approach (EPA Memo, June 2012).

10. Phase 1 Permit Cycle Progress

The following sections discuss the progress that the City has made in meeting the L2 Scoping Target Reductions. Each project or group of BMPs below was initially presented in the City's Phase 1 Action Plan and is complete. The reductions for Lake Cook were added to Phase 2 due to the timing of the project. Section 10.9 summaries the pollutant reductions for the Phase 1 permit cycle. BMP calculations are found in Appendix B.

10.1 Credits for 2006 – 2009 Historical Stormwater BMPs

Structural stormwater BMPs implemented prior to January 1, 2006, are included in the calibration and baseline conditions of the Bay Model and are not available for credit towards reductions. The credits for structural BMPs implemented on or after January 1, 2006, and prior to July 1, 2009, were approved by DEQ in the Phase 1 Chesapeake Bay Action Plan. These historical BMPs were submitted by September 1, 2015, as part of the "Historical Data Clean-up" and so that they could be incorporated into the Phase 6 Chesapeake Bay Model. The Phase 1 Guidance stated that if the data submitted prior to September 1, 2015, the permittee would receive credit toward target pollutant reductions.

The City BMP database was queried for BMPs installed during this timeframe. Pollutant loads associated with the impervious and pervious area draining to project BMPs were calculated using the

Potomac River Basin loading rates from 2013-2018 Table 2b. Removal efficiencies for the BMPs were assigned using the Chesapeake Bay Program Efficiencies found in Guidance Table V.C.2. A full list of BMPs per project with all pertinent data and calculations was submitted with the Phase 1 Action Plan and can be found in Appendix B. The summary of the 2006 – 2009 BMP reductions for nitrogen, phosphorus and sediment are presented in Table 11.

Table 11 – Reductions Achieved for 2006 – 2009 BMPs

Number of Projects	Total Number of BMPs	TN Removed (lbs/yr)	TP Removed (lbs/yr)	TSS Removed (lbs/yr)	Approx. City Cost[1]
40	62	1,305.1	158.0	150,452	$0

[1]*Developer bears installation and long-term operation and maintenance costs for private facilities.*

10.2 Credits for Post-2009 Stormwater BMPs

The City maintains a current digital inventory of stormwater management BMPs that are required as part of the development process or that have been implemented as retrofits on City properties. This database was used to identify and gather data on BMPs for projects initiating construction on or after July 1, 2009, which qualify for water quality treatment credit according to Part III 3 of the Guidance. In addition to the Chesapeake Bay ordinance water quality requirements, the City implemented the water quality volume default requirement for development and redevelopment during this time period. BMPs installed prior to January (Credit for BMPs installed on or after January 1, 2006, and before July 1, 2009 are discussed in Section 9.1.) An analysis was conducted to determine the total load reductions achieved by post-June 30, 2009, BMPs within the MS4 service area.

The BMP database was used to determine the acres treated per type of BMP installed after the 2009 baseline. Pollutant loads for impervious and pervious areas draining to each BMP were calculated using the Potomac River Basin loading rates. Specific BMP types and associated pollutant removal efficiencies were based on the Chesapeake Bay Program Efficiencies and Retrofit Curves data, as applicable.

Two separate calculation tables were developed:

- Table 12 with pollutant reductions associated with BMPs installed between 2009 and June 30, 2014; and
- Table 13 with pollutant reductions associated with BMPs installed between July 1, 2014, and June 30, 2018.

The differentiation was made due to the implementation of the updated VSMP regulations on July 1, 2014 and the need to compare these reductions to the increased loads from the 2009 to June 30, 2014 redevelopment projects (Section 4). The full calculation tables with the pollutant removals for the BMPs installed during these time periods can be found in the Appendix B.

Table 12 – Reductions Achieved for July 1, 2009 – June 30, 2014 BMPs

Total Acres Treated	Impervious Acres Treated	TN Removed (lbs/yr)	TP Removed (lbs/yr)	TSS Removed (lbs/yr)	Approx. City Cost[1]
230.7	165.2	610.9	117.9	125,640	$0

[1]*Developer bears the cost of installation and long-term operation and maintenance for private facilities.*

Table 13 – Reductions Achieved for July 1, 2014 – June 30, 2018 BMPs

Total Acres Treated	Impervious Acres Treated	TN Removed (lbs/yr)	TP Removed (lbs/yr)	TSS Removed (lbs/yr)	Approx. City Cost[1]
130.28	102.78	263.4	36.7	34,583	$0

[1]*Developer bears the cost of installation and long-term operation and maintenance for private facilities.*

10.3 Lake Cook, Regional Facility

Funding for the feasibility and design of Lake Cook were included in the City's FY2013 CIP. This existing fishing pond was identified in early planning-level exercises initiated in late 2011 as a retrofit candidate, included in the City's Response to DCR's November 2011 Information Request, and was considered in a subsequent feasibility study initiated in March 2013. Lake Cook is an existing facility that is currently used as a fishing pond that provides water quantity only (detention). Lake Cook is being retrofitted to provide enhanced pollutant removal or to increase the capture volume and level of treatment. In December 2013, the City received a Stormwater Local Assistance Fund (SLAF) 50% matching grant from DEQ to help fund the conversions of Lake Cook from a recreational fishing lake to a stormwater management BMP. Lake Cook drains approximately 390 acres of urban land, with approximately 127 acres of the drainage area being impervious. The lake's primary use is recreational and it is regularly stocked with fish by the Virginia Department of Game and Inland Fisheries.

A Technical Memorandum providing the approach of the planned retrofit, the calculated pollutant removal efficiencies, and the associated pollutant removal credits was submitted and approved with the Phase 1 Action Plan and included as Appendix C.

Note that the project wasn't substantially complete until September 2018, so the associated reductions are not included in Phase 1 but with the Phase 2 pollutant reductions. Table 14 provides a summary of acres treated, pollutant reductions, and costs for this retrofit project. The total cost of the project was $4.5M.

Table 14 – Lake Cook Retrofit - Pollutant Reductions

Total Acres Treated	Impervious Acres Treated	TN Removed (lbs/yr)	TP Removed (lbs/yr)	TSS Removed (lbs/yr)	Approx. City Cost[1]
390.3	127.5	1587.0	163.3	131,334	$4.5M

[1]*Value includes funds from a SLAF grant. Operation and maintenance is projected at $103,000 annually beginning in FY 2019 with a three percent annual inflation factor included each year thereafter*.

10.4 Eisenhower Pond 19, Regional Facility

This regional facility was constructed by the private developer of the property; however, the impervious area treated was negotiated by City staff to be greater than that required during the development review process. Any pollutant reductions beyond those required are credited towards the City's Bay TMDL reduction requirements. Since this practice goes well beyond the reductions required for development and redevelopment, this pond is not included in the previous section as a "Credit for Post-2009 BMPs". The pond assumes efficiencies based on the stormwater retrofit curves/equations and the runoff depth treated per impervious acre. The efficiency values of 35.0% TP; 22.2% for TN and 44.5% for TSS were subsequently derived. Table 15 presents the pollutant removal data for this regional facility. The Eisenhower Block 19 Pond was brought online in June 2015.

Table 15 – Eisenhower Block 19 Pond – Pollutant Reductions

Total Acres Treated	Impervious Acres Treated	TN Removed (lbs/yr)	TP Removed (lbs/yr)	TSS Removed (lbs/yr)	Approx. City Cost[1]
67.1	53.7	166.8	39.2	23,644	$0

[1]*Developer bears the cost of installation and long-term operation and maintenance. Opportunity costs for alternate uses of the land are considered inconsequential given the current use and therefore not factored into the costs.*

10.5 Retrofits on City Properties

The City has completed several BMP retrofit projects on City properties. Table 16 presents the retrofits that have been implemented on City properties after June 30, 2009, and the related pollutant reductions. Note: This table was revised and updated in FY2025 and included in this Plan as Table 21.

Table 16 – Retrofits on City Property – Pollutant Reductions

Project	Total Treated (ac)	Impervious Treated (ac)	TN Removed (lbs/yr)	TP Removed (lbs/yr)	TSS Removed (lbs/yr)	Approximate Total City Cost[2]
Fire Station #206	0.55	0.55	2.66	0.40	515.38	$252,240
Burke Library BMP#1	0.53	0.51	2.52	0.38	480.71	$71,686[1]
Burke Library BMP#2	0.78	0.41	2.66	0.37	299.91	$71,686[1]
Charles Barrett Elementary BMP#1	0.73	0.62	3.31	0.47	596.45	$252,240[1]
Charles Barrett Elementary BMP#2	1.62	1.38	6.42	1.05	912.24	$252,240[1]
		Totals	**17.6**	**2.7**	**2,805**	**$900,092**

[1]*The total cost was evenly divided, however actual costs varied for each.*
[2]*Average operational costs based on published studies of such facilities with enhanced amenities and visibility are estimated at $25,000 annually beginning in FY 2019, with a three percent annual inflation factor included each year thereafter.*

10.6 Four Mile Run, Urban Stream Restoration

Following years of design, public outreach and inter-jurisdictional collaboration, the Four Mile Run Stream Restoration began construction in May 2015 and substantial completion in the Summer of 2016. The project involved a tidal wetland restoration that the City assessed using Protocol 3 – Credit

for Floodplain Reconnection Volume. The protocol provides mass sediment and nutrient reduction credit since the project will provide a reconnection of the main Four Mile Run stream channel to the floodplain over a wide range of storm events. The approach and the determination of pollutant removal credits is discussed in the Technical Memorandum submitted with the Phase 1 Action Plan and included in Appendix B. Please note that although the memo references an older version of the expert panel report, staff has reviewed the memo against the most recent expert panel report and deemed that the approach remains valid, and the calculated credits are consistent with the latest expert panel recommendations. Table 17 presents the reductions for each pollutant of concern and the approximate project cost. This project was brought online in July 2016.

Table 17(a) – Four Mile Run Stream Restoration – Pollutant Reductions

TN (lbs/yr)	TP (lbs/yr)	TSS (lbs/yr)	Approximate City Cost[1]
194.8	40.0	14,914	$1.8M

[1]*Estimate from the total costs of multiple projects in one package; construction only.*

During the *Phase 3 TMDL Action Plan* review, DEQ observed that the reductions for the Four Mile Run stream restoration project were calculated using a protocol specifically for non-tidal water bodies. However, this project area is tidal which means the calculations are no longer valid. The City updated the reductions using the *Recommendations of the Expert Panel to Define Removal Rates for Shoreline Management Projects*. Details of this approach are summarized in the March 18, 2025, Memorandum - *Update to the Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan – Four Mile Run Reductions*, found in Appendix C. The updated reductions are incorporated into the calculations reflected in the updated Phase 1 calculations (Table 22) as of March 2025. These updated reductions also are included in the Phase 2 and Phase 3 calculations in this *Phase 3 TMDL Action Plan*.

Table 17(b) – Four Mile Run Shoreline Management Restoration – Pollutant Reductions

TN (lbs/yr)	TP (lbs/yr)	TSS (lbs/yr)	Approximate City Cost[1]
170	10.578	13,918	$1.8M

[1]*Estimate from the total costs of multiple projects in one package; construction only.*

10.7 Windmill Hill Living Shoreline

Construction of the living shoreline at Windmill Hill Park was substantially complete in June 2018. This project was not documented during the Phase 1 Action Plan because it was not known at the time that the scope of the project would include the installation of a natural living shoreline, and the Expert Panel Report for Shoreline Management Projects had not obtained final approval. The project was initiated because of a failing bulkhead along the Potomac River at Windmill Hill Park. Several options for replacement were studied with the most cost effective and beneficial being the installation of a living shoreline. Pollutant removal calculations can be found in Table 18.

Table 18 – Windmill Hill Living Shoreline Pollutant Reductions

TN (lbs/yr)	TP (lbs/yr)	TSS (lbs/yr)	Approximate City Cost[1]
131.3	8.0	9,951	$3.6M

[1]*Total cost of project; construction only.*

10.8 Phase 1 Action Plan

The Phase 1 Action Plan was approved by DEQ on January 12, 2016. Correspondence between the City and DEQ along with the Action Plan approval letter can be found in Appendix D. The following list documents the updates and additions to the anticipated Phase 1 reductions documented in the Phase 1 Action Plan:

1. The as-built conditions for Pond 19 produces pollutant reductions slightly less than the values submitted (differences of TN = -2.1 lb/yr; TP = -3.5 lb/yr; TSS = -275.3 lb/yr).
2. A summation error was discovered in the pollutant reduction table for the July 1, 2009, to June 30, 2014 BMP table. The updated values are significantly higher than what was submitted (differences of TN = 500.6 lb/yr; TP = 103.0 lb/yr; TSS = 108,589 lb/yr).
3. The inclusion of the reductions associated with the BMPs installed from July 1, 2014, to June 30, 2018 (differences of TN = 263.4 lb/yr; TP = 36.7 lb/yr; TSS = 34,583 lb/yr).
4. The list of grandfathered projects which began construction was updated and refined. There were several projects that did not move forward or were updated to use the Virginia Runoff Reduction methodology (differences of TN = -722.6 lb/yr; TP = -85.2 lb/yr; TSS = -25,798 lb/yr).
5. The pollutant reductions associated with Windmill Hill Shoreline Restoration were added (TN = 131.3 lb/yr; TP = 8.0 lb/yr; TSS = 9,951 lb/yr).
6. The pollutant reduction associated with Lake Cook Retrofit were removed and are included with the Phase 2 pollutant reductions since the project was substantially complete in September 2018. (TN = 1,587 lb/yr; TP = 163.3 lb/yr; TSS = 131,344 lb/yr).

10.9 Phase 1 Reductions

The following table summarizes the pollutant reductions related to the projects which have been completed, fully or substantially, by the end of the 2017-2018 permit year.

Table 19 – Phase 1 Permit Cycle Pollutant Reductions

Project or BMPs	TN Removed (lbs/yr)	TP Removed (lbs/yr)	TSS Removed (lbs/yr)	Approximate City Cost[1]
2006-2009 BMPs	1305.1	158.0	150,452	$0
2009-2014 BMPs[2]	610.9	117.9	125,640	$0
2014-2018 BMPs[3]	263.4	36.7	34,583	$0
Eisenhower Pond 19[4]	166.8	39.2	23,644	$0
Retrofits on City Properties	17.6	2.7	2,805	$900,000
Four Mile Run Restoration	194.8	40.0	14,914	$1.8M
Windmill Hill Living Shoreline[3]	131.3	8.0	9,951	$3.6M
TOTAL PHASE 1	**2,689.8**	**402.4**	**361,990**	**$6.3M**

[1]Developer bears installation and long-term operation and maintenance costs for private facilities.
[2]Calculation error discovered in Phase 1 Action Plan (values have been increased by TN = 500.6 lb/yr; TP = 103.0 lb/yr; TSS = 108,589 lb/yr as compared to the Phase 1 Action Plan)
[3]Was not included in Phase 1 Action Plan
[4]Values have changed from the Phase 1 Action Plan based on the as-built survey

10.10 Phase 1 Reductions Update

During FY2023, two BMPs initially reported under Phase 1 were found to be removed or in major disrepair. BMP ID 2007-0102 is a Vegetated Roof and was found to be completely removed from the facility. BMP ID 2004-0038 01 is a stream restoration completed in 2010 and was found to have "failed" based on a forensic analysis that was completed. The stream project restored approximately 600 linear feet of the downstream portion of Strawberry Run and the City calculated 40.80 lbs/yr of TP reductions using the linear foot method from this project. However, the published *Strawberry Run Downstream Forensic Investigation* (June 2022) found that the restoration no longer functions as designed. During FY2024, one BMP was found to be removed which was also initially reported under Phase 1. BMP ID 2008-0012 04 was a StormFilter™ Stormwater Treatment System that was no longer in operation. The Credits received for these three SMFs are shown in Table 20 and were be removed from the BMP Warehouse; the Bay TMDL calculations; and reflected in this Phase 3 Action Plan. These BMPs were originally reported with Phase 1, removed from the BMP Calculation Tables, and reflected in the updated Phase 1 reductions in Table 22.

Table 20 – Credits Received from BMPs Removed from Inventory

Project	TN Reductions (lbs/yr)	TP Reductions (lbs/yr)	TSS Reductions (lbs/yr)
2010 Strawberry Run Restoration (2004-0038 01)	45	40.80	26,928
Vegetated Green Roof, Windsor Ave. (2007-0102 01)	0.06	0.01	5
StormFilter™ Stormwater Treatment System (2008-0012 04)	0.42	2.85	532

The City revisited Table 16 presented in this Action Plan, *Retrofits on City Property – Pollutant Reductions*, and cross referenced the BMPs with the City's most up to date inventory. Table 21 provides an updated accounting of the Retrofits on City Property completed during Phase 1.

Table 21 – Updated Retrofits on City Property – Pollutant Reductions

BMP Type	TN Removed (lbs/yr)	TP Removed (lbs/yr)	TSS Removed (lbs/yr)
Manufactured Treatment Device - Filtering	0	0.24	112.61
Manufactured Treatment Device - Filtering	0	0.22	103.22
Rainwater Harvesting	0	0	0.00
Rainwater Harvesting	0	0	0.00
Rainwater Harvesting	0	0	0.00
Manufactured Treatment Device - Filtering	0	0.27	126.68
Manufactured Treatment Device - Filtering	0	0.27	126.68
Bioretention	13.67	1.64	769.49
Total	**13.67**	**2.64**	**1,238.69**

In October 2024, the City reviewed the full suite of BMPs reported to the Commonwealth of Virginia in compliance with the Chesapeake Bay TMDL. BMPs were reviewed for duplicates and the nutrient removal rates were calculated in accordance with current policy and regulations. This exercise produced more accurate pollution removals associated with Phase 1 which are an essential component of providing an accurate roadmap to 100% compliance by FY2028, as described in this Action Plan. Table 22 provides and updated accounting of the Phase 1 BMPs and the attached BMP Calculation Tables provide more detailed information for individual BMPs.

Table 22 – Updated Phase 1 Permit Cycle Pollutant Reductions

Project or BMPs	# of BMPs	TN Removed (lbs/yr)	TP Removed (lbs/yr)	TSS Removed (lbs/yr)
2006-2009 BMPs	61	1,305	158	150,445
2009-2014 BMPs	190	552	75	96,345
2014-2018 BMPs	84	270	48	39,927
Eisenhower Pond 19	1	167	39	23,644
Retrofits on City Properties	8	14	3	1,239
Four Mile Run Restoration (revised March 2025)	1	170	11	13,918
Windmill Hill Living Shoreline	1	131	8	9,951
TOTAL PHASE 1	**346**	**2,609**	**342**	**335,469**

11. Phase 2 Permit Cycle Progress

The following sections discuss the progress that the City has made in meeting the L2 Scoping Target Reductions. Each project or group of BMPs below initially presented in the City's Phase 2 Action Plan is complete.

11.1 Lake Cook Retrofit

Construction of the Lake Cook Retrofit project was substantially complete in September 2018 or during the beginning of permit year 2018-2019. The project was awarded Stormwater Local Assistance Fund (SLAF) grant funding from DEQ.

Table 23 – Lake Cook Retrofit – Pollution Reductions

Total Acres Treated	Impervious Acres Treated	TN Removed (lbs/yr)	TP Removed (lbs/yr)	TSS Removed (lbs/yr)	Approx. City Cost[1]
390.3	127.5	1587.0	163.3	131,334	$4.5M

[1]*Value includes funds from a SLAF grant. Operation and maintenance is projected at $103,000 annually beginning in FY 2019 with a three percent annual inflation factor included each year thereafter*.

11.2 Ben Brenman Pond Retrofit

The Ben Brenman Pond retrofit was substantially complete in June 2020. This City-owned and maintained facility drains approximately 290 acres of urban land with an impervious percentage of 62%. The pond is in Ben Brenman Park and is in the Backlick Run watershed. Design plans improving the pond to meet the Level 2 Wet Pond criteria were finalized in November 2017. Improvements include increased pond and forebay volume, multiple cells, aquatic benches, wetland areas, aerators, and diversion of an additional 35 acres that was previously untreated. The project received a SLAF 50% matching grant in December 2014. The pollutant removals have been refined since they were reported for reference purposes in the Phase 1 Action Plan. The Pollution Calculations for Ben Brenman Pond is included in Appendix B.

Table 24 – Ben Brenman Pond Retrofit – Pollutant Reductions[1]

Total Acres Treated	Impervious Acres Treated	TN Removed (lbs/yr)	TP Removed (lbs/yr)	TSS Removed (lbs/yr)	Approx. Cost[1]
290.1	179.1	946.4	151.3	87,734	$3.75M

[1]*Opportunity costs for alternate uses of the land are considered inconsequential given the current use and therefore not factored into the costs.*

11.3 Development SWM Facilities

In accordance with the Phase 1 and Phase 2 Action Plans, BMPs installed as part of redevelopment projects have been certified, documented, and uploaded to the DEQ BMP Warehouse. The BMP calculations for these BMPs are found in Appendix B.

Table 25 – Development SWM Facilities – Pollution Reductions

Total Acres Treated	Impervious Acres Treated	TN Removed (lbs/yr)	TP Removed (lbs/yr)	TSS Removed (lbs/yr)	Approx. City Cost[1]
54	40	124	44	20,499	$0

11.4 Phase 2 Summary of Progress

Table 26 presents a summary of the progress at the end of the Phase 2 permit cycle. Based on progress made in the first cycle and strategies to be implanted in the second permit cycle, the City will far exceed the 40% pollutant reduction requirement and has made substantial progress in achieving 100% reduction goals.

Table 26 – Phase 2 Permit Cycle Pollutant Reductions

Project or BMPs	TN Removed (lbs/yr)	TP Removed (lbs/yr)	TSS Removed (lbs/yr)	Approximate City Cost
FY2019-FY2024 BMPs[1]	124	44	20,499	$0
2009-2019 New Sources Offsets[2]	-13	-2.3	-1,911	$0
Grandfathered Offsets[2]	30.6	8.7	3,676	$0
Lake Cook Retrofit	1,587	163.3	131,334	$4.5M
Ben Brenman Pond Retrofit	946.4	151.3	87,734	$3.75M
TOTAL PHASE 2	**2,675**	**365**	**241,332**	**$8.25M**

[1]*Developer bears installation and long-term operation and maintenance costs for private facilities.*
[2]*Negative values indicate net pollutant reductions.*

Table 27 – Phase 1 and 2 Progress

Pollutant of Concern	City Phase 1 & 2 Actual Reductions (lbs/yr)	L2 Total Required Reductions (lbs/yr)	Percent of L2 Total Required Reductions Met
TN	5,284	7,597.03	70%
TP	707	1,004.40	70%
TSS	576,801	861,937	67%

12. Phase 3 Permit Cycle Anticipated Reductions and Final TMDL Compliance

In addition to redevelopment credits, the City completed the Lucky Run stream restoration project during FY 2024, and will use redevelopment and new BMP retrofits, along with credits obtained through the bi-lateral trading program with River Renew to achieve over 100% TMDL compliance by FY2028 as required through the 2023-2028 MS4 general permit. As noted above, DEQ removed the TSS requirement from the 2023-2028 MS4 general permit and that update is reflected in the tables below. Please note that the City has achieved over 100% of the previously required sediment reduction requirements. An overview of the reductions and credits are included in Table 26 and described herein.

The new 2023-2028 MS4 general permit removed total suspended solids/sediment from the Chesapeake Bay TMDL special conditions. Table 30 summarizes the completed expected reductions, which account for over 100% of the TN and TP goal.

Table 28 – Phase 3 Anticipated Reductions

Pollutant of Concern	Total Phase 1 & Phase 2 Reductions (lbs/yr)	Anticipated Phase 3 Reductions (lbs/yr)	Total Phase 1 through 3 Reductions (lbs/yr)	Total Required Reductions (lbs/yr)	Percent of Total
TN	5,284	2,936	8,220	7,597.03	106%
TP	707	920	1,627	1,004.40	162%

12.1 Stream Restoration

The City will complete the Lucky Run Stream Restoration project during Phase 3 (December 2023). The City received an FY2019 SLAF grant for the project, which involves restoring 950 linear feet of stream. The project is bounded by residential developments to the north and east, West Braddock Road to the west, and by Interstate 395 to the south. Lucky Run eventually outfalls to Four Mile Run, which ultimately outfalls to the Potomac River, and then the Chesapeake Bay. Approximately, 224 acres of highly urban land drain to Lucky Run. The restoration has reestablished a stable pattern and profile in the stream as well as addressing areas of severe erosion near a sanitary line and nature trail. Construction was completed during the Phase 3 permit cycle. The pollutant removals for the project are based on the 2014 Stream Restoration Expert Panel Report using protocols 1 and 2.

Table 29 – Phase 3 Progress: Lucky Run

Project	TN Removed (lbs/yr)	TP Removed (lbs/yr)	Approx. Cost to City[1]
Lucky Run Stream Restoration	658	257	$1.8M

[1]*The cost of the Lucky Run project has been updated from the Phase 2 Action Plan and is based on more current information. This cost includes SLAF funding.*

12.2 Bi-Lateral Trading

During Phase 3, the City will engage in bi-lateral trading with Alexandria Renew Enterprises (AlexRenew) for the pollution reduction credits generated from the River Renew project funded by the City's rate payers. Section 15 of the Outfall Transfer Agreement states that AlexRenew will apply the Bay TMDL Combined Sewer Overflow (CSO) WLAs that are in effect for nitrogen, phosphorus, and sediment to any CSO overflows and to combined sewer flows that are measured, captured, and treated through AlexRenew's Water Resource Recovery Facility (WRRF) once the RiverRenew project is complete. If after this analysis, allocation of nitrogen, phosphorus, and sediment remains unapplied, such credits will be calculated using AlexRenew's actual previous year annual reported nitrogen, phosphorus and sediment performance and traded to the City for its use. As such, the City may use these credits towards meeting the Bay TMDL pollutant reductions in the MS4 general permit. The funding for the RiverRenew project is being born by the City's ratepayers. These are the same ratepayers that pay the City's Stormwater Utility Fee. The anticipated annual trading credits are provided in Table 28.

Table 30 – Phase 3 Progress: Anticipated Bi-Lateral Trading Credits

Project	TN Removed (lbs/yr)	TP Removed (lbs/yr)	Approx. Cost to City[1]
Bi-Lateral Trading[2]	1,500	500	$0

[1]*The cost of the RiverRenew Project is $615 million that is funded by rate payers in the City as described above.*
[2]*Numbers are estimated and dependent on the performance of the tunnel system.*

12.3 Redevelopment SWM Credits

During Phase 3, two large redevelopment projects are anticipated to be completed as well as routine redevelopment. Stormwater quality BMPs implemented to meet the VSMP regulations, as adopted into the City's Environmental Management Ordinance effective July 1, 2014, and the City's more stringent requirements to treat the first one-half inch of runoff – the first flush – from all impervious surfaces. Note that development also must comply with the City's memo to industry that requires at least 65% of the TP removal requirement be accomplished through non-proprietary surface BMPs, i.e. Green Infrastructure.

- ***Landmark.*** The Landmark Redevelopment Project was approved on July 6, 2021 by City Council. This project will result in up to approximately four million square feet of new development. The project will be anchored by the relocation and expansion of Inova's new state-of-the-art Alexandria Hospital, bringing more than 2,000 health care workers to the medical campus. This transformational project—led by developer Foulger-Pratt—was named by the Washington Business Journal as the 2020 Real Estate Deal of the Year.
- ***North Potomac Yard.*** The 2010 North Potomac Yard Small Area Plan established the vision and guiding principles for the redevelopment of the approximately 70-acre site as a sustainable, mixed-use, walkable community oriented around the construction of the Potomac Yard Metrorail station and established the framework to determine funding sources for the Metrorail Station and potential phasing options for redevelopment of the Plan area.

In March 2025, upon re-evaluation, staff determined that the estimated annual reductions should be updated to better reflect anticipated annual credits. Table 31 provides a more accurate projection of the anticipated redevelopment credits. These revised numbers are reflected in Phase 3.

Table 31 – Phase 3 Progress: Anticipated Redevelopment Credits

Project	TN Removed (lbs/yr)	TP Removed (lbs/yr)	Approx. Cost to City[1]
Anticipated Annual Redevelopment through FY2028	778	163	$0

[1]*Developer bears installation and long-term operation and maintenance costs for private facilities.*

12.4 Summary of Projected Credits for Phase 3 (2023 – 2028)

Table 30 provides a summary of anticipated pollution credits and estimated costs anticipated during Phase 3.

Table 32 – Phase 3 Permit Cycle Anticipated Pollutant Reductions

Project or BMPs	TN Removed (lbs/yr)	TP Removed (lbs/yr)	Approximate City Cost
Lucky Run Stream Restoration	658	257	$1.8M
Bi-Lateral Trading	1,500	500	$0
Anticipated Annual Redevelopment through FY2028	778	163	$0
TOTAL PHASE 3	2,936	920	$1.8M

13. Costs of Implementation

The cost for credits for BMPs implemented during development and redevelopment are borne by the developer. But much of the cost to implement the strategies outlined herein will largely fall to the City. While small amounts of grant funding may be available from state and federal agencies, Virginia has acknowledged that the planning, implementation, operation, and maintenance of BMPs "will be costly and likely borne by local government." (Virginia Senate Finance Committee, November 2011)

Order of magnitude costs were developed in previous planning-level exercises to estimate the total cost of 100% compliance with the target loads to determine the impact on the CIP budget over the short and long terms. Cost assumptions were based on best engineering practices, local assumptions, discussions with regional partners, and a draft report researching the costs of various BMPs (King and Hagen, 2011) prepared for the Maryland Department of Environment. The analyses employed during the previous planning level exercise identified specific possible retrofit strategies that may be implemented based on assumptions about the type of retrofit most likely to be implemented for each specific strategy, and limitations associated with each strategy. A range of technologies were assumed applicable and an average removal efficiency and unit cost per acre treated were derived for each strategy. For instance, most Retrofits of City Rights-of-Way would likely involve manufactured BMPs (such as tree box filters) or similar structures with an average removal efficiency of approximately 45% at a unit cost of approximately $112,000 per acre treated. This and other assumptions for other types of strategies, along with the assumed long-term operations and maintenance costs, may or may not hold true. Regarding those strategies needed to fill the pollutant reduction gap (that is, those generic strategies needed to reach reduction targets after implementation of the specific strategies addressed in this report), no assumptions were made regarding whether these would be sited on public or private land. As a result, cost estimates do not include the cost of purchasing land or easements – which could be considerable.

To meet increased costs, the City adopted a Stormwater Utility Fee on May 4, 2017, with the Fiscal Year 2018 budget to provide a dedicated source to fund the City's Stormwater Management Program, to be billed starting May 2018. The fee funds stormwater management, to include federal and state mandates to clean up the Chesapeake Bay, more equitably than through real estate taxes by shifting stormwater management costs to residential and nonresidential property owners with greater impact on stormwater runoff. The fee was effective January 1, 2018, and the first bill was mailed on in May 2018. The fee is billed twice a year with the City's real estate billing.

14. Public Comment

The draft Phase 3 Action Plan was shared with the public for review from August 28 – September 16, 2024 (20-calendar days). The City shared an eNews announcing the public comment period August 22, 2024. The public comment information was shared in the Alexandria Gazette Packet on August 29, 2024. Comments were received via an online form and via email. City staff shared the draft Phase 3 Action Plan with the City's Environmental Policy Commission in an email on August 29, 2024. City staff also presented on the draft Phase 3 Action Plan to the EPC on September 16, 2024. During the meeting, Commission members discussed possible future goals for the Chesapeake Bay TMDL and its anticipated impact on the City and they inquired if the City does water quality testing for the TMDL parameters and/or how that is calculated. The draft Phase 3 Action Plan comment and response table is included as Table 31.

Table 33. Phase 3 Action Plan Public Comment and Response Table

Commentor	Comment	Response and Action Taken	Action Taken
Russell Bailey, Roy Byrd, Jeremy Flachs, Carter Flemming, Bill Gillespie, Kathie Hoekstra, Andrew Macdonald, Kurt Moser	Comments on Alexandria's Draft Phase 3 Chesapeake Bay TMDL Action Plan for 100% Compliance We were all community member participants in the City staff-community consensus building groups on the Taylor Run proposed reengineering project. We welcome the City's August 2024 Draft Phase 3 Chesapeake Bay TMDL Action Plan for 100% Compliance ("AP"). That plan shows that Alexandria is on track to well exceed the nutrient reduction requirements in its 2023-2028 MS4 general permit. The AP sets out specific measures that have been, or will be, implemented to meet the 100% compliance targets. Because total suspended sediment reductions have been dropped as a requirement, the plan focuses on reduction mechanisms for nitrogen and phosphorus. The AP describes the reductions that were reached through its Phase 1 and Phase 2 efforts as well as those that will be, or have been, reached as a result of its Phase 3 efforts. It is those later efforts that we address here. While Alexandria identifies a range of actions that can be taken to reduce TN and TP, the City details three major reduction measures: 1) the receipt of nutrient reduction credits due to bi-lateral trading with Alexandria Renew Enterprises, which will soon be operating a new waste water treatment system, 2) the reengineering of Lucky Run, and 3) Best Management Practices (BMP's) that will be put in place as part of redevelopment projects in the City that will take place by the end of 2028. AP, pages 32-34. The plan does not include any stream reengineering beyond that done at Lucky Run and specifically states that previously proposed projects at Taylor Run and Strawberry Run have been removed as nutrient reductions options. AP, page 20. While several of the undersigned opposed the Lucky Run project, it is done. We appreciate the development of a compliance plan than achieves sufficient measurable nutrient reductions without undertaking additional stream projects. We look forward to working with the City on infrastructure fixes that may need to be undertaken at Taylor Run. Russell Bailey, Roy Byrd, Jeremy Flachs, Carter Flemming, Bill Gillespie, Kathie Hoekstra, Andrew Macdonald, Kurt Moser	The City confirms that the Phase 3 Action Plan focuses on the three major reduction measures described in the comments.	No Action Taken
Philip Mobilia, EPC Commissioner	1. p. E-4, 4th paragraph (and in numerous other sections further down the document): Reference is made to "Bi-lateral Trading project". A brief description of what is meant by this would be helpful.	Bi-lateral trading is further detailed in Section 9, Means and Methods to Meet Target Reductions, section 9.12.	No Action Taken

Commentor	Comment	Response and Action Taken	Action Taken
Philip Mobilia, EPC Commissioner	2. Many of the tables show values for TN and TP removal rates. I saw no description of how the nitrogen and phosphorous were/will be removed. A brief discussion of the treatment methods used would be helpful.	Best management practices (BMPs), also known as Stormwater Management Facilities (SMFs), remove pollution by allowing rainwater and snowmelt to soak into the system which helps to filter out pollutants, such as nutrients and sediment, and allow 'treated' water to return to waterways. Each type of BMP (i.e., wet pond, green roof, infiltration practices, etc.) uses different processes engineered to treat stormwater and are defined in the Virginia BMP Clearinghouse. Each BMP type has a specific removal efficiency assigned to it based on several factors and the associated removals are calculated using the Virginia Runoff Reduction Method which is based on the acres treated, type of area draining to the BMP, and type of practice.	A text box was added to the Executive Summary on Page E-3.
	3. Figure 2 – Graphic Representation of Existing Nitrogen Loads, p. 7: There is no key to assist with interpreting what the graph represents. What does yellow represent? Red? Orange?	The gradient of the colors presented on the map represent the estimated intensity of nitrogen loads across the City with the darker, red color showing areas of more intense loading and lighter yellow color being less intense.	Additional information about Figure 2 was added to page 6, which highlights the difference between the different colors.
	4. p. 11, 1st paragraph (and in several other locations) reference is made to requirements for projects exceeding 1 acre. What about projects <1 acre? Exempt?	The regulations specific to grandfathered projects within Phase 1 outlined the requirement to identify and account for projects disturbing one acre or greater.	No Action Taken
	5. Several locations: "reduction credits" are discussed. What are these, how are they determined, how are they used?	Reduction credits are generated when a water quality BMP is installed under any of the strategies listed in the Action Plan. These BMPs reduce the amount of pollution in stormwater runoff. The amount of the reduced pollution or "reduction credits" is applied to the target reductions that are mandated by the MS4 general permit. So any BMP installed will provide reduction credits.	No Action Taken
	6. General: Is any actual water sampling conducted to verify the projected reductions or are we relying solely on calculations based on estimated values?	No, water sampling is not conducted. The City relies on the state guidance for calculating pollution reductions.	No Action Taken

Commentor	Comment	Response and Action Taken	Action Taken
Philip Mobilia, EPC Commissioner	7. p. 24, Section 10: The opening paragraph of this section states, in part: “Each project or group of BMPs below was initially presented in the City’s Phase 1 Action Plan and is complete or is expected to be substantially completed by the end of the 2017-2018 permit year.” (emphasis added). This sounds like a “cut and paste” from a prior report. This should be updated to reflect the actual status of each item.	Please note that the Lake Cook project initially shown in Phase 1 was considered substantially complete in Phase 2. This update is reflected in the Final Phase 3 Action Plan.	Text on page 24 has been revised to indicate that the projects are complete and Lake Cook credits are taken in Phase 2. Text on page 29 also has been slightly revised as well for proper wording (Phase 2).
	8. Table titled: July 1, 2009 to June 30, 2014 BMP Calculation Table. There is a column heading: “TN BMP Efficiency*”, but there is no description of what the “*” refers to (none that I could find).	The Asterisk refers to the BMP removal efficiency utilized for the individual BMP which is shown as "Efficiency Method" in the last column of the table. However, each of the tables presented within Appendix B include the Efficiency Method so the Asterisk is not needed in this table.	The table has been updated to remove the Asterisk.

15. Summary of Phase 3 Action Plan Updates Prior to Submission to DEQ

Prior to submission of the Phase 3 Action Plan to DEQ, staff further refined and checked all of the tables, calculations, and information presented in the draft Phase 3 Action Plan and determined that several adjustments should be made in order to present the most accurate and updated information in the final document. These updates are summarized as follows:

- Updates to Table E2 and corresponding tables E3 and E5, as well as Table 24, 25, and 26 were updated based on revised calculations that accurately captured the values shown.
- The percentage towards the goals were updated in the Introduction section based on the revised calculations reflected in Tables 24 – 26.
- Removed the erroneous footnote on Table 29.
- Updated the BMP Calculation Tables in Appendix B for all fiscal years and removed duplicates and BMPs that were removed from the calculations and warehouse. Added in the 2006 – 2009 BMP Calculations.
- Moved Credits Received from BMPs Removed from Inventory during FY2023 and FY2024 into Phase 1 calculations and updated Phase 1 totals accordingly.
- Updated the City retrofit BMPs included in Phase 1 to reflect actual BMPs installed.
- Added a new section to discuss updates to Phase 1 and included a new table to reflect updates to Phase 1 calculations.
- Updated Table 26 to align with the values presented in Table 30.
- Adjusted the totals in Phase 2 based on the updated BMP Calculation Tables.
- Added Appendix E to provide information on the Phase 3 public notification and outreach activities.

16. References

1. Community Based Public-Private Partnerships (CBP3s) and Alternative Market-Based Tools for Integrating Green Stormwater Infrastructure; EPA Region 3; Water Protection Division, April 2015

2. Chesapeake Stormwater Network Technical Bulletin No. 9, Stormwater Nutrient Accounting.

3. Guidance Memo No. 15-2005, Virginia Department of Environmental Quality, May 18, 2015

4. Recommendations of the Expert Panel to Define Removal Rates for Urban Stormwater Retrofit Projects, January 2015

5. Recommendation of the Expert Panel to Define Removal Rates for Urban Nutrient Management, March 2013

6. Recommendation of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects, September 2014

7. Recommendation of the Expert Panel to Define Removal Rates for Shoreline Management Projects, July 2015

8. Recommendations of the Expert Panel to Define Removal Rates for Street and Storm Drain Cleaning Practices, May 2016

9. Recommendations of the Expert Panel to Define BMP Effectiveness for Urban Tree Canopy Expansion, September 2016

10. June 5, 2012 Memo form EPA Regional Administrators to Acting Assistant Administrator for the Office of Water, Integrated Municipal Stormwater and Wastewater Planning Approach Framework

11. Strawberry Run Downstream Forensic Investigation, Part 1 Final Report - Forensic Analysis, June 22 2022

12. December 19, 2019 Memo form EPA Regional Administrator to DEQ on Phase III WIP

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Appendix A

Future Grandfathered Projects

Future Grandfathered Projects		
Project Name	**Address**	**Approx. Project Site Area (ac)**
Carlyle Plaza Two (Amendments)	DSP2013-00025	6.92
Hoffman Properties Blocks 11 and 12	DSP2016-00012 (DSUP2013-00008)	4.27
Carlyle Plaza One	DSP2006-00003	1.39
Mark Center Plaza 1A Building 5	DSP2007-00027	7.24
	Total	**19.82**

Potomac Yard Landbay G - Block D (Institute for Defense Analyses at Potomac Yard) (DSP2012-00008) was removed from the list of future grandfathered projects during the Phase 3 Action Plan update. The calculations for this BMP are included in the Phase 2 calculations and reflected herein. Eisenhower Block 20 (DSP2015-00008 (DSUP2007-00017)) also was removed and will be go back through the planning process.

Appendix B: BMP Calculation Tables

July 1, 2006 to June 30, 2009 BMP Calculation Table
July 1, 2009 to June 30, 2014 BMP Calculation Table
July 1, 2014 to June 30, 2018 BMP Calculation Table
July 1, 2018 to June 30, 2023 BMP Calculation Table
July 1, 2023 to June 30, 2024 BMP Calculation Table

July 1, 2006 to June 30, 2009 BMP Calculation Table

City of Alexandria, VA
2006 - 2009 BMP Calculations

BMP ID	BMP Type	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed	TSS Removed	Efficiency Method
2004-0020 01	Filtering Practices	1/16/2006	0.35	0.28	0.48	5.43	340	60%	40%	80%	0.29	2.17	272.22	Chesapeake Bay Program
2004-0021 01	Filtering Practices	1/16/2006	0.57	0.45	0.78	8.80	548	60%	40%	80%	0.47	3.52	438.55	Chesapeake Bay Program
2004-0022 01	Filtering Practices	1/16/2006	0.75	0.62	1.06	11.76	749	60%	40%	80%	0.63	4.70	599.26	Chesapeake Bay Program
2003-0039 01	Filtering Practices	3/6/2006	0.81	0.81	1.31	13.66	949	60%	40%	80%	0.79	5.46	759.02	Chesapeake Bay Program
2005-0810 BLD 01	Vegetated Roof	3/25/2006	0.15	0.15	0.24	2.53	176	53%	45%	56%	0.13	1.13	98	Retrofit Curves
1995-0019 01	Filtering Practices	4/13/2006	1.65	0.95	1.83	23.07	1,236	60%	40%	80%	1.10	9.23	988.65	Chesapeake Bay Program
1995-0019 02	Filtering Practices	4/13/2006	1.05	0.86	1.47	16.41	1,041	60%	40%	80%	0.88	6.57	832.59	Chesapeake Bay Program
2004-0041 01	MTD/Proprietary: Hydrodynamic Devices	8/8/2006	1.73	1.59	2.63	28.15	1,882	20%	13%	50%	0.53	3.58	941.16	VA BMP Clearinghouse-MTD
2004-0019 01	Filtering Practices	8/9/2006	0.38	0.38	0.62	6.41	445	60%	40%	80%	0.37	2.56	356.08	Chesapeake Bay Program
2003-0035 01	MTD/Proprietary: Filtering Devices	9/8/2006	1.56	0.99	1.84	22.43	1,260	45%	29%	80%	0.83	6.43	1007.85	VA BMP Clearinghouse-MTD
2004-0014 01	MTD/Proprietary: Filtering Devices	9/12/2006	0.15	0.10	0.19	2.22	130	45%	29%	80%	0.08	0.64	103.92	VA BMP Clearinghouse-MTD
2004-0014 02	MTD/Proprietary: Filtering Devices	9/12/2006	0.28	0.16	0.31	3.90	208	45%	29%	80%	0.14	1.12	166.01	VA BMP Clearinghouse-MTD
2003-0041 01	Filtering Practices	10/16/2006	1.32	1.22	2.01	21.55	1,443	60%	40%	80%	1.21	8.62	1154.09	Chesapeake Bay Program
1998-0015 01	Extended Detention (ED) Ponds	1/3/2007	5.40	0.93	3.34	60.69	1,875	20%	13%	50%	0.67	7.72	937.58	VA BMP Clearinghouse-MTD
1998-0015 02	Sheet Flow to Veg. Filter Strip/Conserved Open Spac	1/3/2007	0.95	0.05	0.45	9.91	217	10%	10%	50%	0.05	0.99	108.39	Chesapeake Bay Program
2000-0009 01	Bioretention (inc. Urban Bioretention)	1/17/2007	2.11	1.69	2.91	32.71	2,051	45%	25%	55%	1.31	8.18	1128.26	Chesapeake Bay Program
2006-0101 01	Bioretention (inc. Urban Bioretention)	1/26/2007	0.25	0.25	0.41	4.22	293	45%	25%	55%	0.18	1.05	161	Chesapeake Bay Program
2006-0101 02	Bioretention (inc. Urban Bioretention)	1/26/2007	0.25	0.25	0.41	4.22	293	45%	25%	55%	0.18	1.05	161	Chesapeake Bay Program
2006-0101 03	Bioretention (inc. Urban Bioretention)	1/26/2007	0.25	0.25	0.41	4.22	293	45%	25%	55%	0.18	1.05	161	Chesapeake Bay Program
2004-0025 01	Filtering Practices	4/13/2007	1.40	1.05	1.84	21.23	1,291	60%	40%	80%	1.11	8.49	1033.13	Chesapeake Bay Program
2004-0025 02	MTD/Proprietary: Filtering Devices	4/13/2007	7.83	7.57	12.37	130.25	8,913	20%	13%	50%	2.47	16.57	4456.30	VA BMP Clearinghouse-MTD
2004-0025 03	MTD/Proprietary: Filtering Devices	4/13/2007	1.77	1.29	2.29	26.58	1,595	20%	13%	50%	0.46	3.38	797.69	VA BMP Clearinghouse-MTD
2001-0014 03	MTD/Proprietary: Filtering Devices	5/4/2007	1.11	0.78	1.40	16.49	970	45%	29%	80%	0.63	4.72	776.14	VA BMP Clearinghouse-MTD
2006-0009 PLT 01	Infiltration Practices	5/12/2007	2.10	0.00	0.86	21.15	369	85%	80%	95%	0.73	16.92	351	Chesapeake Bay Program
2006-0009 PLT 02	Infiltration Practices	5/12/2007	4.09	0.00	1.68	41.15	718	85%	80%	95%	1.42	32.92	682	Chesapeake Bay Program
2002-0022 01	MTD/Proprietary: Filtering Devices	6/27/2007	2.02	1.37	2.49	29.64	1,719	45%	29%	80%	1.12	8.49	1375.18	VA BMP Clearinghouse-MTD
2005-0019 PLT 01	Sheet Flow to Veg. Filter Strip/Conserved Open Spac	8/30/2007	1.02	0.52	1.05	13.80	697	10%	10%	50%	0.10	1.38	348.49	Chesapeake Bay Program
2005-0019 PLT 02	Permeable Pavement	8/30/2007	0.01	0.01	0.01	0.15	11	20%	10%	55%	0.00	0.02	5.80	Chesapeake Bay Program
2005-0019 PLT 03	Permeable Pavement	8/30/2007	0.01	0.01	0.01	0.15	11	20%	10%	55%	0.00	0.02	5.80	Chesapeake Bay Program
2006-0018 PLT 01	MTD/Proprietary: Filtering Devices	10/17/2007	2.26	1.60	2.87	33.64	1,993	45%	29%	80%	1.29	9.64	1,595	VA BMP Clearinghouse-MTD
2006-0018 PLT 02	MTD/Proprietary: Filtering Devices	10/17/2007	10.18	10.18	16.49	171.63	11,924	45%	29%	80%	7.42	49.17	9,539	VA BMP Clearinghouse-MTD
2006-0018 PLT 03	Urban Stream Restoration	10/17/2007	11.27	1.28	6.17	122.16	3,257	50%	25%	15%	3.09	30.54	489	Chesapeake Bay Program

City of Alexandria, VA
2006 - 2009 BMP Calculations

BMP ID	BMP Type	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed	TSS Removed	Efficiency Method
2005-0005 01	Filtering Practices	1/21/2008	2.99	2.82	4.64	49.26	3,333	60%	40%	80%	2.78	19.70	2666.41	Chesapeake Bay Program
2005-0020 01	Filtering Practices	1/21/2008	1.34	1.27	2.09	22.12	1,500	60%	40%	80%	1.25	8.85	1,200	Chesapeake Bay Program
2003-0010 01	Filtering Practices	3/4/2008	0.96	0.96	1.56	16.20	1,126	60%	40%	80%	0.93	6.48	900.51	Chesapeake Bay Program
2007-0004 PLT 01	MTD/Proprietary: Hydrodynamic Devices	5/3/2008	0.59	0.59	0.95	9.91	689	20%	13%	50%	0.19	1.26	344	VA BMP Clearinghouse-MTD
2007-0004 PLT 02	MTD/Proprietary: Hydrodynamic Devices	5/3/2008	0.67	0.67	1.09	11.30	785	20%	13%	50%	0.22	1.44	392	VA BMP Clearinghouse-MTD
2007-0004 PLT 03	MTD/Proprietary: Hydrodynamic Devices	5/3/2008	0.52	0.46	0.77	8.35	548	20%	13%	50%	0.15	1.06	274	VA BMP Clearinghouse-MTD
2001-0014 01	MTD/Proprietary: Filtering Devices	5/22/2008	1.00	1.00	1.62	16.86	1,171	45%	29%	80%	0.73	4.83	937.06	VA BMP Clearinghouse-MTD
2001-0014-A 01	Wet Ponds	5/28/2008	225.00	133.00	253.18	3168.82	171,959	45%	30%	60%	113.93	946.73	102758.87	Retrofit Curves
2001-0003 01	Filtering Practices	7/11/2008	1.15	1.15	1.86	19.39	1,347	60%	40%	80%	1.12	7.76	1077.61	Chesapeake Bay Program
2001-0003 02	Filtering Practices	7/11/2008	1.20	1.20	1.94	20.23	1,406	60%	40%	80%	1.17	8.09	1124.47	Chesapeake Bay Program
2007-0010 PLT 01	Sheet Flow to Veg. Filter Strip/Conserved Open Spac	8/8/2008	0.48	0.42	0.71	7.69	503	10%	10%	50%	0.07	0.77	251	Chesapeake Bay Program
2007-0101 01	Bioretention (inc. Urban Bioretention)	8/16/2008	0.50	0.50	0.81	8.43	586	45%	25%	55%	0.36	2.11	322	Chesapeake Bay Program
2007-0101 02	Bioretention (inc. Urban Bioretention)	8/16/2008	0.50	0.50	0.81	8.43	586	45%	25%	55%	0.36	2.11	322	Chesapeake Bay Program
2002-0001 01	MTD/Proprietary: Hydrodynamic Devices	8/19/2008	1.05	0.83	1.43	16.21	1,011	20%	13%	50%	0.29	2.06	505.44	VA BMP Clearinghouse-MTD
2003-0016 01	MTD/Proprietary: Filtering Devices	9/19/2008	0.28	0.19	0.34	4.11	238	45%	29%	80%	0.16	1.18	190.70	VA BMP Clearinghouse-MTD
2003-0016 02	Vegetated Roof	9/25/2008	0.07	0.07	0.11	1.10	76	53%	45%	56%	0.06	0.49	42.64	Retrofit Curves
2005-0011 01	MTD/Proprietary: Filtering Devices	10/10/2008	0.25	0.18	0.32	3.76	226	45%	29%	80%	0.15	1.08	180.90	VA BMP Clearinghouse-MTD
2005-0011 02	MTD/Proprietary: Filtering Devices	10/10/2008	0.44	0.42	0.69	7.29	497	45%	29%	80%	0.31	2.09	397.83	VA BMP Clearinghouse-MTD
2006-0036 PLT 01	MTD/Proprietary: Hydrodynamic Devices	11/13/2008	0.68	0.34	0.70	9.21	463	20%	13%	50%	0.14	1.17	231	VA BMP Clearinghouse-MTD
2007-0016 PLT 01	MTD/Proprietary: Filtering Devices	11/20/2008	2.13	1.71	2.94	33.06	2,077	45%	29%	80%	1.32	9.47	1,661	VA BMP Clearinghouse-MTD
2002-0048 01	Extended Detention (ED) Ponds	1/5/2009	1.06	0.42	0.94	13.49	599	20%	13%	50%	0.19	1.72	299.74	VA BMP Clearinghouse-MTD
2002-0048 02	MTD/Proprietary: Hydrodynamic Devices	1/5/2009	1.24	0.67	1.31	17.00	880	20%	13%	50%	0.26	2.16	440.01	VA BMP Clearinghouse-MTD
2008-0018 PLT 01	MTD/Proprietary: Filtering Devices	2/12/2009	0.73	0.65	1.09	11.76	775	45%	29%	80%	0.49	3.37	620	VA BMP Clearinghouse-MTD
2005-0015 01	Filtering Practices	2/23/2009	0.48	0.45	0.73	7.82	528	60%	40%	80%	0.44	3.13	422.15	Chesapeake Bay Program
2005-0028 01	Filtering Practices	2/23/2009	0.57	0.57	0.92	9.61	668	60%	40%	80%	0.55	3.84	534	Chesapeake Bay Program
2003-0042 01	MTD/Proprietary: Hydrodynamic Devices	5/8/2009	1.20	0.12	0.64	12.90	330	20%	13%	50%	0.13	1.64	165.21	VA BMP Clearinghouse-MTD
2003-0042 02	MTD/Proprietary: Hydrodynamic Devices	5/8/2009	0.13	0.13	0.21	2.19	152	20%	13%	50%	0.04	0.28	76.14	VA BMP Clearinghouse-MTD
2008-0101 01	Bioretention (inc. Urban Bioretention)	5/27/2009	0.26	0.20	0.35	3.98	245	45%	25%	55%	0.16	0.99	135	Chesapeake Bay Program
2008-0101 02	Bioretention (inc. Urban Bioretention)	5/27/2009	0.30	0.21	0.38	4.45	262	45%	25%	55%	0.17	1.11	144	Chesapeake Bay Program
		Total	**312.80**	**189.34**	**357.36**	**4,435.24**	**243,463.00**				**157.98**	**1,305.00**	**150,444.85**	

July 1, 2009 to June 30, 2014 BMP Calculation Table

City of Alexandria, VA
2009 - 2014 BMP Calculations

BMP ID	BMP Type	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed	TSS Removed [LB/YR]	Efficiency Method	Date Range
1998-0019 01	MTD/Proprietary: Hydrodynamic Devices	7/21/2009	1.84	1.66	2.76	29.80	1,976	20%	13%	50%	0.55	3.79	988.02	VA BMP Clearinghouse-MTD	2009-2014
2006-0012 01	MTD/Proprietary: Hydrodynamic Devices	8/18/2009	0.69	0.62	1.03	11.16	739	20%	13%	50%	0.21	1.42	369.26	VA BMP Clearinghouse-MTD	2009-2014
2006-0012 02	MTD/Proprietary: Hydrodynamic Devices	8/18/2009	2.41	2.28	3.75	39.75	2,693	20%	13%	50%	0.75	5.06	1346.73	VA BMP Clearinghouse-MTD	2009-2014
2001-0012 01	Bioretention (inc. Urban Bioretention)	9/1/2009	0.8	0.2	0.57	9.41	340	45%	25%	55%	0.26	2.35	186.86	Chesapeake Bay Program	2009-2014
2001-0012 02	Bioretention (inc. Urban Bioretention)	9/1/2009	0.2	0.06	0.15	2.42	95	45%	25%	55%	0.07	0.61	52.19	Chesapeake Bay Program	2009-2014
2001-0012 03	Bioretention (inc. Urban Bioretention)	9/1/2009	0.399	0.1	0.28	4.70	170	45%	25%	55%	0.13	1.17	93.33	Chesapeake Bay Program	2009-2014
2001-0012 05	Bioretention (inc. Urban Bioretention)	9/1/2009	0.517	0.172	0.42	6.37	262	45%	25%	55%	0.19	1.59	144.16	Chesapeake Bay Program	2009-2014
2001-0012 06	Sheet Flow to Veg. Filter Strip/Conserved Open Spac	9/1/2009	0.3	0.06	0.20	3.43	112	10%	10%	50%	0.02	0.34	56.24	Chesapeake Bay Program	2009-2014
2001-0012 07	Sheet Flow to Veg. Filter Strip/Conserved Open Spac	9/1/2009	0.5	0.06	0.28	5.44	148	10%	10%	50%	0.03	0.54	73.82	Chesapeake Bay Program	2009-2014
2001-0012 08	Sheet Flow to Veg. Filter Strip/Conserved Open Spac	9/1/2009	0.2	0.09	0.19	2.63	125	10%	10%	50%	0.02	0.26	62.38	Chesapeake Bay Program	2009-2014
2001-0012 PLT 01	Sheet Flow to Veg. Filter Strip/Conserved Open Spac	9/1/2009	0.36	0.16	0.34	4.71	223	10%	10%	50%	0.03	0.47	111.29	Chesapeake Bay Program	2009-2014
2005-0024 01	MTD/Proprietary: Hydrodynamic Devices	9/17/2009	0.9	0.7	1.22	13.82	855	20%	13%	50%	0.24	1.76	427.54	VA BMP Clearinghouse-MTD	2009-2014
2000-0028 01	Filtering Practices	9/21/2009	3.392	2.942	4.95	54.13	3,525	60%	40%	80%	2.97	21.65	2820.11	Chesapeake Bay Program	2009-2014
2000-0028 02	Filtering Practices	9/21/2009	5.813	4.842	8.24	91.41	5,842	60%	40%	80%	4.95	36.57	4673.79	Chesapeake Bay Program	2009-2014
2000-0028 03	MTD/Proprietary: Hydrodynamic Devices	9/21/2009	1.73	1.73	2.80	29.17	2,026	20%	13%	50%	0.56	3.71	1013.19	VA BMP Clearinghouse-MTD	2009-2014
2000-0028 04	MTD/Proprietary: Hydrodynamic Devices	9/21/2009	1.55	1.55	2.51	26.13	1,816	20%	13%	50%	0.50	3.33	907.77	VA BMP Clearinghouse-MTD	2009-2014
2010-0007 GRD 01	Bioretention (inc. Urban Bioretention)	10/9/2009	0.8829	0.1221	0.51	9.72	277	45%	25%	55%	0.23	2.43	152.22	Chesapeake Bay Program	2009-2014
2010-0007 GRD 02	Bioretention (inc. Urban Bioretention)	10/9/2009	0.0784	0.0784	0.13	1.32	92	85%	80%	90%	0.11	1.06	82.65	Chesapeake Bay Program	2009-2014
2005-0003 01	MTD/Proprietary: Hydrodynamic Devices	10/22/2009	0.83	0.76	1.26	13.52	903	20%	13%	50%	0.25	1.72	451.25	VA BMP Clearinghouse-MTD	2009-2014
2005-0003 02	MTD/Proprietary: Hydrodynamic Devices	10/22/2009	0.26	0.24	0.40	4.25	285	20%	13%	50%	0.08	0.54	142.32	VA BMP Clearinghouse-MTD	2009-2014
2004-0010 01	Filtering Practices	11/12/2009	1.4	0.96	1.74	20.62	1,202	45%	29%	80%	0.78	5.91	961.46	VA BMP Clearinghouse-MTD	2009-2014
2006-0025 01	MTD/Proprietary: Hydrodynamic Devices	12/1/2009	6.49	5.15	8.89	100.32	6,268	10%	5%	10%	0.89	5.02	626.79	Chesapeake Bay Program	2009-2014
2006-0025 02	Filtering Practices	12/1/2009	0.46	0.46	0.75	7.76	539	60%	40%	80%	0.45	3.10	431.05	Chesapeake Bay Program	2009-2014
2006-0025 03	Filtering Practices	12/1/2009	0.3	0.3	0.49	5.06	351	60%	40%	80%	0.29	2.02	281.12	Chesapeake Bay Program	2009-2014
2006-0025 04	Filtering Practices	12/1/2009	0.35	0.35	0.57	5.90	410	60%	40%	80%	0.34	2.36	327.97	Chesapeake Bay Program	2009-2014
2006-0023 01	MTD/Proprietary: Filtering Devices	12/11/2009	0.738	0.463	0.86	10.58	591	20%	13%	50%	0.17	1.35	295.33	VA BMP Clearinghouse-MTD	2009-2014
2006-0023 02	Bioretention (inc. Urban Bioretention)	12/11/2009	0.244	0.244	0.40	4.11	286	85%	80%	90%	0.34	3.29	257.22	Chesapeake Bay Program	2009-2014
2007-0008 01	MTD/Proprietary: Hydrodynamic Devices	12/23/2009	0.884	0.401	0.85	11.62	555	20%	13%	50%	0.17	1.48	277.31	VA BMP Clearinghouse-MTD	2009-2014
2005-0016 01	MTD/Proprietary: Filtering Devices	12/28/2009	1.46	1.17	2.01	22.65	1,421	20%	13%	50%	0.40	2.88	710.71	VA BMP Clearinghouse-MTD	2009-2014
2007-0027 PLT 01	MTD/Proprietary: Filtering Devices	12/28/2009	0.741	0.6726	1.12	12.03	800	20%	13%	50%	0.22	1.53	399.93	VA BMP Clearinghouse-MTD	2009-2014
2002-0044 01	Extended Detention (ED) Ponds	1/14/2010	1.22	0.862	1.54	18.14	1,073	20%	13%	50%	0.31	2.31	536.31	VA BMP Clearinghouse-MTD	2009-2014
2002-0044 02	Extended Detention (ED) Ponds	1/14/2010	1.19	0.889	1.56	18.02	1,094	20%	13%	50%	0.31	2.29	547.11	VA BMP Clearinghouse-MTD	2009-2014
2002-0044 03	Extended Detention (ED) Ponds	1/14/2010	0.755	0.503	0.92	11.02	633	20%	13%	50%	0.18	1.40	316.74	VA BMP Clearinghouse-MTD	2009-2014

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2002-0044 04	Extended Detention (ED) Ponds	1/14/2010	1	0.573	1.10	13.96	746	20%	13%	50%	0.22	1.78	373.12	VA BMP Clearinghouse-MTD	2009-2014
2002-0044 05	Filtering Practices	1/14/2010	2.898	2.512	4.23	46.24	3,010	45%	29%	80%	1.90	13.25	2408.17	VA BMP Clearinghouse-MTD	2009-2014
2002-0044 06	Bioretention (inc. Urban Bioretention)	1/14/2010	3.19	1.489	3.11	42.23	2,043	45%	25%	55%	1.40	10.56	1123.72	Chesapeake Bay Program	2009-2014
2002-0044 08	Bioretention (inc. Urban Bioretention)	1/14/2010	0.182	0.182	0.29	3.07	213	85%	80%	90%	0.25	2.45	191.86	Chesapeake Bay Program	2009-2014
2003-0030 01	Sheet Flow to Veg. Filter Strip/Conserved Open Spac	2/1/2010	1.65	0.11	0.81	17.36	400	10%	10%	50%	0.08	1.74	199.79	Chesapeake Bay Program	2009-2014
2003-0030 02	Sheet Flow to Veg. Filter Strip/Conserved Open Spac	2/1/2010	1.85	0.56	1.44	22.43	883	10%	10%	50%	0.14	2.24	441.36	Chesapeake Bay Program	2009-2014
2003-0030 03	Permeable Pavement	2/1/2010	0.114	0.114	0.18	1.92	134	20%	10%	55%	0.04	0.19	73.44	Chesapeake Bay Program	2009-2014
2003-0030 04	MTD/Proprietary: Hydrodynamic Devices	2/1/2010	0.68	0.14	0.45	7.80	259	10%	5%	10%	0.04	0.39	25.89	Chesapeake Bay Program	2009-2014
2008-0035 PLT 01	Permeable Pavement	2/27/2010	0.077	0.077	0.12	1.30	90	20%	20%	55%	0.02	0.26	49.61	Chesapeake Bay Program	2009-2014
2008-0035 PLT 02	MTD/Proprietary: Hydrodynamic Devices	2/27/2010	0.82	0.08	0.43	8.80	224	10%	5%	10%	0.04	0.44	22.38	Chesapeake Bay Program	2009-2014
2008-0012 01	MTD/Proprietary: Hydrodynamic Devices	3/27/2010	0.73	0.68	1.12	11.97	805	20%	13%	50%	0.22	1.52	402.64	VA BMP Clearinghouse-MTD	2009-2014
2008-0012 02	MTD/Proprietary: Hydrodynamic Devices	3/27/2010	1.1	1.1	1.78	18.55	1,288	20%	13%	50%	0.36	2.36	644.23	VA BMP Clearinghouse-MTD	2009-2014
2008-0012 03	MTD/Proprietary: Hydrodynamic Devices	3/27/2010	1.1	1.1	1.78	18.55	1,288	20%	13%	50%	0.36	2.36	644.23	VA BMP Clearinghouse-MTD	2009-2014
2009-0014 GRD 01	Bioretention (inc. Urban Bioretention)	4/19/2010	0.068	0.066	0.11	1.13	78	45%	25%	55%	0.05	0.28	42.71	Chesapeake Bay Program	2009-2014
2009-0014 GRD 02	Bioretention (inc. Urban Bioretention)	4/19/2010	0.069	0.067	0.11	1.15	79	45%	25%	55%	0.05	0.29	43.36	Chesapeake Bay Program	2009-2014
2009-0014 GRD 03	Bioretention (inc. Urban Bioretention)	4/19/2010	0.052	0.046	0.08	0.84	55	45%	25%	55%	0.03	0.21	30.21	Chesapeake Bay Program	2009-2014
2009-0014 GRD 04	Bioretention (inc. Urban Bioretention)	4/19/2010	0.052	0.046	0.08	0.84	55	45%	25%	55%	0.03	0.21	30.21	Chesapeake Bay Program	2009-2014
2007-0013 01	MTD/Proprietary: Hydrodynamic Devices	6/11/2010	1.81	1.4	2.44	27.73	1,712	20%	13%	50%	0.49	3.53	855.96	VA BMP Clearinghouse-MTD	2009-2014
2006-0030 01	MTD/Proprietary: Hydrodynamic Devices	9/11/2010	1.19	1	1.70	18.77	1,205	20%	13%	50%	0.34	2.39	602.36	VA BMP Clearinghouse-MTD	2009-2014
2006-0031 01	Filtering Practices	9/11/2010	0.285	0.224	0.39	4.39	273	45%	29%	80%	0.17	1.26	218.48	VA BMP Clearinghouse-MTD	2009-2014
2006-0031 02	Filtering Practices	9/11/2010	0.315	0.248	0.43	4.86	302	45%	29%	80%	0.19	1.39	241.81	VA BMP Clearinghouse-MTD	2009-2014
2006-0031 03	Filtering Practices	9/11/2010	0.197	0.155	0.27	3.04	189	45%	29%	80%	0.12	0.87	151.15	VA BMP Clearinghouse-MTD	2009-2014
2006-0031 04	Filtering Practices	9/11/2010	0.226	0.178	0.31	3.48	217	45%	29%	80%	0.14	1.00	173.55	VA BMP Clearinghouse-MTD	2009-2014
2004-0032 01	MTD/Proprietary: Hydrodynamic Devices	10/18/2010	0.44	0.34	0.59	6.74	416	20%	13%	50%	0.12	0.86	207.91	VA BMP Clearinghouse-MTD	2009-2014
2004-0032 02	Bioretention (inc. Urban Bioretention)	10/18/2010	0.13	0.11	0.19	2.06	132	45%	25%	55%	0.08	0.51	72.80	Chesapeake Bay Program	2009-2014
2004-0032 03	Bioretention (inc. Urban Bioretention)	10/18/2010	0.17	0.15	0.25	2.73	179	45%	25%	55%	0.11	0.68	98.57	Chesapeake Bay Program	2009-2014
2004-0018 01	Filtering Practices	11/3/2010	1.84	1.4	2.45	28.03	1,717	45%	29%	80%	1.10	8.03	1373.76	VA BMP Clearinghouse-MTD	2009-2014
2004-0018 02	Filtering Practices	11/3/2010	0.54	0.5	0.83	8.83	593	45%	29%	80%	0.37	2.53	474.15	VA BMP Clearinghouse-MTD	2009-2014
2008-0013 01	Filtering Practices	12/8/2010	1.86	1.49	2.57	28.85	1,810	50%	32%	80%	1.28	9.18	1448.25	VA BMP Clearinghouse-MTD	2009-2014
2005-0041 01	Filtering Practices	12/16/2010	1.214	1.164	1.91	20.13	1,372	45%	29%	80%	0.86	5.77	1097.77	VA BMP Clearinghouse-MTD	2009-2014
1999-0018 01	Bioretention (inc. Urban Bioretention)	3/16/2011	0.0263	0.0263	0.04	0.44	31	45%	25%	55%	0.02	0.11	16.94	Chesapeake Bay Program	2009-2014
2002-0009 01	Filtering Practices	4/8/2011	0.23	0.23	0.37	3.88	269	60%	40%	80%	0.22	1.55	215.52	Chesapeake Bay Program	2009-2014
2007-0025 01	Filtering Practices	4/11/2011	0.433	0.433	0.70	7.30	507	45%	29%	80%	0.32	2.09	405.75	VA BMP Clearinghouse-MTD	2009-2014

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2007-0025 02	Permeable Pavement	4/11/2011	0.069	0.069	0.11	1.16	81	20%	10%	55%	0.02	0.12	44.45	Chesapeake Bay Program	2009-2014
2007-0025 03	Permeable Pavement	4/11/2011	0.026	0.026	0.04	0.44	30	20%	10%	55%	0.01	0.04	16.75	Chesapeake Bay Program	2009-2014
2008-0102 01	MTD/Proprietary: Hydrodynamic Devices	5/9/2011	9.195	4.667	9.42	124.28	6,263	20%	13%	50%	1.88	15.82	3131.29	VA BMP Clearinghouse-MTD	2009-2014
2003-0006 01	Sheet Flow to Veg. Filter Strip/Conserved Open Spac	5/20/2011	0.48	0.08	0.29	5.38	164	10%	10%	50%	0.03	0.54	82.01	Chesapeake Bay Program	2009-2014
2007-0011 01	Filtering Practices	6/15/2011	0.115	0.0955	0.16	1.81	115	45%	29%	80%	0.07	0.52	92.23	VA BMP Clearinghouse-MTD	2009-2014
2007-0011 02	Permeable Pavement	6/15/2011	0.0164	0.0164	0.03	0.28	19	20%	10%	55%	0.01	0.03	10.57	Chesapeake Bay Program	2009-2014
2008-0017 01	Bioretention (inc. Urban Bioretention)	6/29/2011	0.41	0.38	0.63	6.71	450	45%	25%	55%	0.28	1.68	247.71	Chesapeake Bay Program	2009-2014
2008-0017 02	Bioretention (inc. Urban Bioretention)	6/29/2011	0.58	0.395	0.72	8.52	495	45%	25%	55%	0.32	2.13	272.36	Chesapeake Bay Program	2009-2014
2008-0017 03	Bioretention (inc. Urban Bioretention)	6/29/2011	0.58	0.395	0.72	8.52	495	45%	25%	55%	0.32	2.13	272.36	Chesapeake Bay Program	2009-2014
2010-0023 GRD 01	Filtering Practices	7/20/2011	0.063	0.063	0.10	1.06	74	60%	40%	80%	0.06	0.42	59.03	Chesapeake Bay Program	2009-2014
2010-0024 GRD 01	Filtering Practices	7/20/2011	0.035	0.035	0.06	0.59	41	60%	40%	80%	0.03	0.24	32.80	Chesapeake Bay Program	2009-2014
2010-0018 GRD 01	Bioretention (inc. Urban Bioretention)	7/30/2011	0.28	0.02	0.14	2.96	69	45%	25%	55%	0.06	0.74	38.02	Chesapeake Bay Program	2009-2014
2009-0009 04	Bioretention (inc. Urban Bioretention)	8/11/2011	0.15	0.15	0.24	2.53	176	85%	80%	90%	0.21	2.02	158.13	Chesapeake Bay Program	2009-2014
2009-0009 05	Bioretention (inc. Urban Bioretention)	8/11/2011	0.0146	0.0146	0.02	0.25	17	85%	80%	90%	0.02	0.20	15.39	Chesapeake Bay Program	2009-2014
2010-0021 GRD 01	Infiltration Practices	9/7/2011	0.26	0.26	0.42	4.38	305	85%	80%	95%	0.36	3.51	289.32	Chesapeake Bay Program	2009-2014
2009-0008 01	Filtering Practices	9/15/2011	0.057	0.057	0.09	0.96	67	60%	40%	80%	0.06	0.38	53.41	Chesapeake Bay Program	2009-2014
2009-0008 02	Filtering Practices	9/15/2011	0.056	0.056	0.09	0.94	66	60%	40%	80%	0.05	0.38	52.48	Chesapeake Bay Program	2009-2014
2010-0001 01	Filtering Practices	10/31/2011	1.73	1.34	2.33	26.52	1,638	50%	32%	80%	1.17	8.44	1310.50	VA BMP Clearinghouse-MTD	2009-2014
2009-0101 01	Bioretention (inc. Urban Bioretention)	1/24/2012	0.0142	0.0142	0.02	0.24	17	85%	80%	90%	0.02	0.19	14.97	Chesapeake Bay Program	2009-2014
2009-0101 02	Bioretention (inc. Urban Bioretention)	1/24/2012	0.0124	0.0124	0.02	0.21	15	85%	80%	90%	0.02	0.17	13.07	Chesapeake Bay Program	2009-2014
2004-0038 03	Permeable Pavement	1/31/2012	0.104	0.104	0.17	1.75	122	20%	10%	55%	0.03	0.18	67.00	Chesapeake Bay Program	2009-2014
2009-0003 01	MTD/Proprietary: Filtering Devices	4/3/2012	2.46	2.38	3.89	40.93	2,802	20%	13%	50%	0.78	5.21	1400.90	VA BMP Clearinghouse-MTD	2009-2014
2009-0003 02	MTD/Proprietary: Filtering Devices	4/3/2012	2.45	2.23	3.70	39.81	2,651	20%	13%	50%	0.74	5.07	1325.36	VA BMP Clearinghouse-MTD	2009-2014
2007-0024 PLT 01	Filtering Practices	4/19/2012	0.09	0.09	0.15	1.52	105	45%	29%	80%	0.07	0.43	84.34	VA BMP Clearinghouse-MTD	2009-2014
2012-0101 01	Bioretention (inc. Urban Bioretention)	5/2/2012	0.25	0.25	0.41	4.22	293	45%	25%	55%	0.18	1.05	161.06	Chesapeake Bay Program	2009-2014
2011-0020 GRD 01	MTD/Proprietary: Hydrodynamic Devices	5/9/2012	0.66	0.51	0.89	10.11	624	20%	13%	50%	0.18	1.29	311.87	VA BMP Clearinghouse-MTD	2009-2014
2007-0030 01	Filtering Practices	6/19/2012	0.244	0.148	0.28	3.46	190	60%	40%	80%	0.17	1.38	152.19	Chesapeake Bay Program	2009-2014
2003-0019 01	Filtering Practices	6/22/2012	1.39	1.1	1.90	21.47	1,339	45%	29%	80%	0.86	6.15	1071.55	VA BMP Clearinghouse-MTD	2009-2014
2003-0019 02	Bioretention (inc. Urban Bioretention)	6/22/2012	0.259	0.259	0.42	4.37	303	85%	80%	90%	0.36	3.49	273.03	Chesapeake Bay Program	2009-2014
2007-0014 01	MTD/Proprietary: Hydrodynamic Devices	6/24/2012	2.21	1.59	2.83	33.05	1,971	20%	13%	50%	0.57	4.21	985.70	VA BMP Clearinghouse-MTD	2009-2014
2007-0014 02	MTD/Proprietary: Hydrodynamic Devices	6/24/2012	7.37	5.56	9.75	111.97	6,831	20%	13%	50%	1.95	14.25	3415.37	VA BMP Clearinghouse-MTD	2009-2014
2009-0013 01	Sheet Flow to Veg. Filter Strip/Conserved Open Spac	7/8/2012	0.26	0.26	0.42	4.38	305	10%	10%	50%	0.04	0.44	152.27	Chesapeake Bay Program	2009-2014
2011-0032 GRD 01	Bioretention (inc. Urban Bioretention)	8/1/2012	0.7575	0.0851	0.41	8.21	218	45%	25%	55%	0.19	2.05	119.84	Chesapeake Bay Program	2009-2014

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2011-0032 GRD 02	MTD/Proprietary: Filtering Devices	8/1/2012	0.69	0.35	0.71	9.32	470	20%	13%	50%	0.14	1.19	234.87	VA BMP Clearinghouse-MTD	2009-2014
2011-0032 GRD 03	Filtering Practices	8/1/2012	0.0448	0.0448	0.07	0.76	52	60%	40%	80%	0.04	0.30	41.98	Chesapeake Bay Program	2009-2014
2011-0032 GRD 04	Filtering Practices	8/1/2012	0.0052	0.0052	0.01	0.09	6	60%	40%	80%	0.01	0.04	4.87	Chesapeake Bay Program	2009-2014
2011-0026 GRD 01	MTD/Proprietary: Hydrodynamic Devices	9/6/2012	1.34	1.14	1.93	21.23	1,370	20%	13%	50%	0.39	2.70	685.23	VA BMP Clearinghouse-MTD	2009-2014
2011-0026 GRD 02	Bioretention (inc. Urban Bioretention)	9/6/2012	0.43	0.27	0.50	6.16	344	45%	25%	55%	0.23	1.54	189.41	Chesapeake Bay Program	2009-2014
2011-0026 GRD 03	Filtering Practices	9/6/2012	2.34	2.19	3.61	38.43	2,592	60%	40%	80%	2.17	15.37	2073.25	Chesapeake Bay Program	2009-2014
2011-0026 GRD 04	Permeable Pavement	9/6/2012	0.014	0.014	0.02	0.24	16	20%	10%	55%	0.00	0.02	9.02	Chesapeake Bay Program	2009-2014
2011-0026 GRD 05	Permeable Pavement	9/6/2012	0.014	0.014	0.02	0.24	16	20%	10%	55%	0.00	0.02	9.02	Chesapeake Bay Program	2009-2014
2009-0006 01	MTD/Proprietary: Filtering Devices	9/29/2012	2.89	2.13	3.76	43.57	2,629	20%	13%	50%	0.75	5.54	1314.26	VA BMP Clearinghouse-MTD	2009-2014
2009-0006 03	Bioretention (inc. Urban Bioretention)	9/29/2012	0.33	0.33	0.53	5.56	387	85%	80%	90%	0.45	4.45	347.88	Chesapeake Bay Program	2009-2014
2003-0037 01	MTD/Proprietary: Filtering Devices	10/15/2012	1.83	0.56	1.43	22.23	879	20%	13%	50%	0.29	2.83	439.60	VA BMP Clearinghouse-MTD	2009-2014
2005-0013 01	Filtering Practices	10/19/2012	0.62	0.54	0.91	9.91	647	45%	29%	80%	0.41	2.84	517.26	VA BMP Clearinghouse-MTD	2009-2014
2005-0013 02	Filtering Practices	10/19/2012	0.85	0.6	1.07	12.63	747	45%	29%	80%	0.48	3.62	597.39	VA BMP Clearinghouse-MTD	2009-2014
2005-0013 03	Filtering Practices	10/19/2012	0.54	0.39	0.69	8.09	483	45%	29%	80%	0.31	2.32	386.55	VA BMP Clearinghouse-MTD	2009-2014
2003-0013 01	MTD/Proprietary: Hydrodynamic Devices	10/22/2012	0.28	0.25	0.42	4.52	298	20%	13%	50%	0.08	0.57	149.05	VA BMP Clearinghouse-MTD	2009-2014
2003-0013 02	MTD/Proprietary: Hydrodynamic Devices	10/22/2012	0.35	0.31	0.52	5.63	370	20%	13%	50%	0.10	0.72	185.07	VA BMP Clearinghouse-MTD	2009-2014
2003-0013 03	MTD/Proprietary: Hydrodynamic Devices	10/22/2012	1.4	0.54	1.23	17.76	784	20%	13%	50%	0.25	2.26	391.85	VA BMP Clearinghouse-MTD	2009-2014
2009-0009 01	MTD/Proprietary: Hydrodynamic Devices	10/26/2012	1.5	0.841	1.63	20.82	1,101	20%	13%	50%	0.33	2.65	550.47	VA BMP Clearinghouse-MTD	2009-2014
2009-0009 02	Filtering Practices	10/26/2012	0.1691	0.1691	0.27	2.85	198	60%	40%	80%	0.16	1.14	158.46	Chesapeake Bay Program	2009-2014
2010-0005 01	Filtering Practices	10/26/2012	0.0166	0.0166	0.03	0.28	19	60%	40%	80%	0.02	0.11	15.56	Chesapeake Bay Program	2009-2014
2010-0005 02	Filtering Practices	10/26/2012	0.0166	0.0166	0.03	0.28	19	60%	40%	80%	0.02	0.11	15.56	Chesapeake Bay Program	2009-2014
2010-0005 03	Filtering Practices	10/26/2012	0.0166	0.0166	0.03	0.28	19	60%	40%	80%	0.02	0.11	15.56	Chesapeake Bay Program	2009-2014
2010-0005 04	Filtering Practices	10/26/2012	0.0166	0.0166	0.03	0.28	19	60%	40%	80%	0.02	0.11	15.56	Chesapeake Bay Program	2009-2014
2010-0005 05	Filtering Practices	10/26/2012	0.0166	0.0166	0.03	0.28	19	60%	40%	80%	0.02	0.11	15.56	Chesapeake Bay Program	2009-2014
2010-0005 06	Filtering Practices	10/26/2012	0.0166	0.0166	0.03	0.28	19	60%	40%	80%	0.02	0.11	15.56	Chesapeake Bay Program	2009-2014
2010-0005 07	Filtering Practices	10/26/2012	0.0166	0.0166	0.03	0.28	19	60%	40%	80%	0.02	0.11	15.56	Chesapeake Bay Program	2009-2014
2010-0005 08	Filtering Practices	10/26/2012	0.0135	0.0135	0.02	0.23	16	60%	40%	80%	0.01	0.09	12.65	Chesapeake Bay Program	2009-2014
2010-0005 09	Filtering Practices	10/26/2012	0.0135	0.0135	0.02	0.23	16	60%	40%	80%	0.01	0.09	12.65	Chesapeake Bay Program	2009-2014
2010-0009 01	Filtering Practices	10/26/2012	0.0316	0.0316	0.05	0.53	37	60%	40%	80%	0.03	0.21	29.61	Chesapeake Bay Program	2009-2014
2010-0009 02	Filtering Practices	10/26/2012	0.0316	0.0316	0.05	0.53	37	60%	40%	80%	0.03	0.21	29.61	Chesapeake Bay Program	2009-2014
2010-0009 03	Filtering Practices	10/26/2012	0.0316	0.0316	0.05	0.53	37	60%	40%	80%	0.03	0.21	29.61	Chesapeake Bay Program	2009-2014
2010-0009 04	Filtering Practices	10/26/2012	0.0316	0.0316	0.05	0.53	37	60%	40%	80%	0.03	0.21	29.61	Chesapeake Bay Program	2009-2014
2010-0009 05	Filtering Practices	10/26/2012	0.0316	0.0316	0.05	0.53	37	60%	40%	80%	0.03	0.21	29.61	Chesapeake Bay Program	2009-2014

City of Alexandria, VA
2009 - 2014 BMP Calculations

BMP ID	BMP Type	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed	TSS Removed [LB/YR]	Efficiency Method	Date Range
2010-0010 01	Filtering Practices	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program	2009-2014
2010-0010 02	Filtering Practices	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program	2009-2014
2010-0010 03	Filtering Practices	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program	2009-2014
2010-0010 04	Filtering Practices	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program	2009-2014
2010-0010 05	Filtering Practices	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program	2009-2014
2010-0010 06	Filtering Practices	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program	2009-2014
2010-0010 07	Filtering Practices	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program	2009-2014
2010-0010 08	Filtering Practices	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program	2009-2014
2010-0010 09	Filtering Practices	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program	2009-2014
2010-0010 10	Filtering Practices	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program	2009-2014
2011-0008 01	Bioretention (inc. Urban Bioretention)	11/14/2012	0.479	0.435	0.72	7.78	517	45%	25%	55%	0.33	1.94	284.49	Chesapeake Bay Program	2009-2014
2011-0008 02	Bioretention (inc. Urban Bioretention)	11/14/2012	0.718	0.635	1.06	11.54	758	45%	25%	55%	0.48	2.89	417.11	Chesapeake Bay Program	2009-2014
2008-0008 01	MTD/Proprietary: Hydrodynamic Devices	11/27/2012	0.67	0.5624	0.96	10.57	678	20%	13%	50%	0.19	1.34	338.83	VA BMP Clearinghouse-MTD	2009-2014
2008-0008 02	MTD/Proprietary: Hydrodynamic Devices	11/27/2012	0.44	0.2827	0.52	6.35	359	20%	13%	50%	0.10	0.81	179.39	VA BMP Clearinghouse-MTD	2009-2014
2008-0008 03	MTD/Proprietary: Filtering Devices	11/27/2012	0.73	0.6996	1.15	12.10	825	20%	13%	50%	0.23	1.54	412.40	VA BMP Clearinghouse-MTD	2009-2014
2007-0003 PLT 01	Bioretention (inc. Urban Bioretention)	11/29/2012	0.062	0.002	0.03	0.64	13	45%	25%	55%	0.01	0.16	7.09	Chesapeake Bay Program	2009-2014
2007-0003 PLT 02	MTD/Proprietary: Hydrodynamic Devices	11/29/2012	0.35	0.35	0.57	5.90	410	20%	13%	50%	0.11	0.75	204.98	VA BMP Clearinghouse-MTD	2009-2014
2012-0383 PRJ 01	Bioretention (inc. Urban Bioretention)	12/15/2012	0.31	0.31	0.50	5.23	363	45%	25%	55%	0.23	1.31	199.71	Chesapeake Bay Program	2009-2014
2012-0383 PRJ 02	Sheet Flow to Veg. Filter Strip/Conserved Open Spac	12/15/2012	0.46	0.46	0.75	7.76	539	10%	10%	50%	0.07	0.78	269.40	Chesapeake Bay Program	2009-2014
2005-0038 01	MTD/Proprietary: Hydrodynamic Devices	1/31/2013	2.66	2.3	3.87	42.40	2,757	20%	13%	50%	0.77	5.40	1378.66	VA BMP Clearinghouse-MTD	2009-2014
2005-0038 02	MTD/Proprietary: Hydrodynamic Devices	1/31/2013	3.01	2.61	4.39	48.03	3,127	20%	13%	50%	0.88	6.11	1563.73	VA BMP Clearinghouse-MTD	2009-2014
2005-0038 03	MTD/Proprietary: Hydrodynamic Devices	1/31/2013	2.8	2.16	3.76	42.86	2,643	20%	13%	50%	0.75	5.45	1321.28	VA BMP Clearinghouse-MTD	2009-2014
2005-0038 04	MTD/Proprietary: Hydrodynamic Devices	1/31/2013	5.07	4.03	6.96	78.42	4,903	20%	13%	50%	1.39	9.98	2451.63	VA BMP Clearinghouse-MTD	2009-2014
2005-0038 05	MTD/Proprietary: Hydrodynamic Devices	1/31/2013	2.49	2.2	3.68	40.01	2,628	20%	13%	50%	0.74	5.09	1313.94	VA BMP Clearinghouse-MTD	2009-2014
2005-0038 06	MTD/Proprietary: Hydrodynamic Devices	1/31/2013	9	7.06	12.23	138.57	8,611	20%	13%	50%	2.45	17.63	4305.29	VA BMP Clearinghouse-MTD	2009-2014
2005-0038 07	MTD/Proprietary: Hydrodynamic Devices	1/31/2013	8.19	6.18	10.84	124.44	7,592	20%	13%	50%	2.17	15.84	3796.06	VA BMP Clearinghouse-MTD	2009-2014
2005-0038 08	MTD/Proprietary: Hydrodynamic Devices	1/31/2013	3.22	2.75	4.65	51.10	3,304	20%	13%	50%	0.93	6.50	1651.88	VA BMP Clearinghouse-MTD	2009-2014
2006-0036 01	MTD/Proprietary: Hydrodynamic Devices	3/22/2013	0.587	0.587	0.95	9.90	688	20%	13%	50%	0.19	1.26	343.78	VA BMP Clearinghouse-MTD	2009-2014
2007-0004 01	Filtering Practices	6/3/2013	0.859	0.45	0.90	11.71	599	60%	40%	80%	0.54	4.68	479.20	Chesapeake Bay Program	2009-2014
2006-0019 01	Extended Detention (ED) Ponds	7/8/2013	0.24	0.22	0.36	3.91	261	10%	5%	10%	0.04	0.20	26.12	Chesapeake Bay Program	2009-2014
2007-0037 01	Sheet Flow to Veg. Filter Strip/Conserved Open Spac	7/10/2013	1.44	0.12	0.74	15.32	373	10%	10%	50%	0.07	1.53	186.31	Chesapeake Bay Program	2009-2014
2007-0037 02	Bioretention (inc. Urban Bioretention)	7/10/2013	1.27	0.54	1.17	16.46	761	45%	25%	55%	0.53	4.11	418.47	Chesapeake Bay Program	2009-2014
2007-0037 03	Bioretention (inc. Urban Bioretention)	7/10/2013	1.16	0.86	1.52	17.52	1,060	45%	25%	55%	0.68	4.38	583.04	Chesapeake Bay Program	2009-2014

City of Alexandria, VA
2009 - 2014 BMP Calculations

BMP ID	BMP Type	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed	TSS Removed [LB/YR]	Efficiency Method	Date Range
2007-0037 04	Bioretention (inc. Urban Bioretention)	7/10/2013	1.26	0.75	1.42	17.78	968	45%	25%	55%	0.64	4.45	532.48	Chesapeake Bay Program	2009-2014
2007-0037 05	Bioretention (inc. Urban Bioretention)	7/10/2013	0.95	0.68	1.21	14.18	844	45%	25%	55%	0.55	3.55	464.18	Chesapeake Bay Program	2009-2014
2007-0037 06	Bioretention (inc. Urban Bioretention)	7/10/2013	0.25	0.15	0.28	3.54	193	45%	25%	55%	0.13	0.88	106.30	Chesapeake Bay Program	2009-2014
2007-0031 01	MTD/Proprietary: Filtering Devices	7/19/2013	0.79	0.44	0.86	10.94	577	20%	13%	50%	0.17	1.39	288.46	VA BMP Clearinghouse-MTD	2009-2014
2012-0102 01	MTD/Proprietary: Hydrodynamic Devices	7/25/2013	2.05	1.42	2.56	30.29	1,774	20%	13%	50%	0.51	3.85	887.01	VA BMP Clearinghouse-MTD	2009-2014
2012-0102 02	MTD/Proprietary: Hydrodynamic Devices	7/25/2013	0.7	0.62	1.04	11.26	740	20%	13%	50%	0.21	1.43	370.14	VA BMP Clearinghouse-MTD	2009-2014
2012-0102 03	MTD/Proprietary: Hydrodynamic Devices	7/25/2013	0.25	0.22	0.37	4.01	263	20%	13%	50%	0.07	0.51	131.48	VA BMP Clearinghouse-MTD	2009-2014
1995-0021 01	MTD/Proprietary: Hydrodynamic Devices	8/19/2013	34.65	22.72	41.70	503.19	28,710	10%	5%	10%	4.17	25.16	2870.97	Chesapeake Bay Program	2009-2014
2011-0003 01	Filtering Practices	11/19/2013	1.91	1.54	2.65	29.69	1,869	45%	29%	80%	1.19	8.51	1495.10	VA BMP Clearinghouse-MTD	2009-2014
2012-0013 01 GRD	Bioretention (inc. Urban Bioretention)	11/25/2013	0.126	0.126	0.20	2.12	148	45%	25%	55%	0.09	0.53	81.17	Chesapeake Bay Program	2009-2014
2005-0018 01	MTD/Proprietary: Hydrodynamic Devices	12/4/2013	0.66	0.56	0.95	10.45	674	20%	13%	50%	0.19	1.33	336.76	VA BMP Clearinghouse-MTD	2009-2014
2012-0034 01	Filtering Practices	2/7/2014	0.062	0.062	0.10	1.05	73	60%	40%	80%	0.06	0.42	58.10	Chesapeake Bay Program	2009-2014
2012-0034 02	Filtering Practices	2/7/2014	0.062	0.062	0.10	1.05	73	60%	40%	80%	0.06	0.42	58.10	Chesapeake Bay Program	2009-2014
2012-0034 03	Filtering Practices	2/7/2014	0.014	0.014	0.02	0.24	16	60%	40%	80%	0.01	0.09	13.12	Chesapeake Bay Program	2009-2014
2012-0034 04	Filtering Practices	2/7/2014	0.047	0.047	0.08	0.79	55	60%	40%	80%	0.05	0.32	44.04	Chesapeake Bay Program	2009-2014
2012-0034 05	Filtering Practices	2/7/2014	0.04	0.04	0.06	0.67	47	60%	40%	80%	0.04	0.27	37.48	Chesapeake Bay Program	2009-2014
2012-0034 06	Filtering Practices	2/7/2014	0.04	0.04	0.06	0.67	47	60%	40%	80%	0.04	0.27	37.48	Chesapeake Bay Program	2009-2014
2012-0034 07	Filtering Practices	2/7/2014	9.195	4.667	9.42	124.28	6,263	45%	29%	80%	4.24	35.61	5010.06	VA BMP Clearinghouse-MTD	2009-2014
2011-0015 01	Bioretention (inc. Urban Bioretention)	4/2/2014	0.141	0.07	0.14	1.90	94	45%	25%	55%	0.06	0.47	51.96	Chesapeake Bay Program	2009-2014
2011-0015 02	Bioretention (inc. Urban Bioretention)	4/2/2014	0.643	0.439	0.79	9.46	550	45%	25%	55%	0.36	2.36	302.54	Chesapeake Bay Program	2009-2014
2011-0015 03	Bioretention (inc. Urban Bioretention)	4/2/2014	0.277	0.213	0.37	4.24	261	45%	25%	55%	0.17	1.06	143.41	Chesapeake Bay Program	2009-2014
2011-0015 04	Bioretention (inc. Urban Bioretention)	4/2/2014	0.125	0.096	0.17	1.91	118	45%	25%	55%	0.08	0.48	64.65	Chesapeake Bay Program	2009-2014
2011-0015 05	Filtering Practices	4/2/2014	0.8275	0.82	1.33	13.90	962	60%	40%	80%	0.80	5.56	769.44	Chesapeake Bay Program	2009-2014
2011-0015 06	Filtering Practices	4/2/2014	0.8275	0.82	1.33	13.90	962	60%	40%	80%	0.80	5.56	769.44	Chesapeake Bay Program	2009-2014
2011-0015 07	Filtering Practices	4/2/2014	0.211	0.198	0.33	3.47	234	60%	40%	80%	0.20	1.39	187.37	Chesapeake Bay Program	2009-2014
		Total	**217.63**	**155.46**	**277.37**	**3,247.12**	**193,025.00**				**75.25**	**552.16**	**96,345.15**		

July 1, 2014 to June 30, 2018 BMP Calculation Table

City of Alexandria, VA
2014 - 2018 BMP Calculations

BMP ID	BMP Type	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed	TSS Removed	Efficiency Method	Date Range
2014-0101 01	Bioretention (inc. Urban Bioretention)	7/7/2014	0.17	0.11	0.20	2.46	139	45%	25%	55%	0.09	0.61	76.67	Chesapeake Bay Program	2014/2015
2014-0101 02	Bioretention (inc. Urban Bioretention)	7/7/2014	0.16	0.12	0.21	2.43	148	45%	25%	55%	0.09	0.61	81.17	Chesapeake Bay Program	2014/2015
2014-0101 03	Bioretention (inc. Urban Bioretention)	7/7/2014	0.16	0.08	0.16	2.15	108	45%	25%	55%	0.07	0.54	59.27	Chesapeake Bay Program	2014/2015
2014-0101 04	Bioretention (inc. Urban Bioretention)	7/7/2014	0.18	0.12	0.22	2.63	151	45%	25%	55%	0.10	0.66	83.11	Chesapeake Bay Program	2014/2015
2014-0101 05	Bioretention (inc. Urban Bioretention)	7/7/2014	0.19	0.11	0.21	2.66	143	45%	25%	55%	0.09	0.67	78.60	Chesapeake Bay Program	2014/2015
2014-0101 06	Bioretention (inc. Urban Bioretention)	7/7/2014	0.15	0.13	0.22	2.39	156	45%	25%	55%	0.10	0.60	85.68	Chesapeake Bay Program	2014/2015
2014-0101 07	Bioretention (inc. Urban Bioretention)	7/7/2014	0.18	0.14	0.24	2.76	171	45%	25%	55%	0.11	0.69	94.06	Chesapeake Bay Program	2014/2015
2011-0022 01	MTD/Proprietary: Filtering Devices	9/19/2014	1.868	1.548	2.64	29.32	1,869	45%	29%	80%	1.19	8.40	1495.57	VA BMP Clearinghouse - MTD	2014/2015
2012-0001 01	MTD/Proprietary: Filtering Devices	9/19/2014	1.555	1.269	2.17	24.28	1,537	45%	29%	80%	0.98	6.95	1229.35	VA BMP Clearinghouse - MTD	2014/2015
2010-0023 01	MTD/Proprietary: Filtering Devices	1/2/2015	0.8539	0.8539	1.38	14.40	1,000	45%	29%	80%	0.62	4.12	800.15	VA BMP Clearinghouse - MTD	2014/2015
2004-0005 01	MTD/Proprietary: Hydrodynamic Devices	1/21/2015	2.13	0.9	1.96	27.56	1,270	20%	13%	50%	0.39	3.51	635.21	VA BMP Clearinghouse - MTD	2014/2015
2004-0005 02	MTD/Proprietary: Hydrodynamic Devices	1/21/2015	1.4	0.56	1.25	17.90	804	20%	13%	50%	0.25	2.28	401.81	VA BMP Clearinghouse - MTD	2014/2015
2010-0028 01	Filtering Practices	1/28/2015	2.23	2.2	3.58	37.39	2,582	60%	40%	80%	2.15	14.96	2065.74	Chesapeake Bay Program	2014/2015
2003-0007 01	MTD/Proprietary: Filtering Devices	2/19/2015	1.6	0.4	1.14	18.83	679	20%	13%	50%	0.23	2.40	339.74	VA BMP Clearinghouse - MTD	2014/2015
2012-0011 01	Infiltration Practices	9/1/2015	2.84	2.25	3.89	43.88	2,739	85%	80%	95%	3.30	35.10	2602.23	Chesapeake Bay Program	2014/2015
2012-0011 02	Infiltration Practices	9/1/2015	0.83	0.66	1.14	12.84	803	85%	80%	95%	0.97	10.27	762.81	Chesapeake Bay Program	2014/2015
2012-0011 03	Bioretention (inc. Urban Bioretention)	9/1/2015	0.85	0.48	0.93	11.82	627	45%	25%	55%	0.42	2.95	345.00	Chesapeake Bay Program	2014/2015
2012-0011 05	MTD/Proprietary: Filtering Devices	9/1/2015	2.1	1.73	2.95	32.89	2,091	20%	13%	50%	0.59	4.19	1045.71	VA BMP Clearinghouse - MTD	2014/2015
2012-0011 06	MTD/Proprietary: Filtering Devices	9/1/2015	0.38	0.32	0.54	6.00	385	20%	13%	50%	0.11	0.76	192.69	VA BMP Clearinghouse - MTD	2014/2015
2010-0012	Wet Ponds	6/30/2015	18.84	15.1	26.00	292.25	18,344	45%	20%	60%	11.70	58.45	11006.65	Chesapeake Bay Program	2015/2016
2012-0022 01	MTD/Proprietary: Filtering Devices	7/27/2015	1.48	0.79	1.56	20.27	1,047	45%	29%	80%	0.70	5.81	837.32	VA BMP Clearinghouse - MTD	2015/2016
2011-0030 01	MTD/Proprietary: Filtering Devices	8/3/2015	3.94	3.58	5.95	63.98	4,257	45%	29%	80%	2.68	18.33	3405.29	VA BMP Clearinghouse - MTD	2015/2016
2013-0005 01	MTD/Proprietary: Filtering Devices	8/3/2015	0.83	0.73	1.22	13.31	873	45%	29%	80%	0.55	3.81	698.11	VA BMP Clearinghouse - MTD	2015/2016
2012-0010	MTD/Proprietary: Filtering Devices	2/24/2016	1.56	1.56	2.53	26.30	1,827	20%	13%	50%	0.51	3.35	913.63	VA BMP Clearinghouse - MTD	2015/2016
2013-0010 01	MTD/Proprietary: Filtering Devices	6/14/2016	0.2	0.16	0.28	3.10	194	20%	13%	50%	0.06	0.39	97.22	VA BMP Clearinghouse - MTD	2015/2016
2011-0014 02	Filtering Practices	8/8/2016	0.0091	0.0091	0.01	0.15	11	60%	40%	80%	0.01	0.06	8.53	Chesapeake Bay Program	2016/2017
2011-0014 03	Filtering Practices	8/8/2016	0.0091	0.0091	0.01	0.15	11	60%	40%	80%	0.01	0.06	8.53	Chesapeake Bay Program	2016/2017
2011-0014 04	Filtering Practices	8/8/2016	0.0091	0.0091	0.01	0.15	11	60%	40%	80%	0.01	0.06	8.53	Chesapeake Bay Program	2016/2017
2011-0014 05	Filtering Practices	8/8/2016	0.0091	0.0091	0.01	0.15	11	60%	40%	80%	0.01	0.06	8.53	Chesapeake Bay Program	2016/2017
2011-0014 06	Filtering Practices	8/8/2016	0.0091	0.0091	0.01	0.15	11	60%	40%	80%	0.01	0.06	8.53	Chesapeake Bay Program	2016/2017
2011-0014 07	Permeable Pavement	8/8/2016	0.012	0.012	0.02	0.20	14	20%	10%	55%	0.00	0.02	7.73	Chesapeake Bay Program	2016/2017
2011-0014 08	Permeable Pavement	8/8/2016	0.01	0.01	0.02	0.17	12	20%	10%	55%	0.00	0.02	6.44	Chesapeake Bay Program	2016/2017
2017-0102 01 DPI	Permeable Pavement	8/12/2016	0.05	0.05	0.08	0.84	59	20%	10%	55%	0.02	0.08	32.21	Chesapeake Bay Program	2016/2017

City of Alexandria, VA
2014 - 2018 BMP Calculations

BMP ID	BMP Type	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed	TSS Removed	Efficiency Method	Date Range
2013-0019 02	MTD/Proprietary: Filtering Devices	10/20/2016	1.09	0.58	1.15	14.91	769	45%	29%	80%	0.52	4.27	615.22	VA BMP Clearinghouse - MTD	2016/2017
2011-0028 01	MTD/Proprietary: Filtering Devices	10/24/2016	0.55	0.44	0.76	8.53	535	45%	29%	80%	0.34	2.44	427.78	VA BMP Clearinghouse - MTD	2016/2017
2012-0030 01	MTD/Proprietary: Filtering Devices	11/8/2016	0.56	0.5	0.83	9.03	596	20%	13%	50%	0.17	1.15	298.10	VA BMP Clearinghouse - MTD	2016/2017
2016-0102 01 DPI	Bioretention (inc. Urban Bioretention)	12/2/2016	0.63	0.46	0.81	9.47	569	45%	25%	55%	0.37	2.37	312.78	Chesapeake Bay Program	2016/2017
2017-0101 01 DPI	Bioretention (inc. Urban Bioretention)	4/18/2017	0.5	0.1	0.33	5.71	187	45%	25%	55%	0.15	1.43	103.10	Chesapeake Bay Program	2016/2017
2015-0005 02	Filtering Practices	9/18/2017	0.42	0.42	0.68	7.08	492	50%	32%	0%	0.34	2.25	0.00	VA BMP Clearinghouse - MTD	2017/2018
2015-0020 01	MTD/Proprietary: Filtering Devices	9/25/2017	2.34	1.85	3.20	36.13	2,253	50%	32%	0%	1.60	11.50	0.00	VA BMP Clearinghouse - MTD	2017/2018
2015-0020 02	Bioretention (inc. Urban Bioretention)	9/25/2017	0.41	0.30	0.53	6.17	371	55%	64%	0%	0.29	3.95	0.00	VA BMP Clearinghouse	2017/2018
2016-0023 01	Filtering Practices	10/17/2017	1.74	1.67	2.73	28.86	1,968	50%	32%	80%	1.37	9.19	1574.73	VA BMP Clearinghouse - MTD	2017/2018
2014-0046 01	Bioretention (inc. Urban Bioretention)	1/24/2018	0.27	0.22	0.38	4.21	266	90%	90%	0%	0.34	3.79	0.00	VA BMP Clearinghouse	2017/2018
2014-0046 02	Bioretention (inc. Urban Bioretention)	1/24/2018	0.35	0.30	0.51	5.56	360	90%	90%	0%	0.46	5.01	0.00	VA BMP Clearinghouse	2017/2018
2014-0046 03	Filtering Practices	1/24/2018	0.22	0.19	0.32	3.51	228	50%	32%	0%	0.16	1.12	0.00	VA BMP Clearinghouse - MTD	2017/2018
2014-0046 04	Filtering Practices	1/24/2018	0.43	0.43	0.70	7.25	504	50%	32%	0%	0.35	2.31	0.00	VA BMP Clearinghouse - MTD	2017/2018
2014-0011 01	Bioretention (inc. Urban Bioretention)	3/7/2018	0.11	0.06	0.12	1.52	79	90%	90%	0%	0.11	1.36	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 02	Bioretention (inc. Urban Bioretention)	3/7/2018	0.44	0.10	0.30	5.11	177	90%	90%	0%	0.27	4.60	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 03	Bioretention (inc. Urban Bioretention)	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 04	Bioretention (inc. Urban Bioretention)	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 05	Bioretention (inc. Urban Bioretention)	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 06	Bioretention (inc. Urban Bioretention)	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 07	Bioretention (inc. Urban Bioretention)	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 08	Bioretention (inc. Urban Bioretention)	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 09	Bioretention (inc. Urban Bioretention)	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 10	Bioretention (inc. Urban Bioretention)	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 11	Bioretention (inc. Urban Bioretention)	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 12	Permeable Pavement	3/7/2018	0.01	0.01	0.02	0.17	12	59%	59%	0%	0.01	0.10	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 13	Permeable Pavement	3/7/2018	0.01	0.01	0.02	0.17	12	59%	59%	0%	0.01	0.10	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 14	Permeable Pavement	3/7/2018	0.01	0.01	0.02	0.17	12	59%	59%	0%	0.01	0.10	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 15	Permeable Pavement	3/7/2018	0.05	0.05	0.07	0.76	53	59%	59%	0%	0.04	0.45	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 16	Permeable Pavement	3/7/2018	0.05	0.05	0.07	0.76	53	59%	59%	0%	0.04	0.45	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 17	Permeable Pavement	3/7/2018	0.05	0.05	0.08	0.84	59	59%	59%	0%	0.05	0.50	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 18	Permeable Pavement	3/7/2018	0.05	0.05	0.08	0.84	59	59%	59%	0%	0.05	0.50	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 19	Permeable Pavement	3/7/2018	0.05	0.05	0.08	0.84	59	59%	59%	0%	0.05	0.50	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 20	Bioretention (inc. Urban Bioretention)	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00	VA BMP Clearinghouse	2017/2018

City of Alexandria, VA
2014 - 2018 BMP Calculations

BMP ID	BMP Type	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed	TSS Removed	Efficiency Method	Date Range
2014-0011 21	Bioretention (inc. Urban Bioretention)	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00	VA BMP Clearinghouse	2017/2018
2014-0011 22	Bioretention (inc. Urban Bioretention)	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00	VA BMP Clearinghouse	2017/2018
2014-0004 02	MTD/Proprietary: Filtering Devices	4/20/2018	2.08	1.78	3.01	33.03	2,138	20%	13%	50%	0.60	4.20	1068.84	VA BMP Clearinghouse - MTD	2017/2018
2015-0002 02	MTD/Proprietary: Filtering Devices	5/10/2018	1.29	1.10	1.86	20.46	1,322	20%	13%	50%	0.37	2.60	660.93	VA BMP Clearinghouse - MTD	2017/2018
2014-0026 02	Bioretention (inc. Urban Bioretention)	5/11/2018	0.08	0.08	0.13	1.35	94	55%	64%	0%	0.07	0.86	0.00	VA BMP Clearinghouse	2017/2018
2008-0022 01	MTD/Proprietary: Filtering Devices	5/6/2016	3.72	3.50	5.76	61.23	4138.30	50%	32%	80%	1.54	0.00	722.57	VA BMP Clearinghouse-MTD	2018/2019
2014-0008 01	Extended Detention (ED) Ponds	5/4/2018	0.69	0.64	1.06	11.29	758.43	20%	13%	50%	0.29	0.00	136.07	VA BMP Clearinghouse-MTD	2018/2019
2012-0015 01	MTD/Proprietary: Filtering Devices	6/27/2018	0.61	0.06	0.32	6.55	166.97	50%	32%	0%	0.67	0.00	314.36	VA BMP Clearinghouse-MTD	2018/2019
2014-0041 01	Bioretention (inc. Urban Bioretention)	7/25/2018	0.06	0.03	0.06	0.81	40.41	45%	25%	55%	0.05	0.38	23.46	Chesapeake Bay Program	2018/2019
2014-0041 02	Bioretention (inc. Urban Bioretention)	7/25/2018	0.15	0.09	0.17	2.12	115.97	45%	25%	55%	0.13	1.05	61.00	Chesapeake Bay Program	2018/2019
2013-0002 02	Extended Detention (ED) Ponds	8/1/2018	0.31	0.30	0.49	5.16	353.15	20%	13%	50%	0.13	0.00	61.00	VA BMP Clearinghouse-MTD	2018/2019
2008-0005 01	Bioretention (inc. Urban Bioretention)	10/16/2018	0.94	0.10	0.51	10.14	264.80	45%	25%	55%	0.38	3.18	178.30	Chesapeake Bay Program	2018/2019
2013-0007 01	MTD/Proprietary: Filtering Devices	11/13/2018	1.13	1.02	1.70	18.30	1214.08	50%	32%	80%	2.43	0.00	1140.16	VA BMP Clearinghouse-MTD	2018/2019
2013-0007 02	MTD/Proprietary: Filtering Devices	11/13/2018	1.32	1.21	2.01	21.51	1436.64	50%	32%	80%	2.72	0.00	1276.22	VA BMP Clearinghouse-MTD	2018/2019
2013-0007 03	MTD/Proprietary: Filtering Devices	11/13/2018	1.32	1.22	2.02	21.58	1446.59	50%	32%	80%	2.72	0.00	1276.22	VA BMP Clearinghouse-MTD	2018/2019
2017-0002 PRK 01	Permeable Pavement	2/4/2019	0.13	0.13	0.20	2.11	146.42	20%	10%	55%	0.16	1.14	75.07	Chesapeake Bay Program	2018/2019
2011-0002 01	Extended Detention (ED) Ponds	2/13/2019	0.91	0.72	1.24	14.01	873.41	20%	13%	50%	0.02	0.00	9.38	VA BMP Clearinghouse-MTD	2018/2019
2011-0002 02	Vegetated Roof	2/13/2019	0.15	0.15	0.24	2.51	174.53	85%	80%	90%	0.15	1.04	70.38	Chesapeake Bay Program	2018/2019
		Total	**72.50**	**56.52**	**98.14**	**1,114.04**	**69,028.70**				**48.13**	**270.12**	**39,927.49**		

July 1, 2018 to June 30, 2023 BMP Calculation Tables

City of Alexandria, VA
2019 - 2023 BMP Calculations

BMP ID	BMP Type	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed	TSS Removed	Efficiency Method	Date Range
2013-0027 03	Extended Detention (ED) Ponds	8/22/2019	0.14	0.10	0.18	2.09	124.16	20%	13%	50%	0.24	1.57	112.61	VA BMP Clearinghouse-MTD	2019/2020
2014-0017 01	Extended Detention (ED) Ponds	8/22/2019	0.65	0.51	0.88	10.01	621.99	20%	13%	50%	0.24	0.00	112.61	VA BMP Clearinghouse-MTD	2019/2020
2014-0003 01	MTD/Proprietary: Filtering Devices	11/8/2019	1.13	0.90	1.55	17.49	1094.62	20%	13%	50%	3.69	0.00	1731.35	VA BMP Clearinghouse-MTD	2019/2020
2014-0003 02	MTD/Proprietary: Filtering Devices	11/8/2019	0.50	0.12	0.35	5.85	207.36	20%	13%	50%	0.60	0.00	281.52	VA BMP Clearinghouse-MTD	2019/2020
2015-0019 01	Vegetated Roof	12/4/2019	0.15	0.15	0.24	2.53	175.70	85%	80%	90%	0.19	1.39	89.15	Chesapeake Bay Program	2019/2020
2015-0019 03	MTD/Proprietary: Filtering Devices	12/4/2019	0.43	0.43	0.70	7.25	503.67	50%	32%	0%	0.14	1.02	65.69	VA BMP Clearinghouse-MTD	2019/2020
2019-00010	Bioretention (inc. Urban Bioretention)	12/30/2019	0.07	0.05	0.09	1.04	62.08	45%	25%	55%	0.11	0.05	51.61	VA BMP Clearinghouse-MTD	2019/2020
2017-0021 01	Bioretention (inc. Urban Bioretention)	1/8/2020	0.87	0.27	0.68	10.59	421.74	45%	25%	55%	0.27	1.98	126.68	Chesapeake Bay Program	2019/2020
2017-0021 02	Bioretention (inc. Urban Bioretention)	1/8/2020	1.14	0.50	1.07	14.87	698.17	45%	25%	55%	0.18	1.47	84.46	Chesapeake Bay Program	2019/2020
2014-0012 01	Vegetated Roof	1/15/2020	0.14	0.14	0.23	2.36	163.98	85%	80%	90%	0.14	0.98	65.69	Chesapeake Bay Program	2019/2020
2014-0012 02	Bioretention (inc. Urban Bioretention)	1/15/2020	0.11	0.11	0.18	1.85	128.85	45%	25%	55%	0.26	2.18	121.99	Chesapeake Bay Program	2019/2020
2014-0012 03	Bioretention (inc. Urban Bioretention)	1/15/2020	0.11	0.11	0.18	1.85	128.85	45%	25%	55%	0.26	2.18	121.99	Chesapeake Bay Program	2019/2020
2014-0012 04	MTD/Proprietary: Filtering Devices	1/15/2020	1.37	0.89	1.64	19.84	1126.86	20%	13%	50%	0.44	0.00	206.45	VA BMP Clearinghouse-MTD	2019/2020
2016-0027 01	Extended Detention (ED) Ponds	1/21/2020	0.91	0.83	1.38	14.80	986.26	20%	13%	50%	0.66	0.00	309.67	VA BMP Clearinghouse-MTD	2019/2020
2017-0015 01	Extended Detention (ED) Ponds	6/2/2020	0.78	0.59	1.03	11.86	724.48	20%	13%	50%	0.02	0.00	9.38	VA BMP Clearinghouse-MTD	2019/2020
2013-0023 02	MTD/Proprietary: Filtering Devices	1/24/2019	0.14	0.10	0.18	2.09	124.16	20%	13%	50%	0.11	0.00	51.61	VA BMP Clearinghouse-MTD	2020/2021
2014-0019 01	MTD/Proprietary: Filtering Devices	10/21/2019	0.49	0.46	0.76	8.06	544.08	20%	13%	50%	0.20	0.00	93.84	VA BMP Clearinghouse-MTD	2020/2021
2013-0003 03 (2014-0040 03)	MTD/Proprietary: Filtering Devices	5/27/2020	0.38	0.36	0.59	6.27	425.19	20%	13%	50%	0.40	0.00	187.68	VA BMP Clearinghouse-MTD	2020/2021
2013-0003 05 (2014-0040 05)	MTD/Proprietary: Filtering Devices	5/27/2020	0.75	0.70	1.15	12.31	828.71	20%	13%	50%	0.77	0.00	361.28	VA BMP Clearinghouse-MTD	2020/2021
2013-0003 02 (2016-0036 B)	MTD/Proprietary: Filtering Devices	7/1/2020	3.16	3.15	5.11	53.21	3691.42	20%	13%	50%	3.41	0.00	1599.97	VA BMP Clearinghouse-MTD	2020/2021
2013-0003 04 (2014-0040 04)	MTD/Proprietary: Filtering Devices	7/1/2020	1.79	1.69	2.78	29.50	1997.11	20%	13%	50%	1.86	0.00	872.71	VA BMP Clearinghouse-MTD	2020/2021
2014-0029 01	Dry Swales	7/9/2020	0.57	0.49	0.83	9.07	588.01	10%	10%	50%	0.58	4.35	272.14	Chesapeake Bay Program	2020/2021
2014-0029 02	MTD/Proprietary: Filtering Devices	7/9/2020	1.12	1.02	1.69	18.20	1212.33	20%	13%	50%	0.85	0.00	398.82	VA BMP Clearinghouse-MTD	2020/2021
2019-0017 GRD 01	Filtering Practices	7/16/2020	0.33	0.21	0.39	4.75	267.07	60%	40%	80%	0.28	2.37	131.38	Chesapeake Bay Program	2020/2021
2019-0017 GRD 02	Filtering Practices	7/16/2020	0.33	0.21	0.39	4.75	267.07	60%	40%	80%	0.28	2.37	131.38	Chesapeake Bay Program	2020/2021
2016-0024 01	Vegetated Roof	10/9/2020	0.18	0.18	0.29	3.03	210.84	80%	85%	90%	0.18	1.25	84.46	Chesapeake Bay Program	2020/2021
2016-0024 02	Bioretention (inc. Urban Bioretention)	10/9/2020	0.07	0.07	0.11	1.18	81.99	45%	25%	55%	0.08	0.69	37.54	Chesapeake Bay Program	2020/2021
2016-0024 03	Bioretention (inc. Urban Bioretention)	10/9/2020	0.07	0.07	0.11	1.18	81.99	45%	25%	55%	0.08	0.69	37.54	Chesapeake Bay Program	2020/2021
2016-0024 04	Bioretention (inc. Urban Bioretention)	10/9/2020	0.10	0.10	0.16	1.69	117.13	45%	25%	55%	0.12	0.99	56.30	Chesapeake Bay Program	2020/2021
2013-0003 06 (2014-0040 02)	MTD/Proprietary: Filtering Devices	10/15/2020	0.46	0.44	0.72	7.62	518.90	20%	13%	50%	0.48	0.00	225.22	VA BMP Clearinghouse-MTD	2020/2021
2017-0017 01	Bioretention (inc. Urban Bioretention)	10/23/2020	0.22	0.22	0.36	3.71	257.69	45%	25%	55%	0.26	2.18	121.99	Chesapeake Bay Program	2020/2021
2017-0017 02	Bioretention (inc. Urban Bioretention)	10/23/2020	0.22	0.22	0.36	3.71	257.69	45%	25%	55%	0.26	2.18	121.99	Chesapeake Bay Program	2020/2021
2017-0017 03	Bioretention (inc. Urban Bioretention)	10/23/2020	0.01	0.01	0.02	0.17	11.71	45%	25%	55%	0.10	0.10	4.69	Chesapeake Bay Program	2020/2021

City of Alexandria, VA
2019 - 2023 BMP Calculations

BMP ID	BMP Type	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed	TSS Removed	Efficiency Method	Date Range
2016-0003 01	Vegetated Roof	11/17/2020	0.14	0.14	0.23	2.36	163.98	80%	85%	90%	0.14	0.98	65.69	Chesapeake Bay Program	2020/2021
2016-0003 02	Bioretention (inc. Urban Bioretention)	11/17/2020	0.03	0.03	0.05	0.51	35.14	45%	25%	55%	0.13	1.09	61.00	Chesapeake Bay Program	2020/2021
2016-0003 03	Bioretention (inc. Urban Bioretention)	11/17/2020	0.08	0.08	0.13	1.35	93.71	45%	25%	55%	0.10	0.79	46.92	Chesapeake Bay Program	2020/2021
2018-0019 01	Bioretention (inc. Urban Bioretention)	1/5/2021	1.21	0.57	1.19	16.06	780.16	45%	25%	55%	0.88	7.32	412.90	Chesapeake Bay Program	2020/2021
2018-0019 02	Bioretention (inc. Urban Bioretention)	1/5/2021	1.53	0.62	1.38	19.62	886.20	45%	25%	55%	1.02	8.52	478.58	Chesapeake Bay Program	2020/2021
2018-0019 03	Bioretention (inc. Urban Bioretention)	1/5/2021	1.30	0.46	1.09	16.21	686.48	45%	25%	55%	0.81	6.75	380.05	Chesapeake Bay Program	2020/2021
2018-0019 04	Bioretention (inc. Urban Bioretention)	1/5/2021	1.87	0.37	1.21	21.34	697.09	45%	25%	55%	0.91	7.58	426.97	Chesapeake Bay Program	2020/2021
2018-0019 05	Bioretention (inc. Urban Bioretention)	1/5/2021	2.62	0.46	1.63	29.51	918.54	45%	25%	55%	2.00	14.65	938.40	Chesapeake Bay Program	2020/2021
2016-0008 01	Vegetated Roof	6/22/2021	0.07	0.07	0.11	1.18	81.99	80%	85%	90%	0.11	0.77	51.61	Chesapeake Bay Program	2020/2021
2016-0008 02	Vegetated Roof	6/22/2021	0.09	0.09	0.15	1.52	105.42	80%	85%	90%	0.14	1.02	65.69	Chesapeake Bay Program	2020/2021
2016-0008 03	MTD/Proprietary: Filtering Devices	6/22/2021	0.62	0.54	0.91	9.91	646.58	20%	13%	50%	0.69	0.00	323.75	VA BMP Clearinghouse-MTD	2020/2021
2015-0001 01	MTD/Proprietary: Filtering Devices	12/9/2021	2.12	1.68	2.90	32.76	2045.17	20%	13%	50%	1.70	0.00	797.64	VA BMP Clearinghouse-MTD	2020/2021
2015-0001 02	MTD/Proprietary: Filtering Devices	12/9/2021	1.61	1.56	2.55	26.81	1836.05	20%	13%	50%	1.85	0.00	868.02	VA BMP Clearinghouse-MTD	2020/2021
2015-0001 03	MTD/Proprietary: Filtering Devices	12/9/2021	2.02	1.60	2.76	31.21	1947.95	20%	13%	50%	1.94	0.00	910.25	VA BMP Clearinghouse-MTD	2020/2021
2015-0001 04	Bioretention (inc. Urban Bioretention)	12/9/2021	0.55	0.15	0.41	6.56	246.02	45%	25%	55%	0.50	3.64	234.60	Chesapeake Bay Program	2020/2021
2015-0001 05	Bioretention (inc. Urban Bioretention)	12/9/2021	1.36	1.36	2.20	22.93	1593.00	45%	25%	55%	1.62	11.84	760.10	Chesapeake Bay Program	2020/2021
2012-0019 01	MTD/Proprietary: Filtering Devices	5/15/2019	0.46	0.46	0.75	7.77	539.98	50%	32%	80%	0.45	0.00	211.14	VA BMP Clearinghouse-MTD	2021/2022
2016-0044 01	Permeable Pavement	3/31/2021	0.02	0.02	0.03	0.34	23.43	20%	10%	55%	0.03	0.00	14.08	Chesapeake Bay Program	2021/2022
2016-0044 02	Extended Detention (ED) Ponds	3/31/2021	0.585	0.485	0.83	9.18	585.67	20%	13%	50%	0.03	0.00	14.08	VA BMP Clearinghouse-MTD	2021/2022
2016-0044 03	MTD/Proprietary: Filtering Devices	3/31/2021	0.585	0.485	0.83	9.18	585.67	50%	32%	80%	0.70	0.00	328.44	VA BMP Clearinghouse-MTD	2021/2022
2016-0044 04	Permeable Pavement	3/31/2021	0.04	0.04	0.06	0.67	46.85	20%	10%	55%	0.05	0.00	23.46	Chesapeake Bay Program	2021/2022
2016-0044 05	MTD/Proprietary: Filtering Devices	3/31/2021	0.37	0.26	0.47	5.49	323.88	20%	13%	50%	0.26	0.00	121.99	VA BMP Clearinghouse-MTD	2021/2022
2016-0021 01 (2014-0003 02)	MTD/Proprietary: Filtering Devices	5/12/2021	0.50	0.12	0.35	5.85	207.36	50%	32%	80%	0.60	0.00	281.52	VA BMP Clearinghouse-MTD	2021/2022
2016-0021 02	MTD/Proprietary: Filtering Devices	5/12/2021	0.22	0.16	0.28	3.30	197.96	50%	32%	80%	0.08	0.00	37.54	VA BMP Clearinghouse-MTD	2021/2022
2016-0021 03	MTD/Proprietary: Filtering Devices	5/12/2021	0.40	0.36	0.60	6.47	428.71	50%	32%	80%	0.16	0.00	75.07	VA BMP Clearinghouse-MTD	2021/2022
2016-0021 04	MTD/Proprietary: Filtering Devices	5/12/2021	0.40	0.36	0.60	6.47	428.71	50%	32%	80%	0.16	0.00	75.07	VA BMP Clearinghouse-MTD	2021/2022
2016-0021 05	MTD/Proprietary: Filtering Devices	5/12/2021	0.24	0.06	0.17	2.82	101.92	50%	32%	80%	0.05	0.00	23.46	VA BMP Clearinghouse-MTD	2021/2022
2016-0021 06	Extended Detention (ED) Ponds	5/12/2021	0.25	0.24	0.39	4.15	282.87	20%	13%	50%	0.11	0.00	51.61	VA BMP Clearinghouse-MTD	2021/2022
2016-0041 01	Vegetated Roof	8/27/2021	0.16	0.16	0.26	2.70	187.41	80%	85%	90%	0.16	1.11	75.07	Chesapeake Bay Program	2021/2022
2016-0041 02	Extended Detention (ED) Ponds	8/27/2021	0.48	0.43	0.72	7.75	512.46	20%	13%	50%	0.19	0.00	89.15	VA BMP Clearinghouse-MTD	2021/2022
2014-0006 01	Bioretention (inc. Urban Bioretention)	9/2/2021	0.02	0.01	0.02	0.25	16.57	45%	25%	55%	0.02	0.13	7.51	Chesapeake Bay Program	2021/2022
2014-0006 02	Bioretention (inc. Urban Bioretention)	9/2/2021	0.02	0.01	0.02	0.25	16.57	45%	25%	55%	0.02	0.13	7.51	Chesapeake Bay Program	2021/2022
2014-0006 03	Bioretention (inc. Urban Bioretention)	9/2/2021	0.02	0.01	0.02	0.25	16.57	45%	25%	55%	0.02	0.13	7.51	Chesapeake Bay Program	2021/2022

City of Alexandria, VA
2019 - 2023 BMP Calculations

BMP ID	BMP Type	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed	TSS Removed	Efficiency Method	Date Range
2014-0006 04	Bioretention (inc. Urban Bioretention)	9/2/2021	0.02	0.01	0.02	0.25	16.57	45%	25%	55%	0.02	0.13	7.51	Chesapeake Bay Program	2021/2022
2014-0006 05	Bioretention (inc. Urban Bioretention)	9/2/2021	0.02	0.01	0.02	0.25	16.57	45%	25%	55%	0.02	0.13	7.51	Chesapeake Bay Program	2021/2022
2014-0006 06	Bioretention (inc. Urban Bioretention)	9/2/2021	0.02	0.01	0.02	0.25	16.57	45%	25%	55%	0.02	0.13	7.51	Chesapeake Bay Program	2021/2022
2014-0006 07	Bioretention (inc. Urban Bioretention)	9/2/2021	0.02	0.01	0.02	0.25	16.57	45%	25%	55%	0.02	0.13	7.51	Chesapeake Bay Program	2021/2022
2014-0006 08	Bioretention (inc. Urban Bioretention)	9/2/2021	0.02	0.01	0.02	0.25	16.57	45%	25%	55%	0.02	0.13	7.51	Chesapeake Bay Program	2021/2022
2014-0006 09	Bioretention (inc. Urban Bioretention)	9/2/2021	0.02	0.01	0.02	0.25	16.57	45%	25%	55%	0.02	0.13	7.51	Chesapeake Bay Program	2021/2022
2014-0006 10	Bioretention (inc. Urban Bioretention)	9/2/2021	0.02	0.01	0.02	0.25	16.57	45%	25%	55%	0.02	0.13	7.51	Chesapeake Bay Program	2021/2022
2014-0006 11	MTD/Proprietary: Filtering Devices	9/2/2021	0.53	0.53	0.86	8.94	620.80	50%	32%	0%	0.60	0.00	281.52	VA BMP Clearinghouse-MTD	2021/2022
2016-0010 01	Filtering Practices	6/30/2022	0.27	0.20	0.35	4.08	246.57	60%	40%	80%	0.28	1.01	131.38	Chesapeake Bay Program	2021/2022
2016-0010 02	Bioretention (inc. Urban Bioretention)	6/30/2022	0.42	0.33	0.57	6.47	402.36	45%	25%	55%	0.42	3.50	197.06	Chesapeake Bay Program	2021/2022
2016-0010 03	Filtering Practices	6/30/2022	0.02	0.00	0.01	0.20	3.52	60%	40%	80%	0.02	0.20	9.38	Chesapeake Bay Program	2021/2022
2018-0014 01	Filtering Practices	5/26/2022	0.12	0.10	0.17	1.89	120.65	45%	25%	55%	0.13	1.04	61.00	Chesapeake Bay Program	2022/2023
2018-0014 02	Filtering Practices	5/26/2022	0.21	0.17	0.29	3.27	206.16	45%	25%	55%	0.21	1.79	98.53	Chesapeake Bay Program	2022/2023
2018-0014 03	Filtering Practices	5/26/2022	0.15	0.12	0.21	2.33	145.83	45%	25%	55%	0.15	1.27	70.38	Chesapeake Bay Program	2022/2023
2018-0014 04	Filtering Practices	5/26/2022	0.12	0.10	0.17	1.89	120.65	45%	25%	55%	0.13	1.04	61.00	Chesapeake Bay Program	2022/2023
2018-0014 05	Filtering Practices	5/26/2022	0.15	0.14	0.23	2.46	165.74	45%	25%	55%	0.17	1.41	79.76	Chesapeake Bay Program	2022/2023
2018-0014 06	Filtering Practices	5/26/2022	0.17	0.15	0.25	2.73	179.21	45%	25%	55%	0.18	1.54	84.46	Chesapeake Bay Program	2022/2023
2018-0014 07	Filtering Practices	5/26/2022	0.16	0.14	0.24	2.56	167.50	45%	25%	55%	0.17	1.44	79.76	Chesapeake Bay Program	2022/2023
2018-0014 08	Filtering Practices	5/26/2022	0.10	0.09	0.15	1.62	107.18	45%	25%	55%	0.11	0.92	51.61	Chesapeake Bay Program	2022/2023
2018-0014 09	Filtering Practices	5/26/2022	0.23	0.23	0.37	3.88	269.40	45%	25%	55%	0.27	2.28	126.68	Chesapeake Bay Program	2022/2023
2018-0014 10	Vegetated Roof	5/26/2022	0.08	0.08	0.13	1.35	93.71	80%	85%	90%	0.08	0.56	37.54	Chesapeake Bay Program	2022/2023
2018-0014 11	Extended Detention (ED) Ponds	5/26/2022	1.84	1.82	2.96	30.89	2135.32	20%	13%	50%	0.81	0.00	380.05	VA BMP Clearinghouse-MTD	2022/2023
2017-0025 01	Filtering Practices	7/28/2022	0.04	0.04	0.07	0.69	47.20	45%	25%	55%	0.05	0.40	23.46	Chesapeake Bay Program	2022/2023
2017-0025 02	Filtering Practices	7/28/2022	0.02	0.02	0.03	0.34	23.43	45%	25%	55%	0.02	0.20	9.38	Chesapeake Bay Program	2022/2023
2017-0025 03	Filtering Practices	7/28/2022	0.02	0.02	0.04	0.39	26.12	45%	25%	55%	0.03	0.22	14.08	Chesapeake Bay Program	2022/2023
2017-0025 04	Filtering Practices	7/28/2022	0.03	0.02	0.04	0.42	28.46	45%	25%	55%	0.03	0.24	14.08	Chesapeake Bay Program	2022/2023
2017-0025 05	Filtering Practices	7/28/2022	0.03	0.02	0.04	0.47	29.17	45%	25%	55%	0.03	0.24	14.08	Chesapeake Bay Program	2022/2023
2017-0025 06	Filtering Practices	7/28/2022	0.03	0.02	0.04	0.46	28.17	45%	25%	55%	0.03	0.24	14.08	Chesapeake Bay Program	2022/2023
2017-0025 07	Filtering Practices	7/28/2022	0.04	0.03	0.06	0.63	40.88	45%	25%	55%	0.04	0.24	18.77	Chesapeake Bay Program	2022/2023
2017-0025 08	Filtering Practices	7/28/2022	0.02	0.02	0.04	0.39	26.12	45%	25%	55%	0.03	0.34	14.08	Chesapeake Bay Program	2022/2023
2017-0025 09	Filtering Practices	7/28/2022	0.02	0.02	0.03	0.34	24.42	45%	25%	55%	0.03	0.24	14.08	Chesapeake Bay Program	2022/2023
2017-0025 10	Filtering Practices	7/28/2022	0.02	0.02	0.03	0.35	25.42	45%	25%	55%	0.03	0.23	14.08	Chesapeake Bay Program	2022/2023
2017-0025 11	Filtering Practices	7/28/2022	0.03	0.02	0.04	0.44	25.18	45%	25%	55%	0.02	0.24	9.38	Chesapeake Bay Program	2022/2023

City of Alexandria, VA
2019 - 2023 BMP Calculations

BMP ID	BMP Type	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed	TSS Removed	Efficiency Method	Date Range
2017-0025 12	Filtering Practices	7/28/2022	0.03	0.03	0.05	0.50	34.14	45%	25%	55%	0.04	0.21	18.77	Chesapeake Bay Program	2022/2023
2017-0025 13	Filtering Practices	7/28/2022	0.60	0.02	0.27	6.17	124.39	45%	25%	55%	0.02	0.30	9.38	Chesapeake Bay Program	2022/2023
2017-0025 14	Extended Detention (ED) Ponds	7/28/2022	0.58	0.58	0.94	9.78	679.37	20%	13%	50%	0.25	0.00	117.30	VA BMP Clearinghouse-MTD	2022/2023
2017-0025 15	Vegetated Roof	7/28/2022	0.07	0.07	0.11	1.15	77.01	80%	85%	90%	0.06	0.45	28.15	Chesapeake Bay Program	2022/2023
2017-0025 16	Vegetated Roof	7/28/2022	0.05	0.05	0.08	0.84	58.57	80%	85%	90%	0.06	0.46	28.15	Chesapeake Bay Program	2022/2023
2018-0021 01	Bioretention (inc. Urban Bioretention)	12/15/2022	1.5384	1.101	1.96	22.97	1366.52	45%	25%	55%	1.45	0.00	680.34	Chesapeake Bay Program	2022/2023
2018-0021 02	Extended Detention (ED) Ponds	12/15/2022	1.5384	1.101	1.96	22.97	1366.52	20%	13%	50%	0.24	0.00	112.61	VA BMP Clearinghouse-MTD	2022/2023
2018-0021 03	Permeable Pavement	12/15/2022	0.0944	0.0944	0.15	1.59	110.57	20%	10%	55%	0.17	1.13	79.76	Chesapeake Bay Program	2022/2023
2017-0006 01	MTD/Proprietary: Filtering Devices	5/30/2023	1.69	1.44	2.43	26.78	1726.38	50%	32%	80%	0.65	0.00	304.98	VA BMP Clearinghouse-MTD	2022/2023
2017-0006 02	Extended Detention (ED) Ponds	5/30/2023	1.69	1.44	2.43	26.78	1726.38	20%	13%	50%	0.65	0.00	304.98	VA BMP Clearinghouse-MTD	2022/2023
2017-0006 03	Extended Detention (ED) Ponds	5/30/2023	0.46	0.41	0.68	7.35	484.86	20%	13%	50%	0.18	0.00	84.46	VA BMP Clearinghouse-MTD	2022/2023
2017-0006 04	Permeable Pavement	5/30/2023	0.22	0.22	0.35	3.67	254.88	20%	10%	55%	0.28	1.98	131.38	Chesapeake Bay Program	2022/2023
2021-0006 01	Bioretention (inc. Urban Bioretention)	6/13/2023	0.015	0.01	0.02	0.22	12.59	45%	25%	55%	0.03	0.11	11.73	Chesapeake Bay Program	2022/2023
2021-0006 02	Bioretention (inc. Urban Bioretention)	6/13/2023	0.015	0.01	0.02	0.22	12.59	45%	25%	55%	0.03	0.11	11.73	Chesapeake Bay Program	2022/2023
2021-0006 03	Bioretention (inc. Urban Bioretention)	6/13/2023	0.015	0.01	0.02	0.22	12.59	45%	25%	55%	0.03	0.11	11.73	Chesapeake Bay Program	2022/2023
2021-0006 04	Bioretention (inc. Urban Bioretention)	6/13/2023	0.015	0.01	0.02	0.22	12.59	45%	25%	55%	0.03	0.11	11.73	Chesapeake Bay Program	2022/2023
2021-0006 05	Permeable Pavement	6/13/2023	0.0781	0.065	0.11	1.23	78.44	20%	10%	55%	0.09	0.59	42.23	Chesapeake Bay Program	2022/2023
		Total	54.54	40.07	70.85	821.33	49,481.52				43.84	123.73	20,499.35		

July 1, 2023 to June 30, 2024 BMP Calculation Tables

City of Alexandria
BMP Calculations
July 1, 2023 - June 30, 2024

BMP ID	Location (Address or Lat/Long)	Reporting PY	BMP Type	Date Installed	Acres Treated	Impervious Acres Treated	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS (lbs/yr)	TP BMP Efficiency	TN Efficiency	TSS Efficiency	TP Removed (lbs/yr)	TN Removed (lbs/yr)	TSS Removed (lbs/yr)	Efficency Method
2013-0001 01	4600 King St	2023/2024	Vegetated Roof	2/7/2024	0.26	0.26	0.42	4.38	304.54	80%	85%	90%	0.34	2.42	159.53	Chesapeake Bay Program
2013-0001 02	4600 King St	2023/2024	Vegetated Roof	2/7/2024	0.45	0.45	0.73	7.59	527.09	80%	85%	90%	0.58	4.18	272.14	Chesapeake Bay Program
2013-0001 03	4600 King St	2023/2024	Filtering Practices	2/7/2024	1.87	1.59	2.69	29.63	1911.62	50%	32%	0%	0.77	0.00	361.28	VA BMP Clearinghouse-MTD
2013-0001 04	4600 King St	2023/2024	Filtering Practices	2/7/2024	1.26	1.16	1.92	20.56	1376.31	50%	32%	0%	1.26	0.00	591.19	VA BMP Clearinghouse-MTD
2013-0001 05	4600 King St	2023/2024	MTD/Proprietary: Filtering Devices	2/7/2024	2.07	2.04	3.32	34.70	2394.77	20%	13%	50%	1.55	0.00	727.26	VA BMP Clearinghouse-MTD
2015-0025	2300 Richmond Hwy	2023/2024	Permeable Pavement	2/24/2023	0.33	0.33	0.53	5.56	386.54	20%	10%	55%	0.42	3.00	197.06	Chesapeake Bay Program
2017-0014 01	1101 N Washington St	2023/2024	Bioretention (inc. Urban Bioretention)	10/14/2022	0.06	0.06	0.10	1.01	70.28	45%	25%	55%	0.06	0.55	28.15	Chesapeake Bay Program
2017-0014 02	1101 N Washington St	2023/2024	MTD/Proprietary: Hydrodynamic Devices	10/14/2022	0.03	0.02	0.04	0.44	25.18	20%	13%	50%	0.03	0.30	14.08	VA BMP Clearinghouse-MTD
2017-0014 03	1101 N Washington St	2023/2024	Filtering Practices	10/14/2022	0.53	0.53	0.86	8.94	620.80	45%	25%	55%	0.23	0.00	107.92	Chesapeake Bay Program
2017-0014 04	1101 N Washington St	2023/2024	Filtering Practices	10/14/2022	0.06	0.05	0.09	0.94	60.32	45%	25%	55%	0.06	0.06	28.15	Chesapeake Bay Program
2017-0014 05	1101 N Washington St	2023/2024	MTD/Proprietary: Filtering Devices	10/14/2022	0.06	0.05	0.09	0.94	60.32	20%	13%	50%	0.06	0.06	28.15	VA BMP Clearinghouse-MTD
2017-0023 01	2455 Mandeville Ln	2023/2024	Vegetated Roof	7/3/2023	1.72	1.72	2.79	29.00	2014.67	80%	85%	90%	1.88	15.98	882.10	Chesapeake Bay Program
2017-0023 02	2455 Mandeville Ln	2023/2024	MTD/Proprietary: Hydrodynamic Devices	7/3/2023	2.09	2.08	3.37	35.17	2438.10	20%	13%	50%	1.10	0.00	516.12	VA BMP Clearinghouse-MTD
2017-0023 03	2455 Mandeville Ln	2023/2024	Filtering Practices	7/3/2023	0.017	0.017	0.03	0.29	19.91	45%	25%	55%	0.02	0.17	9.38	Chesapeake Bay Program
2017-0023 04	2455 Mandeville Ln	2023/2024	Filtering Practices	7/3/2023	0.017	0.017	0.03	0.29	19.91	45%	25%	55%	0.02	0.17	9.38	Chesapeake Bay Program
2017-0023 05	2455 Mandeville Ln	2023/2024	Filtering Practices	7/3/2023	0.017	0.017	0.03	0.29	19.91	45%	25%	55%	0.02	0.17	9.38	Chesapeake Bay Program
2017-0023 06	2455 Mandeville Ln	2023/2024	Filtering Practices	7/3/2023	0.017	0.017	0.03	0.29	19.91	45%	25%	55%	0.02	0.17	9.38	Chesapeake Bay Program
2018-0005	2599 Gadsby Place	2023/2024	Urban Stream Restoration	6/7/2024	225	135	---	---	---	---	---	---	257.00	658.00	489818.00	Chesapeake Bay Program
2018-0006 01	880 S Pickett St	2023/2024	Filtering Practices	6/27/2024	0.07	0.07	0.11	1.18	81.99	45%	25%	55%	0.07	1.31	32.84	Chesapeake Bay Program
2018-0006 02	880 S Pickett St	2023/2024	Filtering Practices	6/27/2024	0.07	0.06	0.10	1.11	72.04	45%	25%	55%	0.07	1.31	32.84	Chesapeake Bay Program
2018-0006 03	880 S Pickett St	2023/2024	Filtering Practices	6/27/2024	0.07	0.06	0.10	1.11	72.04	45%	25%	55%	0.07	1.31	32.84	Chesapeake Bay Program
2018-0006 04	880 S Pickett St	2023/2024	Filtering Practices	6/27/2024	0.07	0.06	0.10	1.11	72.04	45%	25%	55%	0.07	1.31	32.84	Chesapeake Bay Program
2018-0006 05	880 S Pickett St	2023/2024	Filtering Practices	6/27/2024	0.07	0.06	0.10	1.11	72.04	45%	25%	55%	0.07	1.31	32.84	Chesapeake Bay Program
2018-0006 06	880 S Pickett St	2023/2024	Filtering Practices	6/27/2024	0.07	0.06	0.10	1.11	72.04	45%	25%	55%	0.04	0.99	18.77	Chesapeake Bay Program
2018-0006 07	880 S Pickett St	2023/2024	Filtering Practices	6/27/2024	0.03	0.06	0.08	0.71	65.01	45%	25%	55%	0.06	1.22	28.15	Chesapeake Bay Program
2018-0006 08	880 S Pickett St	2023/2024	Filtering Practices	6/27/2024	0.06	0.03	0.06	0.81	40.41	45%	25%	55%	0.05	1.09	23.46	Chesapeake Bay Program
2018-0006 09	880 S Pickett St	2023/2024	Filtering Practices	6/27/2024	0.04	0.05	0.08	0.74	56.81	45%	25%	55%	0.08	1.34	37.54	Chesapeake Bay Program
2018-0006 10	880 S Pickett St	2023/2024	Filtering Practices	6/27/2024	0.08	0.04	0.08	1.08	53.88	45%	25%	55%	0.07	1.24	32.84	Chesapeake Bay Program
2018-0006 11	880 S Pickett St	2023/2024	Filtering Practices	6/27/2024	0.07	0.05	0.09	1.04	62.08	45%	25%	55%	0.05	1.12	23.46	Chesapeake Bay Program
2018-0028 01	2395 Mill Road	2023/2024	Vegetated Roof	8/23/2023	0.48	0.48	0.78	8.09	562.23	80%	85%	90%	0.62	3.34	290.90	Chesapeake Bay Program
2018-0028 02	2395 Mill Road	2023/2024	Filtering Practices	8/23/2023	0.086	0.086	0.14	1.45	100.73	50%	32%	0%	0.09	0.00	42.23	VA BMP Clearinghouse-MTD
2018-0028 03	2395 Mill Road	2023/2024	Filtering Practices	8/23/2023	0.198	0.198	0.32	3.34	231.92	50%	32%	0%	0.21	0.00	98.53	VA BMP Clearinghouse-MTD

City of Alexandria
BMP Calculations
July 1, 2023 - June 30, 2024

BMP ID	Location (Address or Lat/Long)	Reporting PY	BMP Type	Date Installed	Acres Treated	Impervious Acres Treated	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS (lbs/yr)	TP BMP Efficiency	TN Efficiency	TSS Efficiency	TP Removed (lbs/yr)	TN Removed (lbs/yr)	TSS Removed (lbs/yr)	Efficency Method
2019-0001 01	1300 King St.	2023/2024	Vegetated Roof	8/8/2023	0.06	0.06	0.10	1.01	70.28	80%	85%	90%	0.08	0.56	37.54	Chesapeake Bay Program
2019-0001 02	1300 King St.	2023/2024	MTD/Proprietary: Filtering Devices	8/8/2023	0.32	0.32	0.52	5.40	374.82	20%	13%	50%	0.14	0.00	65.69	VA BMP Clearinghouse-MTD
2019-0003 01	2000 N Beauregard St	2023/2024	Filtering Practices	6/29/2024	2.2	2.1	3.44	36.41	2477.35	45%	25%	55%	0.92	0.00	431.66	Chesapeake Bay Program
2019-0003 02	2000 N Beauregard St	2023/2024	Filtering Practices	6/29/2024	0.057	0.057	0.09	0.96	66.77	45%	25%	55%	0.07	0.56	32.84	Chesapeake Bay Program
2019-0003 03	2000 N Beauregard St	2023/2024	Filtering Practices	6/29/2024	0.057	0.057	0.09	0.96	66.77	45%	25%	55%	0.07	0.56	32.84	Chesapeake Bay Program
2019-0003 04	2000 N Beauregard St	2023/2024	Filtering Practices	6/29/2024	0.057	0.057	0.09	0.96	66.77	45%	25%	55%	0.07	0.56	32.84	Chesapeake Bay Program
2019-0003 05	2000 N Beauregard St	2023/2024	Filtering Practices	6/29/2024	0.057	0.057	0.09	0.96	66.77	45%	25%	55%	0.07	0.56	32.84	Chesapeake Bay Program
2019-0003 06	2000 N Beauregard St	2023/2024	Filtering Practices	6/29/2024	0.057	0.057	0.09	0.96	66.77	45%	25%	55%	0.07	0.56	32.84	Chesapeake Bay Program
2019-0003 07	2000 N Beauregard St	2023/2024	Filtering Practices	6/29/2024	0.057	0.057	0.09	0.96	66.77	45%	25%	55%	0.07	0.56	32.84	Chesapeake Bay Program
2019-0003 08	2000 N Beauregard St	2023/2024	Filtering Practices	6/29/2024	0.057	0.057	0.09	0.96	66.77	45%	25%	55%	0.07	0.56	32.84	Chesapeake Bay Program
2019-0003 09	2000 N Beauregard St	2023/2024	Filtering Practices	6/29/2024	0.057	0.057	0.09	0.96	66.77	45%	25%	55%	0.07	0.56	32.84	Chesapeake Bay Program
2019-0003 10	2000 N Beauregard St	2023/2024	Filtering Practices	6/29/2024	0.057	0.057	0.09	0.96	66.77	45%	25%	55%	0.07	0.56	32.84	Chesapeake Bay Program
2019-0003 11	2000 N Beauregard St	2023/2024	Filtering Practices	6/29/2024	0.057	0.057	0.09	0.96	66.77	45%	25%	55%	0.07	0.56	32.84	Chesapeake Bay Program
2019-0003 12	2000 N Beauregard St	2023/2024	Filtering Practices	6/29/2024	0.057	0.057	0.09	0.96	66.77	45%	25%	55%	0.07	0.56	32.84	Chesapeake Bay Program
2019-0003 13	2000 N Beauregard St	2023/2024	Filtering Practices	6/29/2024	0.057	0.057	0.09	0.96	66.77	45%	25%	55%	0.07	0.56	32.84	Chesapeake Bay Program
2019-0003 14	2000 N Beauregard St	2023/2024	Filtering Practices	6/29/2024	0.34	0.24	0.43	5.05	298.70	45%	25%	55%	0.32	2.65	150.14	Chesapeake Bay Program
2019-0004 01	400 Green St.	2023/2024	Permeable Pavement	2/2/2024	0.4629	0.4629	0.75	7.80	542.20	20%	10%	55%	0.59	4.21	276.83	Chesapeake Bay Program
2019-0004 02	400 Green St.	2023/2024	MTD/Proprietary: Hydrodynamic Devices	2/2/2024	2.6754	2.0183	3.54	40.65	2479.59	45%	25%	55%	0.82	0.00	384.74	VA BMP Clearinghouse-MTD
2019-0004 03	1200 N Quaker Ln	2023/2024	Bioretention (inc. Urban Bioretention)	2/2/2024	0.6273	0.4583	0.81	9.43	566.53	45%	25%	55%	0.60	5.95	281.52	Va BMP Clearinghouse-MTD
2019-0026 01	1200 N Quaker Ln	2023/2024	Bioretention (inc. Urban Bioretention)	4/5/2023	1.72	0.57	1.39	21.19	869.82	45%	25%	55%	1.70	12.43	797.64	Chesapeake Bay Program
2019-0026 02	1200 N Quaker Ln	2023/2024	Bioretention (inc. Urban Bioretention)	4/5/2023	0.57	0.38	0.69	8.32	478.50	45%	25%	55%	0.51	4.26	239.29	Chesapeake Bay Program
2019-0026 03	1200 N Quaker Ln	2023/2024	MTD/Proprietary: Filtering Devices	4/5/2023	3.48	1.13	2.79	42.72	1736.72	20%	13%	50%	0.84	0.00	394.13	VA BMP Clearinghouse-MTD
2020-00001 02	1200 N Henry St	2023/2024	Filtering Practices	1/9/2024	0.04	0.04	0.07	0.71	49.08	45%	25%	55%	0.05	0.42	23.46	Chesapeake Bay Program
2020-00001 03	1200 N Henry St	2023/2024	Filtering Practices	1/9/2024	0.04	0.04	0.07	0.71	49.08	45%	25%	55%	0.05	0.42	23.46	Chesapeake Bay Program
2020-00001 04	1200 N Henry St	2023/2024	Filtering Practices	1/9/2024	0.04	0.04	0.07	0.71	49.08	45%	25%	55%	0.05	0.42	23.46	Chesapeake Bay Program
2020-00001 05	1200 N Henry St	2023/2024	Filtering Practices	1/9/2024	0.04	0.04	0.07	0.71	49.08	45%	25%	55%	0.05	0.42	23.46	Chesapeake Bay Program
2020-00001 06	1200 N Henry St	2023/2024	Filtering Practices	1/9/2024	0.04	0.04	0.07	0.71	49.08	45%	25%	55%	0.05	0.42	23.46	Chesapeake Bay Program
2020-00001 07	1200 N Henry St	2023/2024	Filtering Practices	1/9/2024	0.04	0.04	0.07	0.71	49.08	45%	25%	55%	0.05	0.42	23.46	Chesapeake Bay Program
2020-00001 08	1200 N Henry St	2023/2024	Filtering Practices	1/9/2024	0.04	0.04	0.07	0.71	49.08	45%	25%	55%	0.05	0.42	23.46	Chesapeake Bay Program
2020-00001 09	1200 N Henry St	2023/2024	Filtering Practices	1/9/2024	0.04	0.04	0.07	0.71	49.08	45%	25%	55%	0.05	0.42	23.46	Chesapeake Bay Program
2020-00001 01	1200 N Henry St	2023/2024	MTD/Proprietary: Filtering Devices	1/9/2024	0.6	0.6	0.97	10.12	702.79	45%	25%	55%	0.05	0.42	23.46	Chesapeake Bay Program
2020-0002	4301 W Braddock Rd	2023/2024	Permeable Pavement	1/17/2024	0.03	0.03	0.05	0.53	35.51	20%	10%	55%	0.04	0.29	18.77	Chesapeake Bay Program

City of Alexandria
BMP Calculations
July 1, 2023 - June 30, 2024

BMP ID	Location (Address or Lat/Long)	Reporting PY	BMP Type	Date Installed	Acres Treated	Impervious Acres Treated	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS (lbs/yr)	TP BMP Efficiency	TN Efficiency	TSS Efficiency	TP Removed (lbs/yr)	TN Removed (lbs/yr)	TSS Removed (lbs/yr)	Efficency Method
2020-0015 01	801 North Fairfax	2023/2024	Vegetated Roof	5/13/2024	0.115	0.115	0.19	1.94	134.70	80%	85%	90%	0.11	0.80	51.61	Chesapeake Bay Program
2020-0015 02	801 North Fairfax	2023/2024	MTD/Proprietary: Filtering Devices	5/13/2024	0.249	0.249	0.40	4.20	291.66	45%	25%	55%	0.14	0.00	65.69	VA BMP Clearinghouse-MTD
2020-1025 01	3601 University Drive	2023/2024	Bioretention (inc. Urban Bioretention)	5/3/2024	0.58	0.17	0.44	6.99	271.20	45%	25%	55%	0.33	2.75	154.84	Chesapeake Bay Program
2020-1025 02	3601 University Drive	2023/2024	Bioretention (inc. Urban Bioretention)	5/3/2024	0.08	0.02	0.06	0.94	33.97	45%	25%	55%	0.04	0.35	18.77	Chesapeake Bay Program
2020-1025 03	3601 University Drive	2023/2024	Bioretention (inc. Urban Bioretention)	5/3/2024	0.13	0.03	0.09	1.51	52.72	45%	25%	55%	0.07	0.56	32.84	Chesapeake Bay Program
2020-1025 04	3601 University Drive	2023/2024	Bioretention (inc. Urban Bioretention)	5/3/2024	0.06	0	0.02	0.60	10.55	45%	25%	55%	0.02	0.16	9.38	Chesapeake Bay Program
2020-1025 05	3601 University Drive	2023/2024	Bioretention (inc. Urban Bioretention)	5/3/2024	0.07	0	0.03	0.70	12.31	45%	25%	55%	0.03	0.18	14.08	Chesapeake Bay Program
2020-1025 06	3601 University Drive	2023/2024	Bioretention (inc. Urban Bioretention)	5/3/2024	0.06	0	0.02	0.60	10.55	45%	25%	55%	0.02	0.16	9.38	Chesapeake Bay Program
2020-1025 07	3601 University Drive	2023/2024	Bioretention (inc. Urban Bioretention)	5/3/2024	0.11	0.05	0.11	1.45	69.11	45%	25%	55%	0.08	0.65	37.54	Chesapeake Bay Program
2020-1025 08	3601 University Drive	2023/2024	Bioretention (inc. Urban Bioretention)	5/3/2024	0.07	0.02	0.05	0.84	32.22	45%	25%	55%	0.04	0.33	18.77	Chesapeake Bay Program
2020-1025 09	3601 University Drive	2023/2024	Bioretention (inc. Urban Bioretention)	5/3/2024	0.21	0.08	0.18	2.66	116.56	45%	25%	55%	0.14	1.13	65.69	Chesapeake Bay Program
2020-1025 10	3601 University Drive	2023/2024	Bioretention (inc. Urban Bioretention)	5/3/2024	0.08	0.03	0.07	1.01	43.93	45%	25%	55%	0.05	0.43	23.46	Chesapeake Bay Program
2020-1025 11	3601 University Drive	2023/2024	Bioretention (inc. Urban Bioretention)	5/3/2024	0.13	0.03	0.09	1.51	52.72	45%	25%	55%	0.07	0.56	32.84	Chesapeake Bay Program
2020-1025 12	3601 University Drive	2023/2024	Bioretention (inc. Urban Bioretention)	5/3/2024	0.14	0.02	0.08	1.55	44.52	45%	25%	55%	0.06	0.51	28.15	Chesapeake Bay Program
2020-1025 13	3601 University Drive	2023/2024	Bioretention (inc. Urban Bioretention)	5/3/2024	0.15	0.04	0.11	1.78	66.19	45%	25%	55%	0.08	0.68	37.54	Chesapeake Bay Program
2020-1025 14	3601 University Drive	2023/2024	Bioretention (inc. Urban Bioretention)	5/3/2024	0.17	0.04	0.12	1.98	69.71	45%	25%	55%	0.09	1.39	42.23	Chesapeake Bay Program
2020-1025 15	3601 University Drive	2023/2024	Bioretention (inc. Urban Bioretention)	5/3/2024	0.29	0.07	0.20	3.40	120.67	45%	25%	55%	0.15	1.27	79.76	Chesapeake Bay Program
2020-1025 16	3601 University Drive	2023/2024	Bioretention (inc. Urban Bioretention)	5/3/2024	0.49	0.28	0.54	6.84	364.89	45%	25%	55%	0.49	4.05	229.91	Chesapeake Bay Program
SIT82-0021	615 Slaters Lane	2023/2024	Vegetated Roof	8/9/2023	0.01	0.01	0.02	0.17	11.71	80%	85%	90%	0.01	0.00	4.69	Chesapeake Bay Program
				Totals	**254.62**	**157.41**	**39.27**	**450.50**	**27,521.99**	---	---	---	**276.91**	**758.93**	**499,169.15**	

Appendix C

BMP Technical Memorandum & Pollution Calculations

Lake Cook Technical Memorandum
Four Mile Run Stream Restoration Technical Memorandum
Ben Brenman Pollutant Calculations

Lake Cook Technical Memorandum

URS

Technical Memorandum

Date: April 23, 2015

To: City of Alexandria
Department of Transportation and Environmental Services
2900-B Business Center Drive
Alexandria, VA 22314

From: URS Corporation
12420 Milestone Center Drive, Suite 150
Germantown, MD 20876

RE: City of Alexandria- Lake Cook Retrofit Design
Draft Technical Memorandum- Chesapeake Bay TMDL Water Quality Credits
URS No. 15304189

Executive Summary

The City of Alexandria has identified retrofitting existing ponds as an initial step in meeting the Chesapeake Bay Total Maximum Daily Load TMDL reductions specified in its Municipal Separate Storm Sewer System (MS4) permit. A study commissioned by the City in March 2013 identified Lake Cook as a candidate for water quality retrofits. In December 2013, the City received a Stormwater Local Assistance Fund (SLAF) Grant from the Virginia Department of Environmental Quality (VA DEQ) to help fund the conversion of Lake Cook from a recreational fishing lake to a stormwater best management practice (BMP). The purpose of this technical memorandum is to describe the proposed BMPs for Lake Cook and summarize the water quality benefits in terms of pounds of nitrogen, phosphorus, and total suspended solids that will be removed annually by Lake Cook after retrofits are made.

With the exception of treatment volume storage, proposed retrofits to Lake Cook will meet the criteria for a Level 1 Design Wet Pond, as listed in the *Virginia DEQ Stormwater Design Specification No. 14 – Wet Pond, Version 1.9,* dated March 1, 2011. The design specification can be found on the Virginia Stormwater Management BMP Clearinghouse website (http://www.vwrrc.vt.edu/swc/). As a retrofitted wet pond with an upflow filter, Lake Cook will remove approximately 1,610 pounds of nitrogen, 167 pounds of phosphorus, and 134,140 pounds of total suspended solids annually.

While Lake Cook is considered to be a recreational lake in its existing state, it appears on the City's BMP inventory with a credit for the treatment of 15 acres draining to it from the adjacent Animal Welfare League property and a portion of Cameron Run Regional Park. According to DEQ's Draft Revised Guidance Memo No. 14-2012, and the SLAF Program Guidelines, if an existing BMP is retrofitted, nutrient removal credit will be allowed for the differences between the reported annual pollutant removals of the BMP before retrofits were made (existing condition) and the calculated removals after

retrofitting. The existing pollutant removal rates for Lake Cook were calculated using the methods outlined in VA DEQ's Draft Revised Guidance Memo No. 14-2012 for the 15 acres draining from the Animal Welfare League property and Cameron Run Regional Park. The annual removal rates for Lake Cook in its existing condition are 23, 3, and 2,806 pounds of nitrogen, phosphorus, and total solids, respectively. Since the 15 acres the City is taking credit for treating represents less than four percent of the total watershed actually draining to Lake Cook, the City will get credit for the annual removal of approximately 1,587 pounds of nitrogen, 163 pounds of phosphorus, and 131,334 pounds of total solids after completing retrofit improvements. The methods used to calculate the existing and post-retrofit annual pollutant removal rates are discussed below as well as design criteria that will be met as part of the Lake Cook retrofit.

Other design elements such as floating wetlands were included as additional features in the feasibility study, which may be incorporated into the overall project. However, this memorandum addresses only those water quality retrofits approved for nutrient removal credit by the Virginia Stormwater Management BMP Clearinghouse.

Background

Located in the Cameron Run watershed, Lake Cook was originally constructed in the 1970s, and drains approximately 390 acres of urban land in Alexandria. Approximately 127 acres, or 33 percent, of the area draining to Lake Cook, is impervious. The lake has a surface area of approximately 3 acres, and receives stormwater inflows primarily from Strawberry Run. As part of Cameron Run Regional Park, the lake's primary use is recreational and it is regularly stocked by the Virginia Department of Game and Inland Fisheries.

Description of Proposed Retrofits

Improvements to Lake Cook include retrofitting the lake to meet the criteria for a Level 1 Wet Pond, with the exception of treatment volume storage, as outlined by VA DEQ's Stormwater Design Specification No. 14, and the installation of an upflow filter. Some design elements, such as multiple storage cells meet the criteria for a Level 2 Wet Pond design. The following is a description of the required retrofits:

Treatment Volume – A treatment volume of approximately 14.8 acre-feet is required for a Level 1 design, based on the Virginia Runoff Reduction Methodology spreadsheets. This treatment volume may consist of storage entirely below the normal pool elevation, or a combination of extended detention storage above the normal pool elevation plus the storage volume below the normal pool elevation. Because Lake Cook is located within a

Federal Emergency Management Agency (FEMA) regulated floodplain, URS recommends that extended detention storage not be used to achieve the required treatment volume, and that treatment volume storage be contained below the normal pool elevation. Due to site constraints and conditions within the existing pond, the City believes that providing a storage volume of 14.8 acre-feet below the normal pool elevation is not feasible. The City would like to propose creating a storage volume that correlates to a runoff treatment depth of 1 inch over the impervious area within the Lake Cook watershed. With approximately 127.5 impervious acres in the watershed, that volume is approximately 10.6 acre-feet.

Single Pond Cell – Currently, storage in the lake is provided within a single area. The proposed design calls for a two-cell design. Multiple pond cells meet the criteria for a Level 2 Wet Pond design.

Sediment Forebay – A significant amount of accumulated sediment can be seen in aerial photographs at the mouth of Strawberry Run. Two sediment forebays will be incorporated into the proposed design. Each pond cell will have a separate sediment forebay.

Aquatic Benches – Aquatic benches will be provided according to the Level 1 Design criteria. The location of the benches is yet to be determined.

Upflow Filter – Additional water quality improvements will be provided by the construction of an upflow filter. While not a requirement for a Level 1 Design, it will provide additional water quality benefits within the lake.

The proposed upflow filter design does not meet the Virginia Stormwater Management BMP Clearinghouse criteria and has not been approved by VA DEQ as a water quality BMP; therefore, the City will not get any additional nutrient removal credit.

The use of an upflow filter meeting the Virginia Stormwater Management BMP Clearinghouse criteria would provide an additional 40-percent reduction in phosphorus. When applied to the remaining phosphorus load untreated by the wet pond itself, an additional 65 pounds of phosphorus could be removed annually.

Nutrient Removal Credit for Design Retrofits.

In order to calculate the pounds of nutrients removed by Lake Cook after retrofits are completed, the pollutant loads of nitrogen, phosphorus, and total suspended solids generated by the Lake Cook watershed were calculated first. The pollutant loading rates for the three pollutants were taken from Table 2b: *Calculation Sheet for Estimating Existing Source Loads for the Potomac River Basin,* found in Alexandria's 2013-2018 MS4 permit for Regulated Urban Impervious and Regulated Urban Pervious land uses. The pollutant loading rates for forested land were taken from Table III.1 *Forested loading rates by basin:* from DEQ's Draft Revised Guidance Memo 14-2012. Table 1 shows the land use acres served by Lake Cook, the pollutant loads for each nutrient by land use, and the total pollutant loads generated by the Lake Cook watershed.

URS

Table 1. Lake Cook Watershed Pollutant Loads

Land Use	Pollutant	Total Acres Served	Loading Rate (lbs/ac/yr)	Pollutant Load (lbs/yr)	Total Load (lbs/yr)
Regulated Urban Impervious	Nitrogen	127.54	16.86	2,150.32	**4,599.20**
Regulated Urban Pervious	Nitrogen	221.51	10.07	2,230.61	
Forest	Nitrogen	41.26	5.29	218.27	
Regulated Urban Impervious	Phosphorus	127.54	1.62	206.61	**302.80**
Regulated Urban Pervious	Phosphorus	221.51	0.41	90.82	
Forest	Phosphorus	41.26	0.13	5.36	
Regulated Urban Impervious	Total Suspended Solids	127.54	1,171.32	149,390.15	**191,628.70**
Regulated Urban Pervious	Total Suspended Solids	221.51	175.80	38,941.46	
Forest	Total Suspended Solids	41.26	79.91	3,297.09	

Because the proposed wet pond design does not strictly meet all of the Virginia Stormwater BMP Clearinghouse standards for a Level 1 Wet Pond, the Clearinghouse removal efficiencies, strictly speaking, cannot be used to calculate the annual pollutant removals for the pond. Virginia DEQ's Draft Revised Guidance Memo No. 14-2012 (dated March 19, 2015) states that the Chesapeake Bay Program Retrofit Curves should be used to determine pollutant removal efficiencies when a BMP cannot meet the Virginia Stormwater BMP Clearinghouse criteria. Based on a treatment depth of 1 inch over the impervious acres in the Lake Cook watershed, the Chesapeake Bay Program Retrofit Curves give removal efficiencies of 35% for nitrogen, 55% for phosphorus and 70% for sediment for Stormwater Treatment Practices (ST) such as wet ponds. Table 2 shows the annual pollutant removal rates based on the Lake Cook watershed pollutant loads and nutrient removal efficiencies from the Bay Program Retrofit Curves (without the benefit of an approved upflow filter). The City would like to use the removal efficiencies from Bay Program Retrofit Curves to calculate the nutrient reduction credit

for the proposed retrofit design for three reasons. First, recent correspondence with DEQ confirmed that the Bay Program Retrofit curves must be used to calculate nutrient reduction efficiencies for BMPs that do not meet the BMP Clearinghouse criteria, and given a lack of other methods to compute efficiencies, permittees may use those efficiencies calculated by the curves. Secondly, the proposed retrofit design meets all other criteria for a Level 1 Wet Pond design, and even meets the criteria for a Level 2 Wet Pond design by providing multiple cells, each having its own sediment forebay.

Thirdly, the proposed retrofit design still provides storage for a runoff treatment depth of 1 inch over the impervious acreage within the watershed.

Table 2. Annual Nutrient Removal by Lake Cook After Retrofitting

Pollutant	Annual Pollutant Load Input from Watershed (lbs/yr)	Removal Efficiency (%)	Annual Pollutant Removal (lbs/yr)
Nitrogen	4,599.20	35	**1,609.72**
Phosphorus	302.80	55	**166.54**
Total Suspended Solids	191,628.70	70	**134,140.09**

The conversion of Lake Cook to a Level 1 Design Wet Pond through retrofitting will result in the removal of approximately 1,610 pounds of nitrogen, 167 pounds of phosphorus, and 134,140 pounds of total suspended solids.

Existing BMP Nutrient Removal

Per DEQ's Draft Revised Guidance Memo No. 14-2012 and the SLAF Program Guidelines, pollutant removal rates for an existing BMP must be calculated and subtracted from the removal rates for the BMP after upgrades and retrofitting are complete. In the case of Lake Cook, the nutrient removal provided by the lake in its existing state was calculated for the 15-acre Animal Welfare League that drains to the lake, which is the reported acreage serviced by Lake Cook in the City's BMP inventory. Since the lake does not meet the Virginia Stormwater Management BMP Clearinghouse standards for a wet pond in its existing state, the Chesapeake Bay Program BMP removal efficiencies for a wet pond (nitrogen – 20 percent, phosphorus – 45 percent, and total suspended solids – 60 percent) were used as a starting point for the calculations, per Example V.D.2 in the Draft Revised Guidance Memo 14-2012.

Due to the age of the lake and the lack of original design criteria, downward modifications were made to the Chesapeake Bay Program's removal efficiencies. Specifically, 10-percent reductions in efficiency were taken for age since the lake was constructed in the 1970s. The age of the lake combined with the lack of a sediment forebay and the lack of aquatic benches resulted in a total downward reduction of 30 percent. The resulting pollutant removal efficiencies used for calculating the existing pollutant removal rates are: 14 percent, 31.5 percent, and 42 percent for nitrogen, phosphorus, and sediment, respectively.

Tables 3 and 4 show the existing pollutant loads and the pollutant removal rates credited to Lake Cook for treatment of the 15-acre Animal Welfare League site. The pollutant

loads were based on 4.44 acres of urban impervious, 6.64 acres of urban pervious, and 3.92 acres of forested land.

Table 3. Existing Pollutant Loads from the Animal Welfare League/Cameron Run Regional Park

Land Use	Pollutant	Total Acres Served	Loading Rate (lbs/ac/yr)	Pollutant Load (lbs/yr)	Total Load (lbs/yr)
Regulated Urban Impervious	Nitrogen	4.44	16.86	74.86	**162.46**
Regulated Urban Pervious	Nitrogen	6.64	10.07	66.86	
Forest	Nitrogen	3.92	5.29	20.74	
Regulated Urban Impervious	Phosphorus	4.44	1.62	7.19	**10.42**
Regulated Urban Pervious	Phosphorus	6.64	0.41	2.72	
Forest	Phosphorus	3.92	0.13	0.51	
Regulated Urban Impervious	Total Suspended Solids	4.44	1,171.32	5,200.66	**6,681.22**
Regulated Urban Pervious	Total Suspended Solids	6.64	175.80	1,167.31	
Forest	Total Suspended Solids	3.92	79.91	313.25	

Table 4. Pollutant Removals for Existing Lake Cook

Pollutant	Annual Pollutant Load Input from Watershed (lbs/yr)	Removal Efficiency (%)	Annual Pollutant Removal (lbs/yr)
Nitrogen	162.46	14	**22.74**
Phosphorus	10.42	31.5	**3.28**
Total Suspended Solids	6,681.22	42	**2,806.11**

Based on the differences between the annual pollutant removal rates calculated for Lake Cook as an existing BMP treating 15 acres of the Lake Cook watershed (as reported by

the City) and the pollutant removal rates that will be provided by the new water quality retrofits, the City of Alexandria should be allowed to take credit for an incremental increase of 1,587 pounds of nitrogen, 163 pounds of phosphorus, and 131,334 pounds of total suspended solids towards meeting its Chesapeake TMDL reductions. Table 5 summarizes the existing and future pollutant removals, and incremental increase in nutrient removal credit.

Table 5. Existing, Future, and Incremental Pollutant Load Reductions

Pollutant	Existing Annual Pollutant Load Reductions (lbs/yr)	Annual Pollutant Removal Rates After Retrofitting (lbs/yr)	Incremental Difference Between Annual Pollutant Removal Rates (lbs/yr)
Nitrogen	22.74	1,609.72	**1,586.97**
Phosphorus	3.28	166.54	**163.25**
Total Suspended Solids	2,806.11	134,140.09	**131,334**

Four Mile Run Stream Restoration Technical Memorandum

Transportation and Environmental Services
Stormwater Management Division
2900-B Business Center Drive
Alexandria, VA 22314

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Phone: 703-746-6499
Fax: 703-519-8354

March 18, 2025

MEMO: ***Update to the Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan – Four Mile Run Reductions***

Section 10 of the *Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan* (November 1, 2024) provides the Phase 1 Permit Cycle Progress and sub-section 10.6 provides an overview of the credits associated with the Four Mile Run, Urban Stream Restoration effort. Construction for this project commenced in 2015 and was completed in 2016. The Action Plan notes that the City assessed the project utilizing Protocol 3 – Credit for Floodplain Reconnection Volume as indicated in the *Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects* (2013)[1]. The credits for the project are further outlined in the *Four Mile Run Stream Restoration – Tidal Wetland Pollutant Removal – Protocol 3* Technical Memorandum dated September 11, 2024, and included in Appendix C of the TMDL Action Plan.

Section 5 of the *Expert Panel* report indicates the following:

> *These protocols do not apply to sections of streams that are tidally influenced, which will be included in either the Shoreline Erosion Control Expert Panel or a pending future Expert Panel for tidal wetlands.*

However, as indicated in the TMDL Action Plan on page 27, the project is tidally influenced. This oversight was pointed out in an observation letter received by Virginia Department of Environmental Quality on February 14, 2025.

Table 17 in the TMDL Action Plan provides the following pollution reductions associated with the Four Mile Run Stream Restoration effort. This table is incorporated into this Memo as Table 1.

Table 1 – Four Mile Run Stream Restoration – Pollutant Reductions (Original)

TN (lbs/yr)	TP (lbs/yr)
194.8	40.0

[1] Berg, J., Burch, J., Cappuccitti, D., Filoso, S., Fraley-McNeal, L., Goerman, D., Hardman, N., Kaushal, S., Medina, D., Meyers, M., Kerr, B., Stewart, S., Sullivan, B., Walter, R., Winters, J., Schueler, T., Chesapeake Stormwater Network, Stack, B., & Center for Watershed Protection. (2013). *Recommendations of the expert panel to define removal rates for individual stream restoration projects* (By Urban Stormwater Work Group, Watershed Technical Work Group, & Water Quality Goal Implementation Team). https://d38c6ppuviqmfp.cloudfront.net/documents/Final_CBP_Approved_Expert_Panel_Report_on_Stream_Restoration.pdf

The City has reviewed the recommendations used to calculate the reductions and concurs that the results are not applicable because the project is tidally influenced. The City will use the *Recommendations of the Expert Panel to Define Removal Rates for Shoreline Management Projects* (2019)[2] instead.

Shoreline Management Protocol Calculation

On March 11, 2025, the City's Certified Stormwater Management Staff performed a field inspection of the project. Inspection results indicated that the site has been well maintained and operating as designed. The City further confirmed that the practice qualifies as a living shoreline as defined in the *Expert Panel Recommendation*.

Protocol 2 and 3 were utilized to obtain the pollutant reductions as shown in Table 2. The *Expert Panel Recommendations* for pollutant reductions are outlined in Step 1 and 2, below. Further, the project title is updated to *Four Mile Run Shoreline Management Restoration* to better reflect the type of project it is.

Step 2) Determine the total post-construction area of the net increase in marsh plantings and convert to acres. This may be taken from restoration drawings after confirmation in the field through as-builts. Future credit should be based on field verification of survival of the initial planning and any expansion of the restored marsh area due to re-enforcement or natural expansion.

The net increase in marsh plantings is confirmed to be 2-acres based on drawings and confirmation in the field as of March 11, 2025.

Step 2) Multiply by 85 lbs TN/ac/yr; 5.289 lbs TP/ac/yr; and 6,959 lbs TSS/ac/yr.

Table 2 provides an update to the pollutant reductions for this project.

Table 2 – Four Mile Run Shoreline Management Restoration – Pollutant Reductions

TN (lbs/yr)	TP (lbs/yr)	TSS (lbs/yr)
170	10.578	13,918

[2] Forand, N., DuBois, K., Halka, J., Hardaway, S., Janek, G., Karrh, L., Koch, E., Linker, L., Mason, P., Morgereth, E., Proctor, D., Smith, K., Stack, B., Stewart, S., Wolinski, B., Urban Stormwater Work Group, Watershed Technical Work Group, Water Quality Goal Implementation Team, WTWG, & Drescher, S. (2015). *WTWG: Recommendations of Expert Panel on Shoreline Management*. https://d18lev1ok5leia.cloudfront.net/chesapeakebay/documents/Final_Shoreline-Management_RPT__APPENDICES_12-18-19.pdf

Technical Memorandum

To: City of Alexandria

From: Brian Finerfrock, Eliana Rios

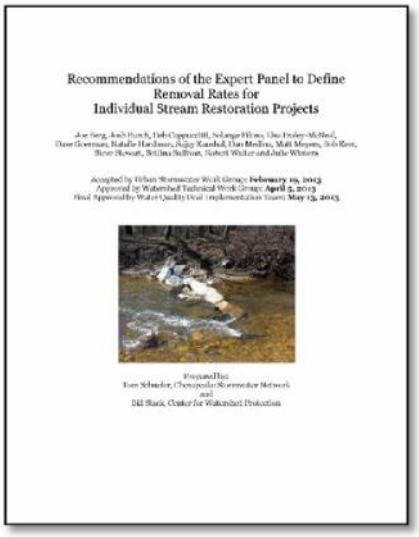
Rummel, Klepper & Kahl, LLP

Date: September 11, 2014

Subject: Four Mile Run Stream Restoration – Tidal Wetland Pollutant Removal – Protocol 3

The following memorandum documents the use of the "Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects" prepared by Tom Schueler (Chesapeake Stormwater Network) and Bill Stack (Center for Watershed Protection) to determine the pollutant removal amount for the proposed tidal wetland restoration site associated with the Four Mile Run Tidal Restoration project.

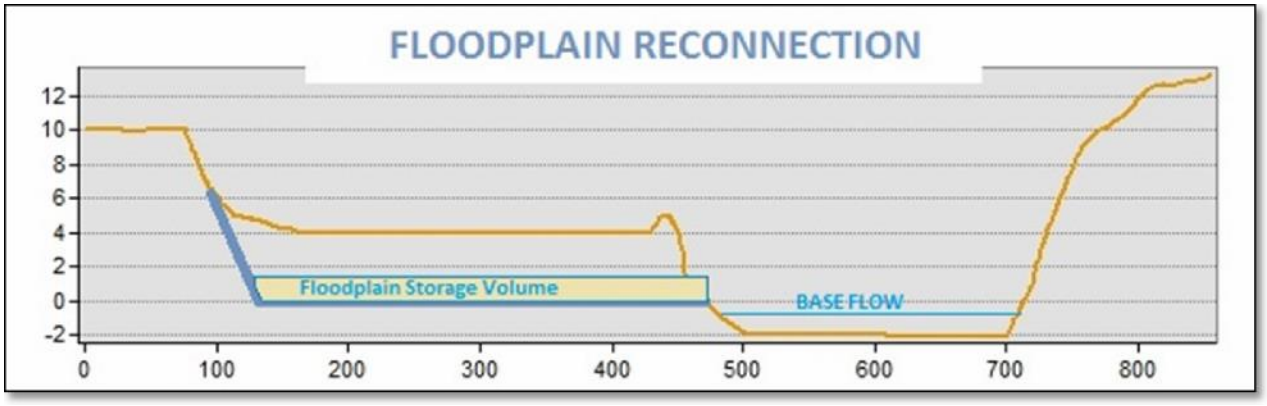
Introduction


Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects

The tidal wetland restoration site will be assessed using Protocol 3- Credit for Floodplain Reconnection Volume. The intent of this protocol is to provide mass sediment and nutrient reduction credit for projects which provide a reconnection of stream channels to their flood plains over a wide range of storm events. This criteria matches the intended function of the proposed wetland by providing a floodplain connection to the main channel (Four Mile Run). It should be noted that the Virginia Runoff Reduction Methodology Standard Constructed Wetland, is not an appropriate assessment of the pollutant removal conditions of the proposed wetland because the Constructed Wetland design and function relies on the long term storage of water over a wetland vegetation which is a function of a stand riser. Whereas the pollutant removal capability of the proposed wetland will be a function of the sediment deposition, plant pollutant uptake, denitrification, and other biological and physical processes.

METHOD AND QUALIFYING CONDITIONS

The applicable mass sediment and nutrient reduction credit is limited to the volume of water, up to 1 foot, captured by the wetland (floodplain reconnection).



A few criteria are required to be evaluated to determine applicability:

1. Is the project primarily designed to protect public infrastructure by bank armoring or riprap?- NO

2. Is the stream reach greater than 100 feet in length and still actively enlarging or grading in response to upstream development or adjustment to previous disturbances in the watershed? Yes

3. Does the project utilize a comprehensive approach to the stream/wetland restoration design? Yes

4. Will the project comply with state and federal permitting?- Yes

5. Are activities being proposed in a high function portion of the urban stream corridor?- No

Site Conditions

The proposed wetland is a tidally influenced wetland, located in the Four Mile Run Park, in the City of Alexandria. The proposed wetland is planned to be 2 acres in size, with a design intended to minimize phragmite colonization.

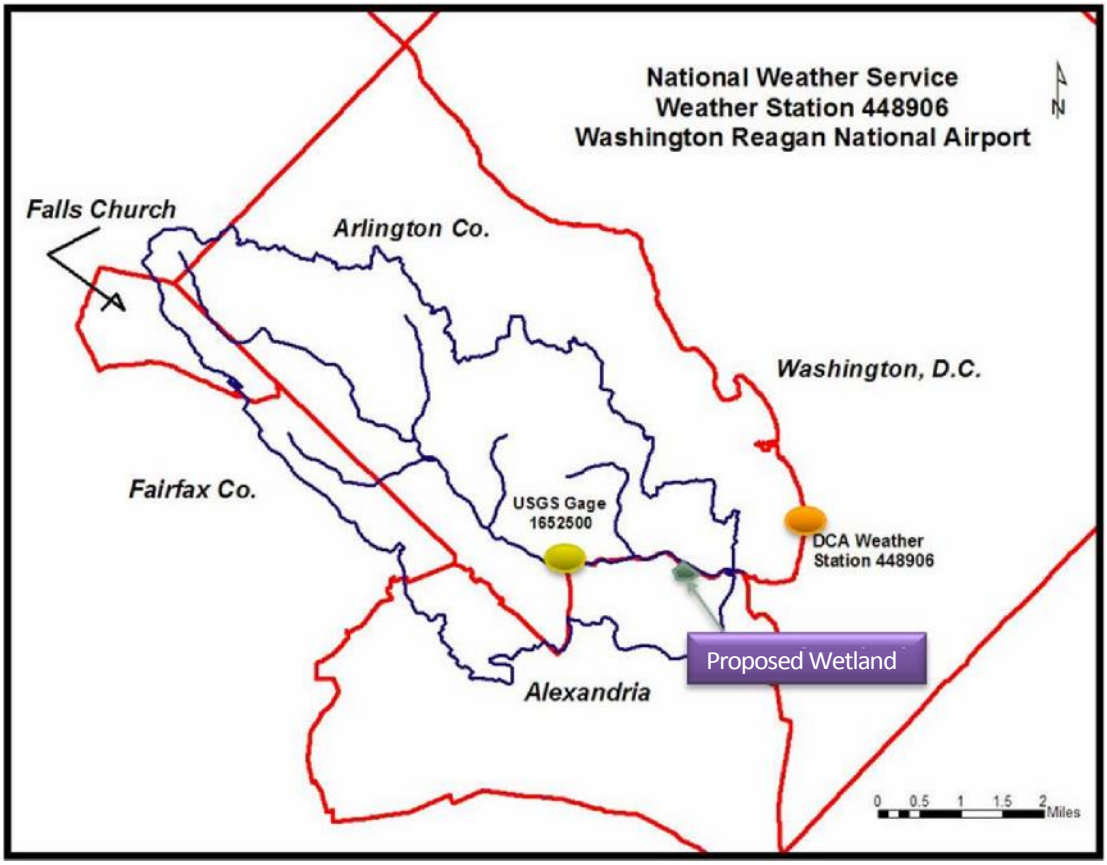


Site Computations:

Step 1: Estimate Floodplain Connection Volume

The proposed wetland is tidally influenced, therefore there is a baseflow condition. For pollutant removal efficiencies we determined which portion of the 1-inch storm event (Water Quality Volume event) will be available to the wetland for potential treatment. We determined the full range of 1-inch watershed inches if available to the wetland for potential treatment.

It should be noted that determination of the use of 1-inch storm events for purposes of treatment volume for the runoff reduction methodology was based an analysis of rainfall data at Reagan National Airport, which is very close to the project site and applicable for use in determining rainfall-runoff



characteristics of Four Mile Run.

Step 2: Estimate Phosphorus, Nitrogen and Total Suspended Solids (TSS) Removal Rate Available to Floodplain Reconnection

Under the guidance of the protocols, the maximum removal efficiency for wetland/floodplain reconnection is 30%. Based on the available volume in the proposed wetland with a maximum depth of 1.0 feet, we conclude that for treatment purposes, storm events up to the 0.5 inch storm event with a floodplain storage volume (watershed inches) of 1-inch, will allow for our wetland to achieve a

phosphorus (P), nitrogen (N) and total suspended solids (TSS) removal efficiency of 10%, 6.8% and 6.8% respectively.

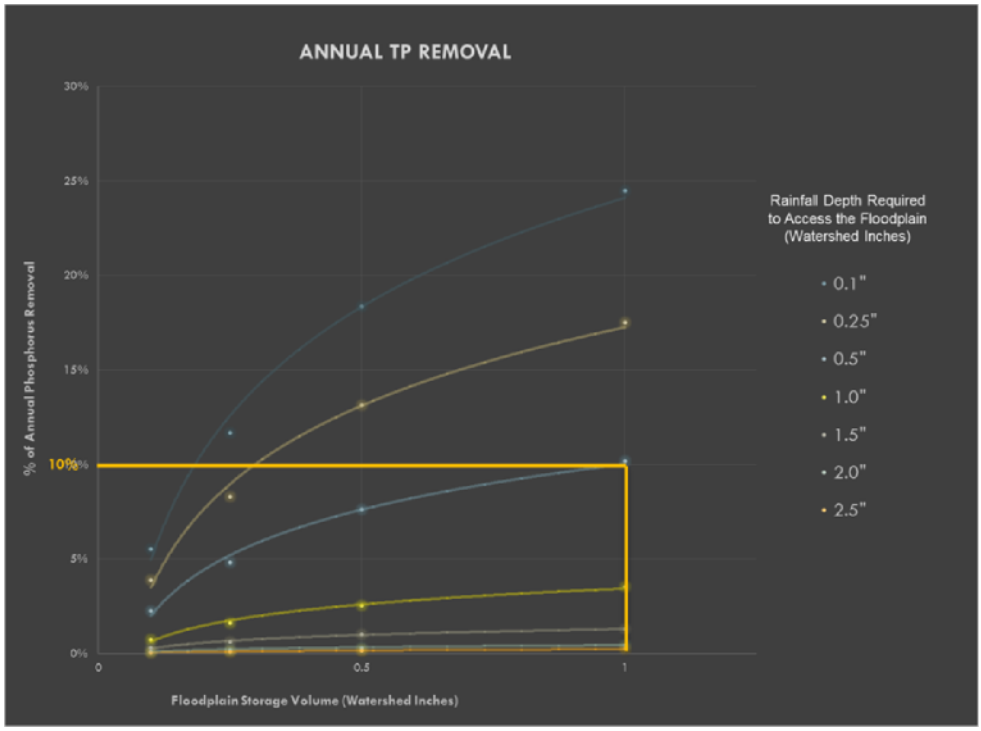
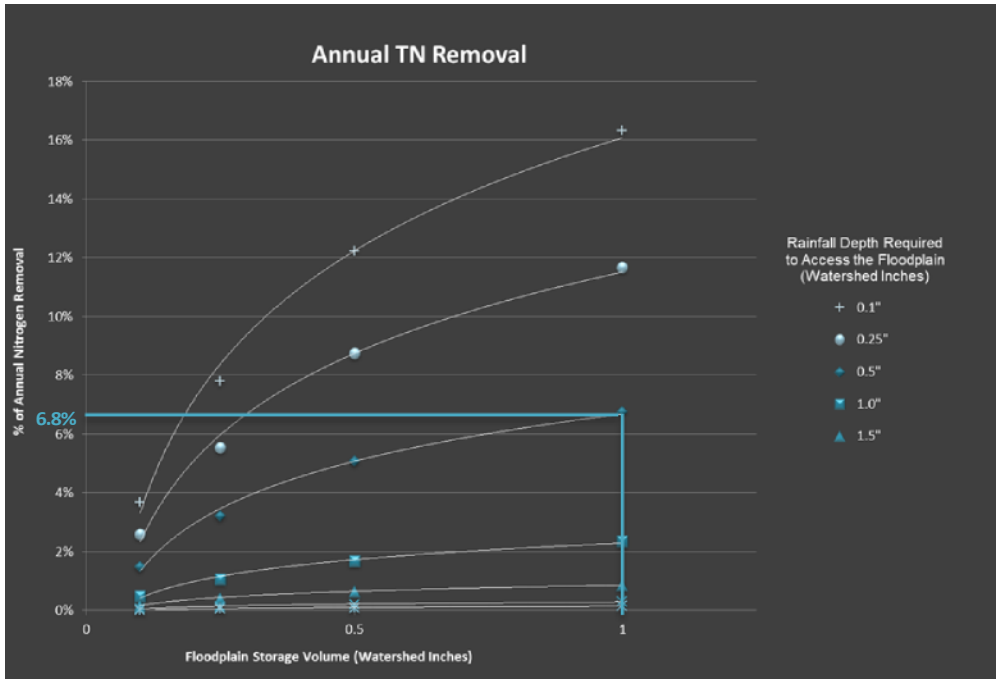


Figure 1-Annual Total Phoshorus (TN) removal as afunction offloodplain storage volume for several rainfall thresholds that allow runoff to access the floodplain.



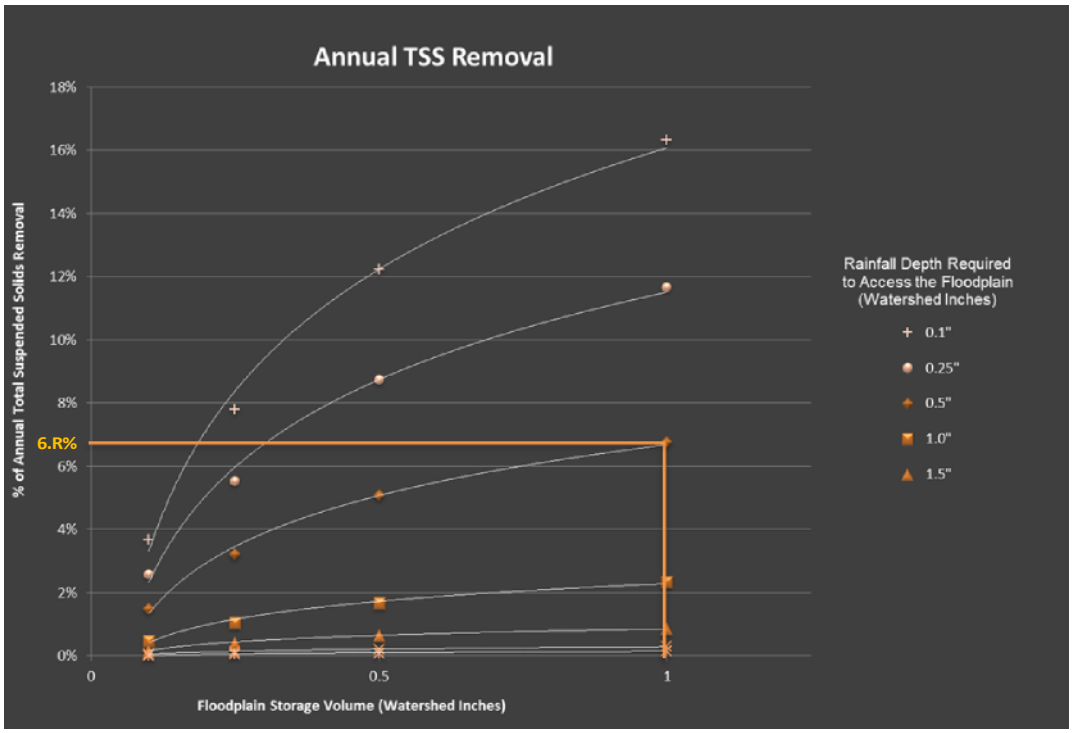
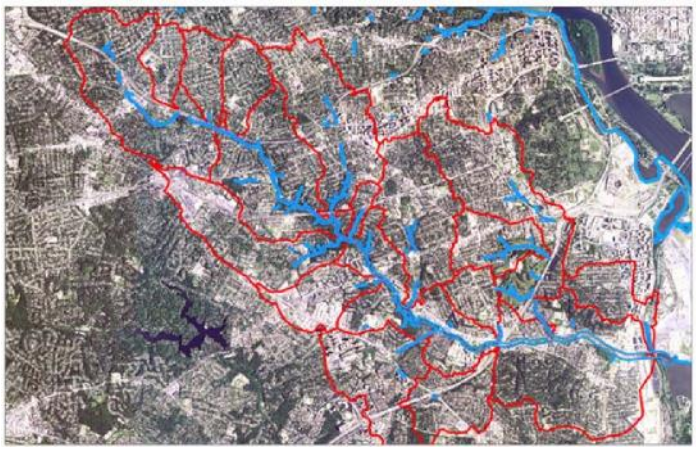


Figure 3-Annual Total Suspended Solids (TSS) removal as a function offloodplain storage volume for several rainfall thresholds that allow runoff to access the floodplain

Step 3: Compute Annual Phosphorus, Nitrogen and Total Suspended Solids Load



Our analysis performed a watershed analysis of the watershed to determine the potential phosphorus loading for Four Mile Run. Four Mile Run watershed drainage area to the wetland is approximately 10,560 acres, comprised of a highly urbanized watershed, with 10% B soils and 90% D soils in average.

Our analysis utilized two methodologies of determining the potential phosphorus and nitrogen loads: Virginia Runoff Reduction Methodologies and Chesapeake Bay Watershed Model projections (CBWM). The later methodology was also used for computing TSS loads. Using these two methods, the results for phosphorus and nitrogen loads were comparable:

- ***Runoff Reduction Methodology:*** *21,074 lbs/yr for Phosphorus and 150,759 lbs/yr for Nitrogen.*
- ***Chesapeake Bay Watershed Model (CBWM):*** *21,648 lbs/yr (using 2.21 lbs/acre/yr of impervious cover & 0.6 lbs/acre/yr for pervious cover)for Phosphorus, 142,879 lbs/yr (using 13.9 lbs/acre/yr of impervious cover & 10.2 lbs/acre/yr for pervious cover) for Nitrogen and*

11,355,168 lb/yr (using 1,175 lbs/acre/yr of impervious cover & 178 lbs/acre/yr for pervious cover)for Total Suspended Solids.

Due to the wide acceptance of Runoff Reduction, we chose to utilize the Runoff Reduction Methodology Loadings: 21,074 lbs/yr for Phosphorus and 150,759 lbs/yr for Nitrogen. As only one methodology was evaluated for Total Suspended Solid the Chesapeake Bay model loadings will be utilized: *11,355,168 lb/yr.*

Step 4: Compute Annual Pollutant Reduction Credit

From step 2, we determined the wetland will have a phosphorus removal rate of approximately 10%. With an estimated pollutant loading of 21,074 lbs/year the total potential phosphorus removal would be 2,107.4 lbs/year. But, due to the wetland area being less than 1% of the watershed area, we cannot take full credit for the load reduction, but rather a portion of the removal (0.019%), this yields a phosphorus credit of **40.0 lbs/year of removal.**

Again, from step 2, we determined the wetland will have a nitrogen removal rate of approximately 6.8%. With an estimated pollutant loading of 150,759 lbs/year the total potential nitrogen removal would be 10,252 lbs/year. But, due to the wetland area being less than 1% of the watershed area, we cannot take full credit for the load reduction, but rather a portion of the removal (0.019%), this yields a nitrogen credit of **194.8 lbs/year of removal.**

Lastly, from step 2, we determined the wetland will have a Total Suspended Solids (TSS) removal rate of approximately 6.8%. With an estimated pollutant loading of 11,355,168 lbs/year the total potential TSS removal would be 784,933 lbs/year. But, due to the wetland area being less than 1% of the watershed area, we cannot take full credit for the load reduction, but rather a portion of the removal (0.019%), this yields a TSS credit of **14,914 lbs/year of removal.**

Appendix A:

Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects (May 2013)

Ben Brenman Pollutant Calculations

City of Alexandria, Virginia

TECHNICAL MEMORANDUM

DATE: August 21, 2017

SUBJECT: Ben Brenman Pond Retrofit Pollutant Removal Calculations

PREPARED BY: City of Alexandria and URS

Purpose

The City of Alexandria has been proactive in its approach to meeting the Chesapeake Bay Total Maximum Daily Load (TMDL) reductions specified in its Municipal Separate Storm Sewer System (MS4) permit. The City identified retrofitting its exiting stormwater ponds as a first step towards meeting its required Chesapeake Bay TMDL reductions. A study commissioned by the City in August 2012 identified several wet ponds as candidates for water quality improvement retrofits. In December 2014, the City received a Stormwater Local Assistance Fund (SLAF) grant from the Virginia Department of Environmental Quality (VA DEQ) to help fund retrofitting Ben Brenman Pond to meet the design criteria for a Virginia Best Management Practice (BMP) Clearinghouse Level 2 Wet Pond.

The purpose of this technical memorandum is to describe the proposed retrofits to Ben Brenman Pond and to summarize the water quality benefits in terms of pounds of nitrogen, phosphorus, and total suspended solids.

Background

Ben Brenman Pond, also referred to as Cameron Station Pond, is located in Ben Brenman Park and was originally constructed in the late 1990s as a stormwater management facility for the adjacent Cameron Station residential development. The pond receives drainage from approximately 255 acres of urban land in the City and is located in the Backlick Run watershed. Backlick Run is a tributary to Holmes Run which flows into Cameron Run and then the Potomac River. Approximately 179 acres (62 percent) of the drainage area for Ben Brenman Pond is impervious. The pond has a surface area of approximately 6.1 acres. In addition to serving as a stormwater management facility, the pond is a popular amenity to the Cameron Station residents, and Ben Brenman Park is heavily used by the local residents.

Proposed Retrofits

Improvement to the existing Ben Brenman Pond will involve adding or retrofitting water quality features in order for the pond to meeting the Level 2 Wet Pond criteria as outlined in *Virginia DEQ Stormwater Design Specification No. 14 – Wet Pond, Version 1.9, dated March 1, 2011*.

Also, the retrofitted pond will provide water quality treatment for previously untreated stormwater in the Backlick Run watershed. Low flows from adjacent storm sewer systems will be diverted to the pond, which will provide water quality treatment for an additional 35 acres of regulated urban pervious and impervious land. The following sections provide detailed descriptions of the proposed retrofits.

Pond and Forebay Treatment Volume

A treatment volume of 24.5 acre-feet is required to meet Level 2 design criteria for the proposed 290 acres (after diversion of the additional 35 acres) being routed to the pond. As outlined in the Virginia DEQ Stormwater Design Specification for Wet Ponds, this treatment volume may consist of the volume entirely below the normal pool elevation, or a combination of the volume associated with extended detention above the normal pool elevation and the volume below the normal pool elevation. Currently, Ben Brenman Pond has a storage volume of approximately 23.8 acre-feet. After the pond is retrofitted, the treatment volume will increase to approximately 27 acre-feet.

Multiple Cell Design

Storage in the pond is currently provided within two cells: a sediment forebay and the larger main pond. Since the entire treatment volume will be contained below the normal pool elevation, the pond must have at least 3 internal cells to meet the Level 2 design criteria. The proposed design includes dividing the main pond cell into two cells using a weir structure across the narrowest portion of the pond.

Sediment Forebay

The sediment forebay is located on the west side of the pond and is separated from the main pond by an earthen berm. The design plans for the pond show a storage volume of 1.7 acre-feet for the forebay, which is approximately 0.5 acre-feet smaller than what the VA DEQ Stormwater Design Specification require for a Level 1 Wet Pond. Bathymetry conducted in Fall of 2012 indicates that a significant amount of sediment has accumulated in the forebay and the volume has been reduced to approximately 1.1 acre-feet. The proposed retrofit will dredge the existing forebay area to its original constructed volume and increase its volume to 3.7 acre-feet by shifting the location of the earthen weir further into the main pond. The volume of 3.7 acre-feet is consistent with the necessary volume for a sediment forebay of a Level 2 Wet Pond draining 290 acres. The retrofitted forebay will have a surface area of approximately 0.7 acres and account for 11% of the retrofitted pond's surface area.

Aquatic Benches

The existing pond does not include aquatic benches and the as-built plans confirmed that benches were not included in the original construction. The VA DEQ Stormwater Design Specification requires aquatic benches for a Level 2 Wet Pond and, as part of the retrofit, they will be constructed around the perimeter of the pond. The aquatic benches will be 5 feet wide around the perimeter of the sediment forebay and 10 feet wide around the perimeter of the two internal pond cells. They will also serve as a safety feature in the event of someone or something falls into the pond.

Wetlands
The VA DEQ Stormwater Design Specification for Wet Ponds specify that wetlands make up more than 10 percent of the pond area. Based on the *High Marsh Zone* definition found in *Virginia DEQ Stormwater Design Specification No. 13 – Constructed Wetlands,* those portions of the aquatic benches that are within 6 inches (above or below) the normal pool elevation will be considered wetland areas for the purpose of meeting this requirement. The proposed aquatic benches will provide approximately 0.4 acres of wetlands around the perimeter of the pond. In addition, floating wetlands will be added to the pond to meet the remaining 10 percent requirement. Together, the floating wetlands and aquatic bench wetlands will be equal to or greater than the 0.61 acres in size, given the pond surface area of approximately 6.1 acres.

Aerators
The existing pond contains two types of aerators. Originally, the pond was equipped with five aerators that pumped surface water in the form or fountains. Since the pond's construction, the City's park service added additional underwater aerators closer to the bottom of the pond. There is no plan to alter the existing aerators, and they will continue to remain in the pond.

Upflow Filter
Additional water quality improvements are provided by an existing upflow filter consisting of aggregate media. Although, it is not a requirement for a Level 1 or 2 design, the upflow filter will remain in the pond, and will not be altered as part of the retrofit design.

The City has noted improved water quality downstream from Ben Brenman Pond that has not been observed downstream from other City-owned retention ponds. This is believed to be at least partially attributed to the upflow filter. A similar upflow filter was added to the retrofit design for nearby Lake Cook, which the City is also retrofitting to help comply with its required Chesapeake Bay TMDL reductions.

Pollutant Calculations

The following sections describe the methodologies and procedures used to compute the existing conditions and proposed retrofit conditions pollutant removals for Ben Brenman Pond. The procedures and methodologies found in Guidance Memo No. 15-2005 (GM15-2005), also referred to as the Chesapeake Bay TMDL Action Plan Guidance, were used in the pollutant calculations.

Existing Conditions
Ben Brenman Pond currently treats 255 acres of urban land due to the existing drainage infrastructure. Since the initial/existing pond was not build to meet the VA Stormwater BMP Clearinghouse standards, the existing pollutant removal rates for Ben Brenman Pond were calculated based on the Chesapeake Bay Program (CBP) established efficiencies for Wet Ponds and Wetlands provided in Table V.C.1 Chesapeake Bay

Program BMPs, Established Efficiencies of GM15-2005.

Table V.C.1 – Chesapeake Bay Program BMPs, Established Efficiencies

Chesapeake Bay Program BMPs	TN	TP	TSS
Wet Ponds and Wetlands	20%	45%	60%

Due to the existing forebay being substantially undersized and the lack of aquatic benches, a downward modification to the Chesapeake Bay Program efficiencies was used. Example V.D.2 in GM15-2005 provides an example of this same approach.

Design Deficiency	***Downward Modification***
Undersized Forebay	10%
No Aquatic Benches	10%
TOTAL	**20%**

After incorporating the downward modifications, the resultant adjusted pollutant removal efficiencies were as follows:

Table 1: Ben Brenman Pond Existing Conditions Pollutant Load Reduction Efficiencies

Pollutant	CBP Efficiency	Downward Modification	Adjusted Efficiency
TN	20%	20%	16%
TP	45%	20%	36%
TSS	60%	20%	48%

The Potomac River Basin 2009 edge of stream loading rates (lbs/acre/yr) can be found in the table below and in Table 2 b of GM15-2005.

Table 2: Potomac River Basin Pollutant Loadings

Pollutant	Land Use	Loading
Nitrogen	Reg Urb Imp	16.86
	Reg Urb Per	10.07
	Forest	5.29
Phosphorus	Reg Urb Imp	1.62
	Reg Urb Per	0.41
	Forest	0.13
Total Suspended Solids	Reg Urb Imp	1171.32
	Reg Urb Per	175.8
	Forest	79.91

It should be noted that the forest loading rate was not used in the calculations because no land within the pond's contributing drainage area was considered to be forested. There are areas of tree cover within the drainage area; however, the Chesapeake Bay Phase 6 TMDL Model categorizes these areas as Tree Canopy over Turf Grass or trees within 30' to 80' of non-road impervious surfaces where the understory is assumed to be turf grass or otherwise altered through compaction, removal of surface organic material, and/or

fertilization. Subsequently, the forest loading rates were not used in the existing condition or proposed retrofitted condition pollutant calculations.

Using the loadings and efficiencies determined above, the total nitrogen, total phosphorus, and total suspended solids removed by the existing pond were computed as shown below.

Table 3: Ben Brenman Pond Existing Conditions Pollutant Load Reductions

Area Treated (ac)	Impervious Treated (ac)	TN Load (lb/yr)	TP Load (lb/yr)	TSS Load (lb/yr)	TN Removed (lb/yr)	TP Removed (lb/yr)	TSS Removed (lb/yr)
255.11	144.1	3547.40	278.96	188,303	567.58	100.42	90,385.33

Proposed Retrofitted Conditions

The retrofitted pond will be designed to treat runoff from the 255 acres of urban land currently draining to it, as well as previously untreated runoff from an additional 35 acres of urban land that will be diverted to the pond.

After retrofitting, the pond will meet the Level 2 design criteria and will be eligible to receive the corresponding pollutant load reductions as presented in Table V.A.1 Virginia Stormwater BMP Clearinghouse BMPs, Established Efficiencies of GM15-2005. The Level 2 Wet Pond efficiencies for TN are 40% (30% in the coastal plain terrain) and for TP are 75% (65% in the coastal plain terrain). Some physiographic maps indicate that the majority of the City of Alexandria falls within the coastal plain region; however, a closer examination of the terrain and other determining characteristics suggests that the west side of the City more closely resembles the piedmont physiographic region. This includes the area where Ben Brenman Pond is located. As a result, the higher efficiencies associated with the non-coastal plain region are used to calculate the pollutant removals for the proposed retrofitted pond.

Table V.A.1 - Virginia Stormwater BMP Clearinghouse BMPs, Established Efficiencies

Practice Number	Practice	TN	TP
14	Wet Pond 1	30% (20%)[2]	50% (45%)[2]
	Wet Pond 2	40% (30%)[2]	75% (65%)[2]

[2]Lower nutrient removal in parentheses apply to wet ponds in coastal plain terrain

Since there are no established efficiencies for TSS in the Virginia Stormwater BMP Clearinghouse, Appendix V.A of GM15-2005 states that permittees should use the retrofit curves developed by the Bay Program or the CBP Established Efficiencies. Using the treatment volume of the proposed retrofitted pond (27 acre-feet) and the impervious area treated (179.1 acres), a treated runoff depth of 1.81 inches was computed. Using the equations for the retrofit curves, a TSS efficiency value of 77.7% was calculated.

Table 4: Ben Brenman Pond Proposed Conditions Pollutant Load Efficiencies

TN Efficiency	TP Efficiency	TSS Efficiency
40%	75%	77.7%

Using the loadings and efficiencies determined above, the total nitrogen, total phosphorus, and total suspended solids removed by the proposed retrofitted Level 2 pond were computed as shown below.

Table 5: Ben Brenman Pond Proposed Conditions Pollutant Load Reductions

Area Treated (ac)	Impervious Treated (ac)	TN Load (lb/yr)	TP Load (lb/yr)	TSS Load (lb/yr)	TN Removed (lb/yr)	TP Removed (lb/yr)	TSS Removed (lb/yr)
290.11	179.1	3785.05	335.66	229,299	1,514.02	251.74	178,119.26

Incremental Difference in Pollutant Removals

According to GM15-2005, permittees will calculate the credit associated with BMP enhancement, conversion, and restoration using an incremental rate.

The difference between the pollutant loads currently being removed by the existing pond and the loads which will be removed by the proposed retrofitted pond will be equal to the amount that can be associated with the project. Using the existing and proposed pollutant removals, the following values are the pollutant removals associated with the retrofit project and can be applied toward the City's required Chesapeake Bay TMDL pollutant load reductions.

Table 6: Ben Brenman Pond Incremental Pollutant Load Reductions (Credits)

TN Removed (lb/yr)	TP Removed (lb/yr)	TSS Removed (lb/yr)
946.44	151.32	87,733.93

Appendix D

DEQ Correspondence and Action Plan Approval

Phase 1
Phase 2
Phase 3

Phase 1: DEQ Correspondence and Action Plan Approval

From: Brooks, Kelsey (DEQ) <Kelsey.Brooks@deq.virginia.gov>
Sent: Monday, November 30, 2015 11:43 AM
To: Jesse Maines
Subject: VAR040057 Chesapeake Bay TMDL Action Plan - Additional Info Required

Follow Up Flag: Flag for follow up
Flag Status: Flagged

Hello Jesse,

The Chesapeake Bay TMDL Action Plan for the City of Alexandria is currently under review. However, the following supplemental and/or clarifying information is necessary before the review of the Action Plan can be completed:

1. **Current Program and Legal Authority –** Please provide an affirmative statement that the permittee has sufficient legal authorities in place to meet the requirements of the TMDL.
2. **Service Area Delineation –** Please provide additional information on the method the permittee used to verify the forested acres that were excluded from the service area are greater than or equal to 900m^2 contiguous and are otherwise undeveloped.
3. **Gordon Recycling Limited Liability Corporation** – Our records indicate this facility is no longer active. The permittee should not exclude the lands draining from this site from its service area. Please revise the loading calculations appropriately.
4. **Historical BMPs –** Please provide the list of Historical BMPs that are being submitted for credit towards the TMDL. The list should include the following for each BMP:
    1. The date the BMP was installed
    2. The BMP type
    3. The method that was used to determine the BMP efficiency for each POC
    4. The BMP efficiency for each POC
    5. The reductions for each POC
5. **Lake Cook –** Please clarify if the lake is being expanded – it is unclear from the information provided how the lake is treating 15 acres in its present condition, but will treat 390 acres once it is upgraded.
6. **Eisenhower Pond 19 –** The method the permittee used to determine the efficiencies used to determine the reductions for this pond is unclear from the information provided. Please provide the following information:
    1. The project's required reductions (total acres, percent impervious)
    2. The pond's total reductions
    3. The RD value that was used to determine the BMP's efficiencies
    4. The date the BMP was implemented.

    In addition the TSS value provided in the description does not appear to match the value for TSS provided in Table 15. Please verify which value is correct.
7. **Cameron Station Pond –** Similarly to the Lake Cook project it is unclear to the Department why the pond is treating 94 acres prior to the ponds upgrade and 248.1 acres after the ponds upgrade if the facility's footprint is not increasing. Please provide additional information concerning the change in the pond's drainage area.
8. **Section 8.5 –** Please provide the following information for each BMP summarized in Table 12:
    1. The date the BMP was installed
    2. The BMP type

3. The BMP efficiency for each POC

Please note the values in Table 12 do not appear to match the values in Table 15. Please verify which of the reported values are correct.

9. **Four Mile Run Stream Restoration –** Please note that it is not appropriate to apply the stream restoration protocols to streams that are tidally influenced. Based on the information provided in this section, it does not appear that the application of Protocol 3 is appropriate.
10. **Aggregate Method Applications –** Please note that the calculations the permittee provided in Table 7 do not appear to match the method provided in Guidance Memo 15-2005. The permittee should also take in to account the change in pervious acres when applying the aggregate accounting method. Please revise the provided calculations.
11. **Grandfathered Projects –** Please provide the list of grandfathered projects summarized in Table 8. Also, please provide the same information as requested in comment 3 for the BMPs that were included in Table 8.
12. **Public Comment Period –** This process should have been completed prior to the Action Plan submittal. If the permittee has posted the plan and solicited comments, please let us know. If not, this process should be undertaken as soon as possible.

Please provide the above information no later than **December 14, 2015**. If there is information in the Action Plan that explains these issues that has been overlooked, please let me know.

If you have any questions, please contact me at **804-698-4321** or **kelsey.brooks@deq.virginia.gov**.

Thank you,
Kelsey Brooks

MS4 Stormwater Specialist
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DEPARTMENT OF TRANSPORTATION
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December 14, 2015

Via Email: kelsey.brooks@deq.virginia.gov

Kelsey Brooks
MS4 Stormwater Specialist
Department of Environmental Quality
629 E Main St, Richmond, VA 23219

RE: City of Alexandria Response to DEQ Additional Information Request: MS4 VAR040057 Chesapeake Bay TMDL 5% Action Plan

Ms. Brooks:

The City received the electronic correspondence entitled "VAR040057 Chesapeake Bay TMDL Action Plan – Additional Info Request" on November 30, 2015 in response to the City's June 30, 2015 "Chesapeake Bay TMDL Action Plan for 5% Compliance" submitted to the Virginia Department of Environmental Quality (DEQ) on October 1, 2015 in compliance with the MS4 permit. The responses below are provided to address the additional information and/or clarifications requested to aid in review of the submitted action plan and will be considered as an addendum to the action plan.

Your request is provided in italics below in its entirety, along with the City's responses in non-italics.

Hi Jesse,

The Chesapeake Bay TMDL Action Plan for the City of Alexandria is currently under review. However, the following supplemental and/or clarifying information is necessary before the review of the Action Plan can be completed:

1. ***Current Program and Legal Authority –*** *Please provide an affirmative statement that the permittee has sufficient legal authorities in place to meet the requirements of the TMDL.*

   Response: Please note that Section 2 of the action plan contains detailed information illustrating the City's ability to meet the requirements of the TMDL. The City affirms that it has sufficient legal authorities in place to meet the requirements of the TMDL.

2. ***Service Area Delineation –*** *Please provide additional information on the method the permittee used to verify the forested acres that were excluded from the service area are greater than or equal to 900m^2 contiguous and are otherwise undeveloped.*

Response: The City took a conservative approach to forested acres in delineating the MS4 service area. Forested areas located in Resource Protection Areas that are undeveloped and/or greater than 900 square meters were excluded. Forested areas draining to a regulated outfall that are not associated with an undeveloped RPA were considered as pervious, regardless of size.

3. ***Gordon Recycling Limited Liability Corporation –*** *Our records indicate this facility is no longer active. The permittee should not exclude the lands draining from this site from its service area. Please revise the loading calculations appropriately.*

   Response: This property was previously not included in the service area and loading calculations due to the active VPDES permit and that the property does not drain to the delineated service area. In the absence of an active permit, the property continues to be excluded from the service area and loading calculations since it is not within the delineated service area.

4. **Historical BMPs –** Please provide the list of Historical BMPs that are being submitted for credit towards the TMDL. The list should include the following for each BMP:
   1. The date the BMP was installed
   2. The BMP type
   3. The method that was used to determine the BMP efficiency for each POC
   4. The BMP efficiency for each POC
   5. The reductions for each POC

   Response: Historical BMP data was included in Appendix B of the Chesapeake Bay TMDL Action Plan dated June 30, 2015 that included #2 (VA Clearinghouse name), #4 (TP only) and #5 above. The table did not contain the date installed since it was given that the BMPs presented were indeed installed between January 1, 2006 and June 30, 2009. The table has been revised to include the requested information. 2006 – 2009 BMPs are presented here in Attachment 1A, and 2009 – 2014 BMP credits (see below for offsets) are presented in Attachment 1B

5. ***Lake Cook –*** *Please clarify if the lake is being expanded – it is unclear from the information provided how the lake is treating 15 acres in its present condition, but will treat 390 acres once it is upgraded.*

   Response: Lake Cook is a fishing pond created prior to 1992 that was not built for water quality and quantity purposes and does not conform to any standard. As such, the pond provides no water quality benefit. The 15 acres assigned to the pond is associated with a water park that was constructed on City property. The Lake Cook Retrofit Project was awarded a Stormwater Local Assistance Fund (SLAF) grant in FY2014, and includes the installation of a sediment forebay, aquatic bench and capture volume to treat approximately 390 acres to the 1" water quality standard.

6. ***Eisenhower Pond 19 –*** *The method the permittee used to determine the efficiencies used to determine the reductions for this pond is unclear from the information provided. Please provide the following information:*
   1. *The project's required reductions (total acres, percent impervious)*
   2. *The pond's total reductions*
   3. *The RD value that was used to determine the BMP's efficiencies*
   4. *The date the BMP was implemented.*

   In addition the TSS value provided in the description does not appear to match the value for TSS provided in Table 15. Please verify which value is correct.

Response: This regional wet pond implemented in "Eisenhower Block 19" treats additional acreage than required to meet the project's water quality requirements. The project is currently under construction (Site Plan DSP2012-00028) by a private developer and slated for completion Spring 2016, so the date of installation requested per #4 is not yet applicable. City staff negotiated with the developer to provide reductions beyond those required for the development project. The following provides project information:

- The RD value is 0.40" based on RD = (1.81 ac-ft.)(12) / 53.68 Ia, using the Bay Curves for a Stormwater Treatment (ST) practice since this is a wet pond.
- Bay Curve efficiencies: TP = 38%, TN = 22.5%, TSS = 45%
- Pond drains a total of 67.1 acres (53.68 impervious aces)
- Project considered new development with 0% impervious existing and about 50% proposed. (see lines #3 and #4 below)
- Reductions required to meet the 16% land cover condition was calculated by subtracting #5 from #3.
- Total reductions in #2 minus the required reductions for the project #6 (old technical criteria requirements and offset to 16%) equals the additional credits in #7 beyond those required by the development and credited towards Bay TMDL reductions.

The following table provides the requested information summarized for Pond 19.

		Total Area (ac)	Ia (ac)	TP (lbs/yr)	TN (lbs/yr)	TSS (lbs/yr)
1.	Total Drainage Area	67.1	53.68	117.80	812.83	55272.12
2.	Total Reductions Provided (TP=38%, TN=22.5%, TSS=45%)			44.8	182.9	24,872.5
3.	Development Site Post Conditions	2.88	1.45	3.30	22.80	1550.11
4.	Existing Site Conditions	2.88	0	0.33	2.27	154.05
5.	16% Land Cover Condition	2.88	0.46	1.27	8.78	596.94
6.	Total Required Reductions to Meet 16% Land cover			2.03	14.02	953.17
7.	**Additional Credits Reductions (#2 - #6)**			**42.7**	**168.9**	**23,919.3**

7. ***Cameron Station Pond –*** *Similarly to the Lake Cook project it is unclear to the Department why the pond is treating 94 acres prior to the ponds upgrade and 248.1 acres after the ponds upgrade if the facility's footprint is not increasing. Please provide additional information concerning the change in the pond's drainage area.*

Response: The Cameron Station Pond was originally designed in the 1990's as a Level 1 pond to the ½" standard for the Cameron Station project, which drained approximately 100 acres from the project and an additional 119.4 acres draining to the pond, equaling a total of 219.4 acres draining to the pond in this configuration. The proposed retrofit will enhance the pond to a Level 2 design standard, which will include increasing the size of the forebay, create two cells, and enhance the aquatic bench. Additionally, the project includes diverting an additional 33ac to the pond for treatment.

As stated in the action plan, this project will not likely be constructed before June 30, 2018 and were not included in summarized strategies to comply with the 5% target reductions of the current MS4 permit cycle. The information in the action plan was based on an outdated approach. The table below presents current information on this retrofit.

Cameron Pond Specification (Note: Proposed conditions includes 33- acres of offsite area to be treated)	**TP (lbs/yr)**	**TN (lbs/yr)**	**TSS (lbs/yr)**
Existing Level I Wet Pond, collects 137.3 acres impervious and 82.1 acres turf (total 219 acres)	169	727	79,294.8
Proposed Level II Wet Pond, which will collect 160.9 acres impervious and 91.9 acres turf (total 252.8 acres)	296	1,129	138,833.2
Water Quality Treatment Achieved through this Retrofit (Proposed minus Existing Conditions)	**127**	**402**	**59,588.4**

8. ***Section 8.5*** *– Please provide the following information for each BMP summarized in Table 12:*
    1. *The date the BMP was installed*
    2. *The BMP type*
    3. *The BMP efficiency for each POC*

   Please note the values in Table 12 do not appear to match the values in Table 15. Please verify which of the reported values are correct.

   Response: The Table in question is related to the Retrofits on City Property that have already been implemented towards the target reductions. The requested information is included in Attachment 2. The revised Table 15 is provided below.

9. ***Four Mile Run Stream Restoration*** *– Please note that it is not appropriate to apply the stream restoration protocols to streams that are tidally influenced. Based on the information provided in this section, it does not appear that the application of Protocol 3 is appropriate.*

   Response: The Four Mile Run Stream Restoration is a floodplain reconnection project that closely aligns with the goals of the Expert Panel's protocol 3 for floodplain reconnection. This project meets all of the basic qualifying criteria and protocol-specific criteria set forth in the Expert Panel report. The tidal limit for Four Mile Run is approximately at the Mount Vernon Bridge, which is only about 500 feet upstream of this project. Because the primary goal of the project was floodplain reconnection and the project meets all of the basic and protocol specific qualifying conditions, we believe that protocol 3 does apply to this stream restoration project.

10. ***Aggregate Method Applications –*** *Please note that the calculations the permittee provided in Table 7 do not appear to match the method provided in Guidance Memo 15-2005. The permittee should also take in to account the change in pervious acres when applying the aggregate accounting method. Please revise the provided calculations.*

    Response: The revised information is provided in Attachment 3.

11. ***Grandfathered Projects –*** *Please provide the list of grandfathered projects summarized in Table 8. Also, please provide the same information as requested in comment 3 for the BMPs that were included in Table 8.*

    Response: The list of Grandfathered BMP Credits is proved in Attachment 4A and Grandfather Project Offsets is provided in Attachment 4B.

12. ***Public Comment Period –*** *This process should have been completed prior to the Action Plan submittal. If the permittee has posted the plan and solicited comments, please let us know. If not, this process should be undertaken as soon as possible.*

    Response: The City provided for a public comment period on the draft Action Plan prior to finalizing on June 30, 2015. The below provides additional information on the process:

    - A public notice was placed in the Alexandria Times/Gazette inviting the public to learn about and comment on the draft by attending the May 18, 2015 Environmental Policy Commission (EPC) Public Meeting.
    - A presentation based on this draft will be provided during the May 18, 2015 EPC Public Meeting, inviting the EPC and members of the community to comment on the draft.
    - Solicitation of public comment by posting the draft action plan on the City website with contact information for receipt of comment.
    - Solicitation of public comment through posting in the June 5, 2015 City Manager's Report on the City's website online.
    - Public comment period was picked up by AlexandriaNews.org (a very well-read online news source) and circulated on June 5, 2015 email alert and online posting.
    - Finally, the Final action plan was placed on the City Council docket for September 8, 2015; where the recommendation to submit the June 30, 2015 action plan to DEQ was passed by consensus.

Please provide the above information no later than ***December 14, 2015****. If there is information in the Action Plan that explains these issues that has been overlooked, please let me know.*

Thanks for this opportunity to provide clarifying information for the action plan to facilitate your review. As presented in the action plan and here in this response to your request, the 5% goal of the action plan – including 2009-2014 offsets and grandfathered projects – is nearly achieved through credits from Post-2009 BMPs from redevelopment. Factoring in the reductions for 2006-2009 Historical BMPs exceeds the requirement by nearly 200%. Based on the above clarifications, the following table (revised from Table 15 in the action plan) summarizes the City's requirements and reductions:

Reduction Strategies	N (lbs)	100% Goal[2]	P (lbs)	100% Goal[2]	TSS (lbs/yr)	100% Goal[2]
2006-2009 BMPs	1305.10	17.2	158.00	15.48	150,452.00	8.69
Post-2009 BMPs	110.24	1.5	14.88	4.44	17,051.59	4.59
Regional Facilities – Lake Cook	1586.97	20.9	163.25	15.79	131,334.00	15.2
Regional Facilities – Pond 19	168.90	2.2	42.70	1.52	23,919.30	1.35
Retrofits on City Property	17.57	0.2	2.67	1.48	2,804.69	0.12
Urban Stream Restoration – Four Mile Run	194.80	2.6	40.00	3.87	14,914.00	1.73
Total Proposed Reductions	**3364.54**	**44.5**	**280.10**	**42.58**	**273,612.33**	**31.68**
Total Required Reductions (3 permit cycles)	*7,597.00*	*100%*	*1,004.40*	*100%*	*861,936.64*	*100%*

1. Assumes all grandfathered projects to be offset this permit cycle.
2. 100% goal is based on L2 scoping.

Please note that the City will provide annual compliance reporting on the implementation of strategies to meet the City's Bay TMDL targets per the requirements of the MS4 general permit and DEQ's Guidance. Please feel free to contact me at jesse.maines@alexandriava.gov or 703-746-4643 should you have any additional questions.

Sincerely,



Jesse E. Maines, MPA, CPESC
Watershed Management Planner
Transportation and Environmental Services
Stormwater & Sanitary Infrastructure Division

Cc: William J. Skrabak, Deputy Director, T&ES Infrastructure and Environment
Lalit K. Sharma, PE, Division Chief, T&ES, Stormwater & Sanitary Infrastructure Division
Brian Rahal, PE, T&ES, S&SI, Stormwater Section Lead

Attachments: Attachment 1A – 2006-2009 Historical BMPs
Attachment 1B – 2009-2014 BMP credits
Attachment 2 – City Property Retrofits
Attachment 3 – Aggregate Accounting 2009-2014 Offsets
Attachment 4A – Grandfathered BMP Credits
Attachment 4B – Grandfathered Required Offsets

City of Alexandria Jan. 1, 2006 - June 30, 2009 BMPs **Attachment 1A**

BMP ID	BMP Type	Chesapeake Bay Program BMP Type	BMP Name (Full)	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed [LB/YR]	TSS Removed [LB/YR]	Efficiency Method
1995-0019 01	D.C. Sand Filter	Filtering Practices	D.C. Sand Filter	4/13/2006	1.65	0.95	1.83	23.07	1,236	60%	40%	80%	1.10	9.23	988.65	Chesapeake Bay Program
1995-0019 02	D.C. Sand Filter	Filtering Practices	D.C. Sand Filter	4/13/2006	1.05	0.86	1.47	16.41	1,041	60%	40%	80%	0.88	6.57	832.59	Chesapeake Bay Program
1998-0015 01	Stormceptor® Stormwater Treatment System	Dry Detention Ponds and Hydrodynamic Structures	Stormceptor® Stormwater Treatment System	1/3/2007	5.40	0.93	3.34	60.69	1,875	20%	13%	50%	0.67	7.72	937.58	VA BMP Clearinghouse-MTD
1998-0015 02	Vegetated Buffer	Vegetated Open Channels C/D soils, no underdrain	Vegetated Buffer	1/3/2007	0.95	0.05	0.45	9.91	217	10%	10%	50%	0.05	0.99	108.39	Chesapeake Bay Program
2000-0009 01	Bioretention Filter	Bioretention C/D soils, underdrain	Bioretention Filter	1/17/2007	2.11	1.69	2.91	32.71	2,051	45%	25%	55%	1.31	8.18	1128.26	Chesapeake Bay Program
2001-0003 01	Alexandria Compound Sand Filter	Filtering Practices	Alexandria Compound Sand Filter	7/11/2008	1.15	1.15	1.86	19.39	1,347	60%	40%	80%	1.12	7.76	1077.61	Chesapeake Bay Program
2001-0003 02	Alexandria Compound Sand Filter	Filtering Practices	Alexandria Compound Sand Filter	7/11/2008	1.20	1.20	1.94	20.23	1,406	60%	40%	80%	1.17	8.09	1124.47	Chesapeake Bay Program
2001-0014 01	StormFilter™ Stormwater Treatment System	Filtering Practices	StormFilter™ Stormwater Treatment System	5/22/2008	1.00	1.00	1.62	16.86	1,171	45%	29%	80%	0.73	4.83	937.06	VA BMP Clearinghouse-MTD
2001-0014 03	StormFilter™ Stormwater Treatment System	Filtering Practices	StormFilter™ Stormwater Treatment System	5/4/2007	1.11	0.78	1.40	16.49	970	45%	29%	80%	0.63	4.72	776.14	VA BMP Clearinghouse-MTD
2001-0014-A 01	Regional Wet Pond	Wet Ponds and Wetlands	Regional Wet Pond	5/28/2008	225.00	133.00	253.18	3168.82	171,959	45%	30%	60%	113.93	946.73	102758.87	Retrofit Curves
2002-0001 01	Stormceptor® Stormwater Treatment System	Dry Detention Ponds and Hydrodynamic Structures	Stormceptor® Stormwater Treatment System	8/19/2008	1.05	0.83	1.43	16.21	1,011	20%	13%	50%	0.29	2.06	505.44	VA BMP Clearinghouse-MTD
2002-0022 01	StormFilter™ Stormwater Treatment System	Filtering Practices	StormFilter™ Stormwater Treatment System	6/27/2007	2.02	1.37	2.49	29.64	1,719	45%	29%	80%	1.12	8.49	1375.18	VA BMP Clearinghouse-MTD
2002-0048 01	Aqua-Swirl® Stormwater Hydrodynamic Separator	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	1/5/2009	1.06	0.42	0.94	13.49	599	20%	13%	50%	0.19	1.72	299.74	VA BMP Clearinghouse-MTD
2002-0048 02	Aqua-Swirl® Stormwater Hydrodynamic Separator	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	1/5/2009	1.24	0.67	1.31	17.00	880	20%	13%	50%	0.26	2.16	440.01	VA BMP Clearinghouse-MTD
2003-0010 01	Alexandria Compound Sand Filter	Filtering Practices	Alexandria Compound Sand Filter	3/4/2008	0.96	0.96	1.56	16.20	1,126	60%	40%	80%	0.93	6.48	900.51	Chesapeake Bay Program
2003-0016 01	StormFilter™ Stormwater Treatment System	Filtering Practices	StormFilter™ Stormwater Treatment System	9/19/2008	0.28	0.19	0.34	4.11	238	45%	29%	80%	0.16	1.18	190.70	VA BMP Clearinghouse-MTD
2003-0016 02	Green Roof	NOT APPLICABLE	Green Roof	9/25/2008	0.07	0.07	0.11	1.10	76	53%	45%	56%	0.06	0.49	42.64	Retrofit Curves
2003-0035 01	StormFilter™ Stormwater Treatment System	Filtering Practices	StormFilter™ Stormwater Treatment System	9/8/2006	1.56	0.99	1.84	22.43	1,260	45%	29%	80%	0.83	6.43	1007.85	VA BMP Clearinghouse-MTD
2003-0039 01	Dry Vault Sand Filter	Filtering Practices	Dry Vault Sand Filter	3/6/2006	0.81	0.81	1.31	13.66	949	60%	40%	80%	0.79	5.46	759.02	Chesapeake Bay Program
2003-0041 01	Alexandria Compound Sand Filter	Filtering Practices	Alexandria Compound Sand Filter	10/16/2006	1.32	1.22	2.01	21.55	1,443	60%	40%	80%	1.21	8.62	1154.09	Chesapeake Bay Program
2003-0042 01	Aqua-Swirl® Stormwater Hydrodynamic Separator	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	5/8/2009	1.20	0.12	0.64	12.90	330	20%	13%	50%	0.13	1.64	165.21	VA BMP Clearinghouse-MTD
2003-0042 02	Aqua-Swirl® Stormwater Hydrodynamic Separator	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	5/8/2009	0.13	0.13	0.21	2.19	152	20%	13%	50%	0.04	0.28	76.14	VA BMP Clearinghouse-MTD
2004-0014 01	StormFilter™ Stormwater Treatment System	Filtering Practices	StormFilter™ Stormwater Treatment System	9/12/2006	0.15	0.10	0.19	2.22	130	45%	29%	80%	0.08	0.64	103.92	VA BMP Clearinghouse-MTD
2004-0014 02	StormFilter™ Stormwater Treatment System	Filtering Practices	StormFilter™ Stormwater Treatment System	9/12/2006	0.28	0.16	0.31	3.90	208	45%	29%	80%	0.14	1.12	166.01	VA BMP Clearinghouse-MTD
2004-0019 01	D.C. Sand Filter	Filtering Practices	D.C. Sand Filter	8/9/2006	0.38	0.38	0.62	6.41	445	60%	40%	80%	0.37	2.56	356.08	Chesapeake Bay Program
2004-0020 01	Delaware Sand Filter	Filtering Practices	Delaware Sand Filter	1/16/2006	0.35	0.28	0.48	5.43	340	60%	40%	80%	0.29	2.17	272.22	Chesapeake Bay Program
2004-0021 01	Delaware Sand Filter	Filtering Practices	Delaware Sand Filter	1/16/2006	0.57	0.45	0.78	8.80	548	60%	40%	80%	0.47	3.52	438.55	Chesapeake Bay Program
2004-0022 01	D.C. Sand Filter	Filtering Practices	D.C. Sand Filter	1/16/2006	0.75	0.62	1.06	11.76	749	60%	40%	80%	0.63	4.70	599.26	Chesapeake Bay Program
2004-0025 01	D.C. Sand Filter	Filtering Practices	D.C. Sand Filter	4/13/2007	1.40	1.05	1.84	21.23	1,291	60%	40%	80%	1.11	8.49	1033.13	Chesapeake Bay Program
2004-0025 02	CDS® Stormwater Treatment System	Dry Detention Ponds and Hydrodynamic Structures	CDS® Stormwater Treatment System	4/13/2007	7.83	7.57	12.37	130.25	8,913	20%	13%	50%	2.47	16.57	4456.30	VA BMP Clearinghouse-MTD

City of Alexandria Jan. 1, 2006 - June 30, 2009 BMPs **Attachment 1A**

BMP ID	BMP Type	Chesapeake Bay Program BMP Type	BMP Name (Full)	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed [LB/YR]	TSS Removed [LB/YR]	Efficiency Method
2004-0025 03	CDS® Stormwater Treatment System	Dry Detention Ponds and Hydrodynamic Structures	CDS® Stormwater Treatment System	4/13/2007	1.77	1.29	2.29	26.58	1,595	20%	13%	50%	0.46	3.38	797.69	VA BMP Clearinghouse-MTD
2004-0041 01	Aqua-Swirl® Stormwater Hydrodynamic Separator	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	8/8/2006	1.73	1.59	2.63	28.15	1,882	20%	13%	50%	0.53	3.58	941.16	VA BMP Clearinghouse-MTD
2005-0005 01	D.C. Sand Filter	Filtering Practices	D.C. Sand Filter	1/21/2008	2.99	2.82	4.64	49.26	3,333	60%	40%	80%	2.78	19.70	2666.41	Chesapeake Bay Program
2005-0011 01	StormFilter™ Stormwater Treatment System	Filtering Practices	StormFilter™ Stormwater Treatment System	10/10/2008	0.25	0.18	0.32	3.76	226	45%	29%	80%	0.15	1.08	180.90	VA BMP Clearinghouse-MTD
2005-0011 02	StormFilter™ Stormwater Treatment System	Filtering Practices	StormFilter™ Stormwater Treatment System	10/10/2008	0.44	0.42	0.69	7.29	497	45%	29%	80%	0.31	2.09	397.83	VA BMP Clearinghouse-MTD
2005-0015 01	Alexandria Compound Sand Filter	Filtering Practices	Alexandria Compound Sand Filter	2/23/2009	0.48	0.45	0.73	7.82	528	60%	40%	80%	0.44	3.13	422.15	Chesapeake Bay Program
2005-0019 PLT 01	Vegetated Filter Strip	Vegetated Open Channels C/D soils, no underdrain	Vegetated Filter Strip	8/30/2007	1.02	0.52	1.05	13.80	697	10%	10%	50%	0.10	1.38	348.49	Chesapeake Bay Program
2005-0019 PLT 02	Permeable Pavement	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	8/30/2007	0.01	0.01	0.01	0.15	11	20%	10%	55%	0.00	0.02	5.80	Chesapeake Bay Program
2005-0019 PLT 03	Permeable Pavement	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	8/30/2007	0.01	0.01	0.01	0.15	11	20%	10%	55%	0.00	0.02	5.80	Chesapeake Bay Program
2005-0020 01	D.C. Sand Filter	Filtering Practices	D.C. Sand Filter	1/21/2008	1.34	1.27	2.09	22.12	1,500	60%	40%	80%	1.25	8.85	1,200	Chesapeake Bay Program
2005-0028 01	Alexandria Compound Sand Filter	Filtering Practices	Alexandria Compound Sand Filter	2/23/2009	0.57	0.57	0.92	9.61	668	60%	40%	80%	0.55	3.84	534	Chesapeake Bay Program
2005-0810 BLD 01	Green Roof	NOT APPLICABLE	Green Roof	3/25/2006	0.15	0.15	0.24	2.53	176	53%	45%	56%	0.13	1.13	98	Retrofit Curves
2006-0009 PLT 01	Infiltration System	Infiltration Practices w/o Sand, Veg.	Infiltration System	5/12/2007	2.10	0.00	0.86	21.15	369	85%	80%	95%	0.73	16.92	351	Chesapeake Bay Program
2006-0009 PLT 02	Infiltration System	Infiltration Practices w/o Sand, Veg.	Infiltration System	5/12/2007	4.09	0.00	1.68	41.15	718	85%	80%	95%	1.42	32.92	682	Chesapeake Bay Program
2006-0018 PLT 01	StormFilter™ Stormwater Treatment System	Filtering Practices	StormFilter™ Stormwater Treatment System	10/17/2007	2.26	1.60	2.87	33.64	1,993	45%	29%	80%	1.29	9.64	1,595	VA BMP Clearinghouse-MTD
2006-0018 PLT 02	StormFilter™ Stormwater Treatment System	Filtering Practices	StormFilter™ Stormwater Treatment System	10/17/2007	10.18	10.18	16.49	171.63	11,924	45%	29%	80%	7.42	49.17	9,539	VA BMP Clearinghouse-MTD
2006-0018 PLT 03	Stream Buffer Restoration	Wetland Restoration: Coastal Plain Dissected Uplands Non-Tidal; Coastal Plain Dissected Uplands Tidal; Coastal Plain Lowlands Tidal; Coastal Plain Uplands Tidal; Coastal Plain Lowlands Non-Tidal; Coastal Plain Uplands Non-Tidal	Stream Buffer Restoration	10/17/2007	11.27	1.28	6.17	122.16	3,257	50%	25%	15%	3.09	30.54	489	Chesapeake Bay Program
2006-0036 PLT 01	Vortechs® Stormwater Treatment System	Dry Detention Ponds and Hydrodynamic Structures	Vortechs® Stormwater Treatment System	11/13/2008	0.68	0.34	0.70	9.21	463	20%	13%	50%	0.14	1.17	231	VA BMP Clearinghouse-MTD
2006-0101 01	Tree Box Filter	Bioretention C/D soils, underdrain	Tree Box Filter	1/26/2007	0.25	0.25	0.41	4.22	293	45%	25%	55%	0.18	1.05	161	Chesapeake Bay Program
2006-0101 02	Tree Box Filter	Bioretention C/D soils, underdrain	Tree Box Filter	1/26/2007	0.25	0.25	0.41	4.22	293	45%	25%	55%	0.18	1.05	161	Chesapeake Bay Program
2006-0101 03	Tree Box Filter	Bioretention C/D soils, underdrain	Tree Box Filter	1/26/2007	0.25	0.25	0.41	4.22	293	45%	25%	55%	0.18	1.05	161	Chesapeake Bay Program
2007-0004 PLT 01	Aqua-Swirl® Stormwater Hydrodynamic Separator	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	5/3/2008	0.59	0.59	0.95	9.91	689	20%	13%	50%	0.19	1.26	344	VA BMP Clearinghouse-MTD
2007-0004 PLT 02	Aqua-Swirl® Stormwater Hydrodynamic Separator	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	5/3/2008	0.67	0.67	1.09	11.30	785	20%	13%	50%	0.22	1.44	392	VA BMP Clearinghouse-MTD
2007-0004 PLT 03	Aqua-Swirl® Stormwater Hydrodynamic Separator	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	5/3/2008	0.52	0.46	0.77	8.35	548	20%	13%	50%	0.15	1.06	274	VA BMP Clearinghouse-MTD
2007-0010 PLT 01	Vegetated Filter Strip	Vegetated Open Channels C/D soils, no underdrain	Vegetated Filter Strip	8/8/2008	0.48	0.42	0.71	7.69	503	10%	10%	50%	0.07	0.77	251	Chesapeake Bay Program

City of Alexandria Jan. 1, 2006 - June 30, 2009 BMPs **Attachment 1A**

BMP ID	BMP Type	Chesapeake Bay Program BMP Type	BMP Name (Full)	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed [LB/YR]	TSS Removed [LB/YR]	Efficiency Method
2007-0016 PLT 01	StormFilter™ Stormwater Treatment System	Filtering Practices	StormFilter™ Stormwater Treatment System	11/20/2008	2.13	1.71	2.94	33.06	2,077	45%	29%	80%	1.32	9.47	1,661	VA BMP Clearinghouse-MTD
2007-0101 01	Tree Box Filter	Bioretention C/D soils, underdrain	Tree Box Filter	8/16/2008	0.50	0.50	0.81	8.43	586	45%	25%	55%	0.36	2.11	322	Chesapeake Bay Program
2007-0101 02	Tree Box Filter	Bioretention C/D soils, underdrain	Tree Box Filter	8/16/2008	0.50	0.50	0.81	8.43	586	45%	25%	55%	0.36	2.11	322	Chesapeake Bay Program
2007-0102 01	Green Roof	NOT APPLICABLE	Green Roof	12/31/2007	0.01	0.01	0.01	0.13	9	53%	45%	56%	0.01	0.06	5	Retrofit Curves
2008-0018 PLT 01	StormFilter™ Stormwater Treatment System	Filtering Practices	StormFilter™ Stormwater Treatment System	2/12/2009	0.73	0.65	1.09	11.76	775	45%	29%	80%	0.49	3.37	620	VA BMP Clearinghouse-MTD
2008-0101 01	Tree Box Filter	Bioretention C/D soils, underdrain	Tree Box Filter	5/27/2009	0.26	0.20	0.35	3.98	245	45%	25%	55%	0.16	0.99	135	Chesapeake Bay Program
2008-0101 02	Tree Box Filter	Bioretention C/D soils, underdrain	Tree Box Filter	5/27/2009	0.30	0.21	0.38	4.45	262	45%	25%	55%	0.17	1.11	144	Chesapeake Bay Program
				Totals	**313**	**189**	**357.33**	**4,435**	**243,470**			**Totals**	**158.0**	**1,305.1**	**150,452**	

**TN Efficiency for the Manufactured Treatment Devices was estimated from the Retrofit Curves and the VA BMP Clearinghouse TP efficiency.*

City of Alexandria July 1, 2009 - June 30, 2014 BMPs **Attachment 1B**

BMP ID	BMP Type	Chesapeake Bay Program BMP Type	BMP Name (Full)	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed [LB/YR]	TSS Removed [LB/YR]	Efficiency Method
1995-0021 01	Dry Detention Ponds & Hydrodynamic Structures	Dry Detention Ponds and Hydrodynamic Structures	Regional Dry Pond	8/19/2013	34.65	22.72	41.70	503.19	28,710	10%	5%	10%	4.17	25.16	2870.97	Chesapeake Bay Program
1998-0019 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Stormceptor® Stormwater Treatment System	7/21/2009	1.84	1.66	2.76	29.80	1,976	20%	13%	50%	0.55	3.79	988.02	VA BMP Clearinghouse-MTD
1999-0018 01	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	3/16/2011	0.0263	0.0263	0.04	0.44	31	45%	25%	55%	0.02	0.11	16.94	Chesapeake Bay Program
2000-0028 01	Underground Sand Filter	Filtering Practices	Dry Vault Sand Filter	9/21/2009	3.392	2.942	4.95	54.13	3,525	60%	40%	80%	2.97	21.65	2820.11	Chesapeake Bay Program
2000-0028 02	Underground Sand Filter	Filtering Practices	Dry Vault Sand Filter	9/21/2009	5.813	4.842	8.24	91.41	5,842	60%	40%	80%	4.95	36.57	4673.79	Chesapeake Bay Program
2000-0028 03	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Vortechs® Stormwater Treatment System	9/21/2009	1.73	1.73	2.80	29.17	2,026	20%	13%	50%	0.56	3.71	1013.19	VA BMP Clearinghouse-MTD
2000-0028 04	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Stormceptor® Stormwater Treatment System	9/21/2009	1.55	1.55	2.51	26.13	1,816	20%	13%	50%	0.50	3.33	907.77	VA BMP Clearinghouse-MTD
2001-0012 01	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	9/1/2009	0.8	0.2	0.57	9.41	340	45%	25%	55%	0.26	2.35	186.86	Chesapeake Bay Program
2001-0012 02	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	9/1/2009	0.2	0.06	0.15	2.42	95	45%	25%	55%	0.07	0.61	52.19	Chesapeake Bay Program
2001-0012 03	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	9/1/2009	0.399	0.1	0.28	4.70	170	45%	25%	55%	0.13	1.17	93.33	Chesapeake Bay Program
2001-0012 05	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	9/1/2009	0.517	0.172	0.42	6.37	262	45%	25%	55%	0.19	1.59	144.16	Chesapeake Bay Program
2001-0012 06	Vegetated Treatment Area, C/D soils, no underdrain	Vegetated Open Channels C/D soils, no underdrain	Vegetated Filter Strip	9/1/2009	0.3	0.06	0.20	3.43	112	10%	10%	50%	0.02	0.34	56.24	Chesapeake Bay Program
2001-0012 07	Vegetated Treatment Area, C/D soils, no underdrain	Vegetated Open Channels C/D soils, no underdrain	Vegetated Filter Strip	9/1/2009	0.5	0.06	0.28	5.44	148	10%	10%	50%	0.03	0.54	73.82	Chesapeake Bay Program
2001-0012 08	Vegetated Open Channels	Vegetated Open Channels C/D soils, no underdrain	Grass Swale	9/1/2009	0.2	0.09	0.19	2.63	125	10%	10%	50%	0.02	0.26	62.38	Chesapeake Bay Program
2001-0012 PLT 01	Vegetated Treatment Area, C/D soils, no underdrain	Vegetated Open Channels C/D soils, no underdrain	Vegetated Filter Strip	9/1/2009	0.36	0.16	0.34	4.71	223	10%	10%	50%	0.03	0.47	111.29	Chesapeake Bay Program
2002-0009 01	Underground Sand Filter	Filtering Practices	Alexandria Compound Sand Filter	4/8/2011	0.23	0.23	0.37	3.88	269	60%	40%	80%	0.22	1.55	215.52	Chesapeake Bay Program
2002-0044 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Downstream Defender® Stormwater Treatment Vortex Separator	1/14/2010	1.22	0.862	1.54	18.14	1,073	20%	13%	50%	0.31	2.31	536.31	VA BMP Clearinghouse-MTD
2002-0044 02	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Downstream Defender® Stormwater Treatment Vortex Separator	1/14/2010	1.19	0.889	1.56	18.02	1,094	20%	13%	50%	0.31	2.29	547.11	VA BMP Clearinghouse-MTD
2002-0044 03	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Downstream Defender® Stormwater Treatment Vortex Separator	1/14/2010	0.755	0.503	0.92	11.02	633	20%	13%	50%	0.18	1.40	316.74	VA BMP Clearinghouse-MTD
2002-0044 04	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Downstream Defender® Stormwater Treatment Vortex Separator	1/14/2010	1	0.573	1.10	13.96	746	20%	13%	50%	0.22	1.78	373.12	VA BMP Clearinghouse-MTD
2002-0044 05	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	1/14/2010	2.898	2.512	4.23	46.24	3,010	45%	29%	80%	1.90	13.25	2408.17	VA BMP Clearinghouse-MTD
2002-0044 06	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	1/14/2010	3.19	1.489	3.11	42.23	2,043	45%	25%	55%	1.40	10.56	1123.72	Chesapeake Bay Program
2002-0044 07	Reduction of Impervious Surface	Already included in aggregate method for determining increase in impervious areas	Cistern	1/14/2010	5.892	5.892	9.55	99.34	6,901							Chesapeake Bay Program
2002-0044 08	Bioretention, no underdrain, A/B soils	Bioretention A/B soils, no underdrain	Green Roof	1/14/2010	0.182	0.182	0.29	3.07	213	85%	80%	90%	0.25	2.45	191.86	Chesapeake Bay Program
2003-0006 01	Vegetated Open Channels	Vegetated Open Channels C/D soils, no underdrain	Grass Swale	5/20/2011	0.48	0.08	0.29	5.38	164	10%	10%	50%	0.03	0.54	82.01	Chesapeake Bay Program
2003-0007 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	CDS® Stormwater Treatment System	6/11/2011	1.6	0.4	1.14	18.83	679	20%	13%	50%	0.23	2.40	339.74	VA BMP Clearinghouse-MTD
2003-0013 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	10/22/2012	0.28	0.25	0.42	4.52	298	20%	13%	50%	0.08	0.57	149.05	VA BMP Clearinghouse-MTD

City of Alexandria July 1, 2009 - June 30, 2014 BMPs **Attachment 1B**

BMP ID	BMP Type	Chesapeake Bay Program BMP Type	BMP Name (Full)	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed [LB/YR]	TSS Removed [LB/YR]	Efficiency Method
2003-0013 02	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	10/22/2012	0.35	0.31	0.52	5.63	370	20%	13%	50%	0.10	0.72	185.07	VA BMP Clearinghouse-MTD
2003-0013 03	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	10/22/2012	1.4	0.54	1.23	17.76	784	20%	13%	50%	0.25	2.26	391.85	VA BMP Clearinghouse-MTD
2003-0019 01	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	6/22/2012	1.39	1.1	1.90	21.47	1,339	45%	29%	80%	0.86	6.15	1071.55	VA BMP Clearinghouse-MTD
2003-0019 02	Bioretention, no underdrain, A/B soils	Bioretention A/B soils, no underdrain	Green Roof	6/22/2012	0.259	0.259	0.42	4.37	303	85%	80%	90%	0.36	3.49	273.03	Chesapeake Bay Program
2003-0030 01	Vegetated Treatment Area, C/D soils, no underdrain	Vegetated Open Channels C/D soils, no underdrain	Vegetated Filter Strip	2/1/2010	1.65	0.11	0.81	17.36	400	10%	10%	50%	0.08	1.74	199.79	Chesapeake Bay Program
2003-0030 02	Vegetated Treatment Area, C/D soils, no underdrain	Vegetated Open Channels C/D soils, no underdrain	Vegetated Filter Strip	2/1/2010	1.85	0.56	1.44	22.43	883	10%	10%	50%	0.14	2.24	441.36	Chesapeake Bay Program
2003-0030 03	Permeable Pavement w/o Sand, Veg. - C/D soils, underdrain	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	2/1/2010	0.114	0.114	0.18	1.92	134	20%	10%	55%	0.04	0.19	73.44	Chesapeake Bay Program
2003-0030 04	Dry Detention Ponds & Hydrodynamic Structures	Dry Detention Ponds and Hydrodynamic Structures	Dry Detention Pond	2/1/2010	0.68	0.14	0.45	7.80	259	10%	5%	10%	0.04	0.39	25.89	Chesapeake Bay Program
2003-0037 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	CDS® Stormwater Treatment System	10/15/2012	1.83	0.56	1.43	22.23	879	20%	13%	50%	0.29	2.83	439.60	VA BMP Clearinghouse-MTD
2004-0010 01	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	11/12/2009	1.4	0.96	1.74	20.62	1,202	45%	29%	80%	0.78	5.91	961.46	VA BMP Clearinghouse-MTD
2004-0018 01	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	11/3/2010	1.84	1.4	2.45	28.03	1,717	45%	29%	80%	1.10	8.03	1373.76	VA BMP Clearinghouse-MTD
2004-0018 02	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	11/3/2010	0.54	0.5	0.83	8.83	593	45%	29%	80%	0.37	2.53	474.15	VA BMP Clearinghouse-MTD
2004-0032 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Stormceptor® Stormwater Treatment System	10/18/2010	0.44	0.34	0.59	6.74	416	20%	13%	50%	0.12	0.86	207.91	VA BMP Clearinghouse-MTD
2004-0032 02	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Tree Box Filter	10/18/2010	0.13	0.11	0.19	2.06	132	45%	25%	55%	0.08	0.51	72.80	Chesapeake Bay Program
2004-0032 03	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Tree Box Filter	10/18/2010	0.17	0.15	0.25	2.73	179	45%	25%	55%	0.11	0.68	98.57	Chesapeake Bay Program
2004-0038 01	Urban stream restoration	600 ft of Stream Restoration - DSP 2007-0018	Stream Restoration	1/31/2012	2.7	0.9	2.20	33.30	1,371				40.80	45.00	26928.00	Chesapeake Bay Program
2004-0038 03	Permeable Pavement w/o Sand, Veg. - C/D soils, underdrain	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	1/31/2012	0.104	0.104	0.17	1.75	122	20%	10%	55%	0.03	0.18	67.00	Chesapeake Bay Program
2005-0003 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Stormceptor® Stormwater Treatment System	10/22/2009	0.83	0.76	1.26	13.52	903	20%	13%	50%	0.25	1.72	451.25	VA BMP Clearinghouse-MTD
2005-0003 02	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Stormceptor® Stormwater Treatment System	10/22/2009	0.26	0.24	0.40	4.25	285	20%	13%	50%	0.08	0.54	142.32	VA BMP Clearinghouse-MTD
2005-0013 01	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	10/19/2012	0.62	0.54	0.91	9.91	647	45%	29%	80%	0.41	2.84	517.26	VA BMP Clearinghouse-MTD
2005-0013 02	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	10/19/2012	0.85	0.6	1.07	12.63	747	45%	29%	80%	0.48	3.62	597.39	VA BMP Clearinghouse-MTD
2005-0013 03	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	10/19/2012	0.54	0.39	0.69	8.09	483	45%	29%	80%	0.31	2.32	386.55	VA BMP Clearinghouse-MTD
2005-0016 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	CDS® Stormwater Treatment System	12/28/2009	1.46	1.17	2.01	22.65	1,421	20%	13%	50%	0.40	2.88	710.71	VA BMP Clearinghouse-MTD
2005-0018 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Stormceptor® Stormwater Treatment System	12/4/2013	0.66	0.56	0.95	10.45	674	20%	13%	50%	0.19	1.33	336.76	VA BMP Clearinghouse-MTD
2005-0024 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Stormceptor® Stormwater Treatment System	9/17/2009	0.9	0.7	1.22	13.82	855	20%	13%	50%	0.24	1.76	427.54	VA BMP Clearinghouse-MTD
2005-0038 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	BaySeparator™ Stormwater Treatment System	1/31/2013	2.66	2.3	3.87	42.40	2,757	20%	13%	50%	0.77	5.40	1378.66	VA BMP Clearinghouse-MTD
2005-0038 02	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	BaySeparator™ Stormwater Treatment System	1/31/2013	3.01	2.61	4.39	48.03	3,127	20%	13%	50%	0.88	6.11	1563.73	VA BMP Clearinghouse-MTD
2005-0038 03	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	BaySeparator™ Stormwater Treatment System	1/31/2013	2.8	2.16	3.76	42.86	2,643	20%	13%	50%	0.75	5.45	1321.28	VA BMP Clearinghouse-MTD
2005-0038 04	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	BaySeparator™ Stormwater Treatment System	1/31/2013	5.07	4.03	6.96	78.42	4,903	20%	13%	50%	1.39	9.98	2451.63	VA BMP Clearinghouse-MTD

City of Alexandria July 1, 2009 - June 30, 2014 BMPs **Attachment 1B**

BMP ID	BMP Type	Chesapeake Bay Program BMP Type	BMP Name (Full)	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed [LB/YR]	TSS Removed [LB/YR]	Efficiency Method
2005-0038 05	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	BaySeparator™ Stormwater Treatment System	1/31/2013	2.49	2.2	3.68	40.01	2,628	20%	13%	50%	0.74	5.09	1313.94	VA BMP Clearinghouse-MTD
2005-0038 06	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	BaySeparator™ Stormwater Treatment System	1/31/2013	9	7.06	12.23	138.57	8,611	20%	13%	50%	2.45	17.63	4305.29	VA BMP Clearinghouse-MTD
2005-0038 07	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	BaySeparator™ Stormwater Treatment System	1/31/2013	8.19	6.18	10.84	124.44	7,592	20%	13%	50%	2.17	15.84	3796.06	VA BMP Clearinghouse-MTD
2005-0038 08	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	BaySeparator™ Stormwater Treatment System	1/31/2013	3.22	2.75	4.65	51.10	3,304	20%	13%	50%	0.93	6.50	1651.88	VA BMP Clearinghouse-MTD
2005-0041 01	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	12/16/2010	1.214	1.164	1.91	20.13	1,372	45%	29%	80%	0.86	5.77	1097.77	VA BMP Clearinghouse-MTD
2006-0012 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	8/18/2009	0.69	0.62	1.03	11.16	739	20%	13%	50%	0.21	1.42	369.26	VA BMP Clearinghouse-MTD
2006-0012 02	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	8/18/2009	2.41	2.28	3.75	39.75	2,693	20%	13%	50%	0.75	5.06	1346.73	VA BMP Clearinghouse-MTD
2006-0019 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	StormTech® Isolator™ Row Stormwater Management System	7/8/2013	0.24	0.22	0.36	3.91	261	10%	5%	10%	0.04	0.20	26.12	Chesapeake Bay Program
2006-0023 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	CDS® Stormwater Treatment System	12/11/2009	0.738	0.463	0.86	10.58	591	20%	13%	50%	0.17	1.35	295.33	VA BMP Clearinghouse-MTD
2006-0023 02	Bioretention, no underdrain, A/B soils	Bioretention A/B soils, no underdrain	Green Roof	12/11/2009	0.244	0.244	0.40	4.11	286	85%	80%	90%	0.34	3.29	257.22	Chesapeake Bay Program
2006-0025 01	Dry Detention Ponds & Hydrodynamic Structures	Dry Detention Ponds and Hydrodynamic Structures	Dry Detention Pond	12/1/2009	6.49	5.15	8.89	100.32	6,268	10%	5%	10%	0.89	5.02	626.79	Chesapeake Bay Program
2006-0025 02	Filtering Practices	Filtering Practices	Flow Thru Planter Box	12/1/2009	0.46	0.46	0.75	7.76	539	60%	40%	80%	0.45	3.10	431.05	Chesapeake Bay Program
2006-0025 03	Filtering Practices	Filtering Practices	Flow Thru Planter Box	12/1/2009	0.3	0.3	0.49	5.06	351	60%	40%	80%	0.29	2.02	281.12	Chesapeake Bay Program
2006-0025 04	Filtering Practices	Filtering Practices	Flow Thru Planter Box	12/1/2009	0.35	0.35	0.57	5.90	410	60%	40%	80%	0.34	2.36	327.97	Chesapeake Bay Program
2006-0030 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	9/11/2010	1.19	1	1.70	18.77	1,205	20%	13%	50%	0.34	2.39	602.36	VA BMP Clearinghouse-MTD
2006-0031 01	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	9/11/2010	0.285	0.224	0.39	4.39	273	45%	29%	80%	0.17	1.26	218.48	VA BMP Clearinghouse-MTD
2006-0031 02	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	9/11/2010	0.315	0.248	0.43	4.86	302	45%	29%	80%	0.19	1.39	241.81	VA BMP Clearinghouse-MTD
2006-0031 03	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	9/11/2010	0.197	0.155	0.27	3.04	189	45%	29%	80%	0.12	0.87	151.15	VA BMP Clearinghouse-MTD
2006-0031 04	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	9/11/2010	0.226	0.178	0.31	3.48	217	45%	29%	80%	0.14	1.00	173.55	VA BMP Clearinghouse-MTD
2006-0036 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	3/22/2013	0.587	0.587	0.95	9.90	688	20%	13%	50%	0.19	1.26	343.78	VA BMP Clearinghouse-MTD
2007-0003 PLT 01	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	11/29/2012	0.062	0.002	0.03	0.64	13	45%	25%	55%	0.01	0.16	7.09	Chesapeake Bay Program
2007-0003 PLT 02	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Stormceptor® Stormwater Treatment System	11/29/2012	0.35	0.35	0.57	5.90	410	20%	13%	50%	0.11	0.75	204.98	VA BMP Clearinghouse-MTD
2007-0004 01	Underground Sand Filter	Filtering Practices	Delaware Sand Filter	6/3/2013	0.859	0.45	0.90	11.71	599	60%	40%	80%	0.54	4.68	479.20	Chesapeake Bay Program
2007-0008 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Stormceptor® Stormwater Treatment System	12/23/2009	0.884	0.401	0.85	11.62	555	20%	13%	50%	0.17	1.48	277.31	VA BMP Clearinghouse-MTD
2007-0011 01	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	6/15/2011	0.115	0.0955	0.16	1.81	115	45%	29%	80%	0.07	0.52	92.23	VA BMP Clearinghouse-MTD
2007-0011 02	Permeable Pavement w/o Sand, Veg. - C/D soils, underdrain	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	6/15/2011	0.0164	0.0164	0.03	0.28	19	20%	10%	55%	0.01	0.03	10.57	Chesapeake Bay Program
2007-0013 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	BaySeparator™ Stormwater Treatment System	6/11/2010	1.81	1.4	2.44	27.73	1,712	20%	13%	50%	0.49	3.53	855.96	VA BMP Clearinghouse-MTD
2007-0014 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	BaySeparator™ Stormwater Treatment System	6/24/2012	2.21	1.59	2.83	33.05	1,971	20%	13%	50%	0.57	4.21	985.70	VA BMP Clearinghouse-MTD
2007-0014 02	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	BaySeparator™ Stormwater Treatment System	6/24/2012	7.37	5.56	9.75	111.97	6,831	20%	13%	50%	1.95	14.25	3415.37	VA BMP Clearinghouse-MTD

City of Alexandria July 1, 2009 - June 30, 2014 BMPs **Attachment 1B**

BMP ID	BMP Type	Chesapeake Bay Program BMP Type	BMP Name (Full)	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed [LB/YR]	TSS Removed [LB/YR]	Efficiency Method
2007-0024 PLT 01	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	4/19/2012	0.09	0.09	0.15	1.52	105	45%	29%	80%	0.07	0.43	84.34	VA BMP Clearinghouse-MTD
2007-0025 01	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	4/11/2011	0.433	0.433	0.70	7.30	507	45%	29%	80%	0.32	2.09	405.75	VA BMP Clearinghouse-MTD
2007-0025 02	Permeable Pavement w/o Sand, Veg. - C/D soils, underdrain	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	4/11/2011	0.069	0.069	0.11	1.16	81	20%	10%	55%	0.02	0.12	44.45	Chesapeake Bay Program
2007-0025 03	Permeable Pavement w/o Sand, Veg. - C/D soils, underdrain	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	4/11/2011	0.026	0.026	0.04	0.44	30	20%	10%	55%	0.01	0.04	16.75	Chesapeake Bay Program
2007-0027 PLT 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	CDS® Stormwater Treatment System	12/28/2009	0.741	0.6726	1.12	12.03	800	20%	13%	50%	0.22	1.53	399.93	VA BMP Clearinghouse-MTD
2007-0027 PLT 02	Water Quality Inlet		Oil / Grit Separator	12/28/2009	0.1	0.1	0.16	1.69	117							Chesapeake Bay Program
2007-0030 01	Underground Sand Filter	Filtering Practices	Sand Filter	6/19/2012	0.244	0.148	0.28	3.46	190	60%	40%	80%	0.17	1.38	152.19	Chesapeake Bay Program
2007-0031 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	CDS® Stormwater Treatment System	7/19/2013	0.79	0.44	0.86	10.94	577	20%	13%	50%	0.17	1.39	288.46	VA BMP Clearinghouse-MTD
2007-0037 01	Vegetated Treatment Area, C/D soils, no underdrain	Vegetated Open Channels C/D soils, no underdrain	Vegetated Filter Strip	7/10/2013	1.44	0.12	0.74	15.32	373	10%	10%	50%	0.07	1.53	186.31	Chesapeake Bay Program
2007-0037 02	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	7/10/2013	1.27	0.54	1.17	16.46	761	45%	25%	55%	0.53	4.11	418.47	Chesapeake Bay Program
2007-0037 03	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	7/10/2013	1.16	0.86	1.52	17.52	1,060	45%	25%	55%	0.68	4.38	583.04	Chesapeake Bay Program
2007-0037 04	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	7/10/2013	1.26	0.75	1.42	17.78	968	45%	25%	55%	0.64	4.45	532.48	Chesapeake Bay Program
2007-0037 05	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	7/10/2013	0.95	0.68	1.21	14.18	844	45%	25%	55%	0.55	3.55	464.18	Chesapeake Bay Program
2007-0037 06	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	7/10/2013	0.25	0.15	0.28	3.54	193	45%	25%	55%	0.13	0.88	106.30	Chesapeake Bay Program
2007-0037 07	Reduction of Impervious Surface	Already included in aggregate method for determining increase in impervious areas	Cistern	7/10/2013	0	0	0.00	0.00	0							Chesapeake Bay Program
2008-0008 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Vortechs® Stormwater Treatment System	11/27/2012	0.67	0.5624	0.96	10.57	678	20%	13%	50%	0.19	1.34	338.83	VA BMP Clearinghouse-MTD
2008-0008 02	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Vortechs® Stormwater Treatment System	11/27/2012	0.44	0.2827	0.52	6.35	359	20%	13%	50%	0.10	0.81	179.39	VA BMP Clearinghouse-MTD
2008-0008 03	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	CDS® Stormwater Treatment System	11/27/2012	0.73	0.6996	1.15	12.10	825	20%	13%	50%	0.23	1.54	412.40	VA BMP Clearinghouse-MTD
2008-0012 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Vortechs® Stormwater Treatment System	3/27/2010	0.73	0.68	1.12	11.97	805	20%	13%	50%	0.22	1.52	402.64	VA BMP Clearinghouse-MTD
2008-0012 02	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Vortechs® Stormwater Treatment System	3/27/2010	1.1	1.1	1.78	18.55	1,288	20%	13%	50%	0.36	2.36	644.23	VA BMP Clearinghouse-MTD
2008-0012 03	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Vortechs® Stormwater Treatment System	3/27/2010	1.1	1.1	1.78	18.55	1,288	20%	13%	50%	0.36	2.36	644.23	VA BMP Clearinghouse-MTD
2008-0012 04	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	3/27/2010	0.61	0.56	0.93	9.95	665	45%	29%	80%	0.42	2.85	531.78	VA BMP Clearinghouse-MTD
2008-0013 01	Filtering Practices - MTD	Filtering Practices	BayFilter™ Stormwater Filtration System	12/8/2010	1.86	1.49	2.57	28.85	1,810	50%	32%	80%	1.28	9.18	1448.25	VA BMP Clearinghouse-MTD
2008-0017 01	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Tree Box Filter	6/29/2011	0.41	0.38	0.63	6.71	450	45%	25%	55%	0.28	1.68	247.71	Chesapeake Bay Program
2008-0017 02	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Tree Box Filter	6/29/2011	0.58	0.395	0.72	8.52	495	45%	25%	55%	0.32	2.13	272.36	Chesapeake Bay Program
2008-0017 03	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Tree Box Filter	6/29/2011	0.58	0.395	0.72	8.52	495	45%	25%	55%	0.32	2.13	272.36	Chesapeake Bay Program
2008-0035 PLT 01	Permeable Pavement w/o Sand, Veg. - C/D soils, underdrain	Permeable Pavement w/Sand, Veg. C/D soils, underdrain	Permeable Pavement	2/27/2010	0.077	0.077	0.12	1.30	90	20%	20%	55%	0.02	0.26	49.61	Chesapeake Bay Program

City of Alexandria July 1, 2009 - June 30, 2014 BMPs **Attachment 1B**

BMP ID	BMP Type	Chesapeake Bay Program BMP Type	BMP Name (Full)	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed [LB/YR]	TSS Removed [LB/YR]	Efficiency Method
2008-0035 PLT 02	Dry Detention Ponds & Hydrodynamic Structures	Dry Detention Ponds and Hydrodynamic Structures	Dry Detention Pond	2/27/2010	0.82	0.08	0.43	8.80	224	10%	5%	10%	0.04	0.44	22.38	Chesapeake Bay Program
2008-0102 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Stormceptor® Stormwater Treatment System	5/9/2011	9.195	4.667	9.42	124.28	6,263	20%	13%	50%	1.88	15.82	3131.29	VA BMP Clearinghouse-MTD
2009-0003 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	CDS® Stormwater Treatment System	4/3/2012	2.46	2.38	3.89	40.93	2,802	20%	13%	50%	0.78	5.21	1400.90	VA BMP Clearinghouse-MTD
2009-0003 02	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	CDS® Stormwater Treatment System	4/3/2012	2.45	2.23	3.70	39.81	2,651	20%	13%	50%	0.74	5.07	1325.36	VA BMP Clearinghouse-MTD
2009-0006 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	CDS® Stormwater Treatment System	9/29/2012	2.89	2.13	3.76	43.57	2,629	20%	13%	50%	0.75	5.54	1314.26	VA BMP Clearinghouse-MTD
2009-0006 02	Reduction of Impervious Surface	Already included in aggregate method for determining increase in impervious areas	Cistern	9/29/2012	0.33	0.33	0.53	5.56	387							Chesapeake Bay Program
2009-0006 03	Bioretention, no underdrain, A/B soils	Bioretention A/B soils, no underdrain	Green Roof	9/29/2012	0.33	0.33	0.53	5.56	387	85%	80%	90%	0.45	4.45	347.88	Chesapeake Bay Program
2009-0008 01	Filtering Practices	Filtering Practices	Flow Thru Planter Box	9/15/2011	0.057	0.057	0.09	0.96	67	60%	40%	80%	0.06	0.38	53.41	Chesapeake Bay Program
2009-0008 02	Filtering Practices	Filtering Practices	Flow Thru Planter Box	9/15/2011	0.056	0.056	0.09	0.94	66	60%	40%	80%	0.05	0.38	52.48	Chesapeake Bay Program
2009-0009 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	10/26/2012	1.5	0.841	1.63	20.82	1,101	20%	13%	50%	0.33	2.65	550.47	VA BMP Clearinghouse-MTD
2009-0009 02	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.1691	0.1691	0.27	2.85	198	60%	40%	80%	0.16	1.14	158.46	Chesapeake Bay Program
2009-0009 04	Bioretention, no underdrain, A/B soils	Bioretention A/B soils, no underdrain	Green Roof	8/11/2011	0.15	0.15	0.24	2.53	176	85%	80%	90%	0.21	2.02	158.13	Chesapeake Bay Program
2009-0009 05	Bioretention, no underdrain, A/B soils	Bioretention A/B soils, no underdrain	Green Roof	8/11/2011	0.0146	0.0146	0.02	0.25	17	85%	80%	90%	0.02	0.20	15.39	Chesapeake Bay Program
2009-0013 01	Vegetated Treatment Area, C/D soils, no underdrain	Vegetated Open Channels C/D soils, no underdrain	Vegetated Buffer	7/8/2012	0.26	0.26	0.42	4.38	305	10%	10%	50%	0.04	0.44	152.27	Chesapeake Bay Program
2009-0014 GRD 01	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Tree Box Filter	4/19/2010	0.068	0.066	0.11	1.13	78	45%	25%	55%	0.05	0.28	42.71	Chesapeake Bay Program
2009-0014 GRD 02	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Tree Box Filter	4/19/2010	0.069	0.067	0.11	1.15	79	45%	25%	55%	0.05	0.29	43.36	Chesapeake Bay Program
2009-0014 GRD 03	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Tree Box Filter	4/19/2010	0.052	0.046	0.08	0.84	55	45%	25%	55%	0.03	0.21	30.21	Chesapeake Bay Program
2009-0014 GRD 04	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Tree Box Filter	4/19/2010	0.052	0.046	0.08	0.84	55	45%	25%	55%	0.03	0.21	30.21	Chesapeake Bay Program
2009-0101 01	Bioretention, no underdrain, A/B soils	Bioretention A/B soils, no underdrain	Green Roof	1/24/2012	0.0142	0.0142	0.02	0.24	17	85%	80%	90%	0.02	0.19	14.97	Chesapeake Bay Program
2009-0101 02	Bioretention, no underdrain, A/B soils	Bioretention A/B soils, no underdrain	Green Roof	1/24/2012	0.0124	0.0124	0.02	0.21	15	85%	80%	90%	0.02	0.17	13.07	Chesapeake Bay Program
2010-0001 01	Filtering Practices - MTD	Filtering Practices	BayFilter™ Stormwater Filtration System	10/31/2011	1.73	1.34	2.33	26.52	1,638	50%	32%	80%	1.17	8.44	1310.50	VA BMP Clearinghouse-MTD
2010-0005 01	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0166	0.0166	0.03	0.28	19	60%	40%	80%	0.02	0.11	15.56	Chesapeake Bay Program
2010-0005 02	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0166	0.0166	0.03	0.28	19	60%	40%	80%	0.02	0.11	15.56	Chesapeake Bay Program
2010-0005 03	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0166	0.0166	0.03	0.28	19	60%	40%	80%	0.02	0.11	15.56	Chesapeake Bay Program
2010-0005 04	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0166	0.0166	0.03	0.28	19	60%	40%	80%	0.02	0.11	15.56	Chesapeake Bay Program
2010-0005 05	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0166	0.0166	0.03	0.28	19	60%	40%	80%	0.02	0.11	15.56	Chesapeake Bay Program
2010-0005 06	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0166	0.0166	0.03	0.28	19	60%	40%	80%	0.02	0.11	15.56	Chesapeake Bay Program
2010-0005 07	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0166	0.0166	0.03	0.28	19	60%	40%	80%	0.02	0.11	15.56	Chesapeake Bay Program
2010-0005 08	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0135	0.0135	0.02	0.23	16	60%	40%	80%	0.01	0.09	12.65	Chesapeake Bay Program

City of Alexandria July 1, 2009 - June 30, 2014 BMPs **Attachment 1B**

BMP ID	BMP Type	Chesapeake Bay Program BMP Type	BMP Name (Full)	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed [LB/YR]	TSS Removed [LB/YR]	Efficiency Method
2010-0005 09	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0135	0.0135	0.02	0.23	16	60%	40%	80%	0.01	0.09	12.65	Chesapeake Bay Program
2010-0007 GRD 01	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	10/9/2009	0.8829	0.1221	0.51	9.72	277	45%	25%	55%	0.23	2.43	152.22	Chesapeake Bay Program
2010-0007 GRD 02	Bioretention, no underdrain, A/B soils	Bioretention A/B soils, no underdrain	Green Roof	10/9/2009	0.0784	0.0784	0.13	1.32	92	85%	80%	90%	0.11	1.06	82.65	Chesapeake Bay Program
2010-0009 01	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0316	0.0316	0.05	0.53	37	60%	40%	80%	0.03	0.21	29.61	Chesapeake Bay Program
2010-0009 02	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0316	0.0316	0.05	0.53	37	60%	40%	80%	0.03	0.21	29.61	Chesapeake Bay Program
2010-0009 03	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0316	0.0316	0.05	0.53	37	60%	40%	80%	0.03	0.21	29.61	Chesapeake Bay Program
2010-0009 04	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0316	0.0316	0.05	0.53	37	60%	40%	80%	0.03	0.21	29.61	Chesapeake Bay Program
2010-0009 05	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0316	0.0316	0.05	0.53	37	60%	40%	80%	0.03	0.21	29.61	Chesapeake Bay Program
2010-0010 01	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program
2010-0010 02	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program
2010-0010 03	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program
2010-0010 04	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program
2010-0010 05	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program
2010-0010 06	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program
2010-0010 07	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program
2010-0010 08	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program
2010-0010 09	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program
2010-0010 10	Filtering Practices	Filtering Practices	Flow Thru Planter Box	10/26/2012	0.0299	0.0299	0.05	0.50	35	60%	40%	80%	0.03	0.20	28.02	Chesapeake Bay Program
2010-0018 GRD 01	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	7/30/2011	0.28	0.02	0.14	2.96	69	45%	25%	55%	0.06	0.74	38.02	Chesapeake Bay Program
2010-0021 GRD 01	Urban Infiltration Practices	Infiltration Practices w/o Sand, Veg.	Infiltration System	9/7/2011	0.26	0.26	0.42	4.38	305	85%	80%	95%	0.36	3.51	289.32	Chesapeake Bay Program
2010-0023 GRD 01	Filtering Practices	Filtering Practices	Flow Thru Planter Box	7/20/2011	0.063	0.063	0.10	1.06	74	60%	40%	80%	0.06	0.42	59.03	Chesapeake Bay Program
2010-0024 GRD 01	Filtering Practices	Filtering Practices	Flow Thru Planter Box	7/20/2011	0.035	0.035	0.06	0.59	41	60%	40%	80%	0.03	0.24	32.80	Chesapeake Bay Program
2011-0003 01	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	11/19/2013	1.91	1.54	2.65	29.69	1,869	45%	29%	80%	1.19	8.51	1495.10	VA BMP Clearinghouse-MTD
2011-0008 01	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Tree Box Filter	11/14/2012	0.479	0.435	0.72	7.78	517	45%	25%	55%	0.33	1.94	284.49	Chesapeake Bay Program
2011-0008 02	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Tree Box Filter	11/14/2012	0.718	0.635	1.06	11.54	758	45%	25%	55%	0.48	2.89	417.11	Chesapeake Bay Program
2011-0015 01	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	4/2/2014	0.141	0.07	0.14	1.90	94	45%	25%	55%	0.06	0.47	51.96	Chesapeake Bay Program
2011-0015 02	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	4/2/2014	0.643	0.439	0.79	9.46	550	45%	25%	55%	0.36	2.36	302.54	Chesapeake Bay Program
2011-0015 03	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	4/2/2014	0.277	0.213	0.37	4.24	261	45%	25%	55%	0.17	1.06	143.41	Chesapeake Bay Program
2011-0015 04	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	4/2/2014	0.125	0.096	0.17	1.91	118	45%	25%	55%	0.08	0.48	64.65	Chesapeake Bay Program
2011-0015 05	Underground Sand Filter	Filtering Practices	D.C. Sand Filter	4/2/2014	0.8275	0.82	1.33	13.90	962	60%	40%	80%	0.80	5.56	769.44	Chesapeake Bay Program

City of Alexandria July 1, 2009 - June 30, 2014 BMPs **Attachment 1B**

BMP ID	BMP Type	Chesapeake Bay Program BMP Type	BMP Name (Full)	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed [LB/YR]	TSS Removed [LB/YR]	Efficiency Method
2011-0015 06	Underground Sand Filter	Filtering Practices	D.C. Sand Filter	4/2/2014	0.8275	0.82	1.33	13.90	962	60%	40%	80%	0.80	5.56	769.44	Chesapeake Bay Program
2011-0015 07	Underground Sand Filter	Filtering Practices	Delaware Sand Filter	4/2/2014	0.211	0.198	0.33	3.47	234	60%	40%	80%	0.20	1.39	187.37	Chesapeake Bay Program
2011-0020 GRD 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	Stormceptor® Stormwater Treatment System	5/9/2012	0.66	0.51	0.89	10.11	624	20%	13%	50%	0.18	1.29	311.87	VA BMP Clearinghouse-MTD
2011-0022 01	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	5/12/2014	1.868	1.548	2.64	29.32	1,869	45%	29%	80%	1.19	8.40	1495.57	VA BMP Clearinghouse-MTD
2011-0026 GRD 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	BaySeparator™ Stormwater Treatment System	9/6/2012	1.34	1.14	1.93	21.23	1,370	20%	13%	50%	0.39	2.70	685.23	VA BMP Clearinghouse-MTD
2011-0026 GRD 02	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Tree Box Filter	9/6/2012	0.43	0.27	0.50	6.16	344	45%	25%	55%	0.23	1.54	189.41	Chesapeake Bay Program
2011-0026 GRD 03	Underground Sand Filter	Filtering Practices	D.C. Sand Filter	9/6/2012	2.34	2.19	3.61	38.43	2,592	60%	40%	80%	2.17	15.37	2073.25	Chesapeake Bay Program
2011-0026 GRD 04	Permeable Pavement w/o Sand, Veg. - C/D soils, underdrain	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	9/6/2012	0.014	0.014	0.02	0.24	16	20%	10%	55%	0.00	0.02	9.02	Chesapeake Bay Program
2011-0026 GRD 05	Permeable Pavement w/o Sand, Veg. - C/D soils, underdrain	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	9/6/2012	0.014	0.014	0.02	0.24	16	20%	10%	55%	0.00	0.02	9.02	Chesapeake Bay Program
2011-0032 GRD 01	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	8/1/2012	0.7575	0.0851	0.41	8.21	218	45%	25%	55%	0.19	2.05	119.84	Chesapeake Bay Program
2011-0032 GRD 02	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	CDS® Stormwater Treatment System	8/1/2012	0.69	0.35	0.71	9.32	470	20%	13%	50%	0.14	1.19	234.87	VA BMP Clearinghouse-MTD
2011-0032 GRD 03	Filtering Practices	Filtering Practices	Flow Thru Planter Box	8/1/2012	0.0448	0.0448	0.07	0.76	52	60%	40%	80%	0.04	0.30	41.98	Chesapeake Bay Program
2011-0032 GRD 04	Filtering Practices	Filtering Practices	Flow Thru Planter Box	8/1/2012	0.0052	0.0052	0.01	0.09	6	60%	40%	80%	0.01	0.04	4.87	Chesapeake Bay Program
2012-0013 01 GRD	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Tree Box Filter	11/25/2013	0.126	0.126	0.20	2.12	148	45%	25%	55%	0.09	0.53	81.17	Chesapeake Bay Program
2012-0034 01	Filtering Practices	Filtering Practices	Flow Thru Planter Box	2/7/2014	0.062	0.062	0.10	1.05	73	60%	40%	80%	0.06	0.42	58.10	Chesapeake Bay Program
2012-0034 02	Filtering Practices	Filtering Practices	Flow Thru Planter Box	2/7/2014	0.062	0.062	0.10	1.05	73	60%	40%	80%	0.06	0.42	58.10	Chesapeake Bay Program
2012-0034 03	Filtering Practices	Filtering Practices	Flow Thru Planter Box	2/7/2014	0.014	0.014	0.02	0.24	16	60%	40%	80%	0.01	0.09	13.12	Chesapeake Bay Program
2012-0034 04	Filtering Practices	Filtering Practices	Flow Thru Planter Box	2/7/2014	0.047	0.047	0.08	0.79	55	60%	40%	80%	0.05	0.32	44.04	Chesapeake Bay Program
2012-0034 05	Filtering Practices	Filtering Practices	Flow Thru Planter Box	2/7/2014	0.04	0.04	0.06	0.67	47	60%	40%	80%	0.04	0.27	37.48	Chesapeake Bay Program
2012-0034 06	Filtering Practices	Filtering Practices	Flow Thru Planter Box	2/7/2014	0.04	0.04	0.06	0.67	47	60%	40%	80%	0.04	0.27	37.48	Chesapeake Bay Program
2012-0034 07	Filtering Practices - MTD	Filtering Practices	StormFilter™ Stormwater Treatment System	2/7/2014	9.195	4.667	9.42	124.28	6,263	45%	29%	80%	4.24	35.61	5010.06	VA BMP Clearinghouse-MTD
2012-0101 01	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Tree Box Filter	5/2/2012	0.25	0.25	0.41	4.22	293	45%	25%	55%	0.18	1.05	161.06	Chesapeake Bay Program
2012-0102 01	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	BaySeparator™ Stormwater Treatment System	7/25/2013	2.05	1.42	2.56	30.29	1,774	20%	13%	50%	0.51	3.85	887.01	VA BMP Clearinghouse-MTD
2012-0102 02	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	BaySeparator™ Stormwater Treatment System	7/25/2013	0.7	0.62	1.04	11.26	740	20%	13%	50%	0.21	1.43	370.14	VA BMP Clearinghouse-MTD
2012-0102 03	Hydrodynamic Structures - MTD	Dry Detention Ponds and Hydrodynamic Structures	BaySeparator™ Stormwater Treatment System	7/25/2013	0.25	0.22	0.37	4.01	263	20%	13%	50%	0.07	0.51	131.48	VA BMP Clearinghouse-MTD
2012-0383 PRJ 01	Bioretention, underdrain, C/D soils	Bioretention C/D soils, underdrain	Bioretention Filter	12/15/2012	0.31	0.31	0.50	5.23	363	45%	25%	55%	0.23	1.31	199.71	Chesapeake Bay Program
2012-0383 PRJ 02	Vegetated Treatment Area, C/D soils, no underdrain	Vegetated Open Channels C/D soils, no underdrain	Vegetated Buffer	12/15/2012	0.46	0.46	0.75	7.76	539	10%	10%	50%	0.07	0.78	269.40	Chesapeake Bay Program
			Totals		**27.96**	**19.81**	**35.44**	**416**	**24,637**			**Totals**	**14.88**	**110.24**	**17,051.59**	

**TN Efficiency for the Manufactured Treatment Devices was estimated from the Retrofit Curves and the VA BMP Clearinghouse TP efficiency.*

Retrofits on City Property

Attachment 2

Project	BMP ID	Chesapeake Bay Program BMP Type	BMP Name (Full)	Date Installed	Area Treated (ac)	Impervious Treated (ac)	TP LOAD [LB/YR]	TN LOAD [LB/YR]	TSS LOAD [LB/YR]	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed [LB/YR]	TSS Removed [LB/YR]	Efficiency Method
Fire Station #206	2012-0103 01	Filtering Practices	StormFilter™ Stormwater Treatment System	5/20/2015	0.55	0.55	0.89	9.27	644	45%	29%	80%	0.40	2.66	515.38	VA BMP Clearinghouse-MTD
Burke Library		Filtering Practices	StormFilter™ Stormwater Treatment System	5/1/2015	0.53	0.51	0.83	8.80	601	45%	29%	80%	0.38	2.52	480.71	VA BMP Clearinghouse-MTD
Burke Library		Bioretention C/D soils, underdrain	Bioretention C/D soils, underdrain	5/1/2015	0.78	0.41	0.82	10.64	545	45%	25%	55%	0.37	2.66	299.91	Chesapeake Bay Program
Charles Barrett Elementary	2012-0104 01	Filtering Practices	StormFilter™ Stormwater Treatment System	5/20/2015	0.73	0.62	1.05	11.56	746	45%	29%	80%	0.47	3.31	596.45	VA BMP Clearinghouse-MTD
Charles Barrett Elementary	2012-0104 03	Bioretention C/D soils, underdrain	Bioretention Filter	5/20/2015	1.62	1.38	2.33	25.68	1,659	45%	25%	55%	1.05	6.42	912.24	Chesapeake Bay Program
				Totals	**4.21**	**3.47**	**5.92**	**65.96**	**4,194.58**			**Totals**	**2.67**	**17.57**	**2,804.69**	

**TN Efficiency for the Manufactured Treatment Devices was estimated from the Retrofit Curves and the VA BMP Clearinghouse TP efficiency.*

Aggregate Accounting for Special Condition Requirement 7

Attachment 3

POC Loads as of June 30, 2009 (Pre-Development)

Subsource	Pollutant	Total Existing Acres Served by MS4 as of 6/30/2009	2009 EOS Loading Rate (lbs/acre/yr)	Estimated Total POC Load as of 6/30/2009 (lbs/yr)
Regulated Impervious	Nitrogen	3,417.24	16.86	57,614.7
Regulated Pervious		3,991.57	10.07	40,195.1
Regulated Impervious	Phosphorus	3,417.24	1.62	5,535.9
Regulated Pervious		3,991.57	0.41	1,636.5
Regulated Impervious	Total Suspended Solids	3,417.24	1,171.32	4,002,682
Regulated Pervious		3,991.57	175.80	701,718

Post-Development Conditions July 1, 2014

Subsource	Pollutant	Total Existing Acres Served by MS4 as of 7/01/2014	2009 EOS Loading Rate (lbs/acre/yr)	Estimated Total POC Load as of 7/01/2014 (lbs/yr)
Regulated Impervious	Nitrogen	3,422.04	16.86	57,695.6
Regulated Pervious		3,986.77	10.07	40,146.8
Regulated Impervious	Phosphorus	3,422.04	1.62	5,543.7
Regulated Pervious		3,986.77	0.41	1,634.6
Regulated Impervious	Total Suspended Solids	3,422.04	1,171.32	4,008,304
Regulated Pervious		3,986.77	175.80	700,874

Total Load Change from "New Sources" between June 30, 2009 and July 1, 2014

Subsource	Pollutant	Estimated Total POC Loads as of 7/1/2014 (lbs/yr)	Estimated Total POC Load as of 6/30/2009 (lbs/yr)	Load Change (lbs/yr)	Total Load Change (lbs/yr)
Regulated Impervious	Nitrogen	57,695.6	57,614.7	80.9	32.6
Regulated Pervious		40,146.8	40,195.1	-48.3	
Regulated Impervious	Phosphorus	5,543.7	5,535.9	7.8	5.8
Regulated Pervious		1,634.6	1,636.5	-2.0	
Regulated Impervious	Total Suspended Solids	4,008,304	4,002,682	5,622	4,778
Regulated Pervious		700,874	701,718	-844	

Pollutant	Net Load Change (lbs/yr)*	Required Reduction during first permit cycle	Additional Red. Reqd. by the end of first permit cycle (lbs/yr)
Nitrogen	32.6	0.05	1.6
Phosphorus	5.8	0.05	0.3
Total Suspended Solids	4,778	0.05	239

**Reductions for BMPs related to development and/or redevelopment projects during this time are included in the July 1, 2009 to June 30, 2014 BMP Credits*

Grandfathered Projects

Attachment 4A

Grandfathered Projects - BMP Reductions

Project	BMP ID	Chesapeake Bay Program BMP Type	BMP Name (Full)	Manufactured Treatment Device	Area Treated (ac)	Impervious Treated (ac)	TP Load [LB/YR]**	TN Load [LB/YR]**	TSS Load [LB/YR]**	TP BMP Efficiency	TN BMP Efficiency*	TSS BMP Efficiency	TP Removed [LB/YR]	TN Removed [LB/YR]	TSS Removed [LB/YR]	Efficiency Method
Partial Landbay I & Partial Landbay H Multi-Family	2011-0021 01	Filtering Practices	BayFilter™ Stormwater Filtration System	TRUE	0.695	0.21	1.27	8.80	598	50%	32%	80%	0.64	2.80	478.49	VA BMP Clearinghouse MTD
Lynn House - Proposed Addition	2003-0026 01	Filtering Practices	StormFilter™ Stormwater Treatment System	TRUE	1.16	0.69	1.02	7.07	481	45%	29%	80%	0.46	2.03	384.73	VA BMP Clearinghouse MTD
Lynn House - Proposed Addition	2003-0026 02	Hydrodynamic Structures	CDS® Stormwater Treatment System	TRUE	0.67	0.49	0.59	4.08	278	20%	13%	50%	0.12	0.52	138.88	VA BMP Clearinghouse MTD
Lynn House - Proposed Addition	2003-0026 03	Vegetated Open Channels C/D soils, no underdrain	Vegetated Filter Strip	FALSE	0.44	0.08	0.39	2.68	182	10%	10%	50%	0.04	0.27	91.21	Chesapeake Bay Program
Lynn House - Proposed Addition	2003-0026 04	Vegetated Open Channels C/D soils, no underdrain	Vegetated Filter Strip	FALSE	0.53	0.06	0.47	3.23	220	10%	10%	50%	0.05	0.32	109.86	Chesapeake Bay Program
Victory Center - Phase 1	2004-0037 01	Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	TRUE	4.49	3.44	7.72	53.28	3,623	20%	13%	50%	1.54	6.78	1811.60	VA BMP Clearinghouse MTD
5325 Polk Avenue	2005-0012 01	Hydrodynamic Structures	Downstream Defender® Stormwater Treatment Vortex Separator	TRUE	1.43	0.69	1.11	7.68	522	20%	13%	50%	0.22	0.98	260.99	VA BMP Clearinghouse MTD
Lindsay Lexus of Alexandria	2006-0006 01	Filtering Practices	StormFilter™ Stormwater Treatment System	TRUE	1.51	1.33	2.66	18.37	1,249	45%	29%	80%	1.20	5.26	999.43	VA BMP Clearinghouse MTD
Woodmont Park Apartments	2007-0003 01	Hydrodynamic Structures	Vortechs® Stormwater Treatment System	TRUE	0.91	0.91	1.07	7.38	502	20%	13%	50%	0.21	0.94	250.95	VA BMP Clearinghouse MTD
Woodmont Park Apartments	2007-0003 02	Hydrodynamic Structures	Vortechs® Stormwater Treatment System	TRUE	0.85	0.85	1.00	6.89	469	20%	13%	50%	0.20	0.88	234.40	VA BMP Clearinghouse MTD
Woodmont Park Apartments	2007-0003 03	Filtering Practices	StormFilter™ Stormwater Treatment System	TRUE	10.95	7.45	12.87	88.81	6,039	45%	29%	80%	5.79	25.44	4831.46	VA BMP Clearinghouse MTD
VEPCO - North Alexandria Electrical Substation	2007-0009 01	Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	TRUE	0.76	0.55	0.70	4.82	328	20%	13%	50%	0.14	0.61	163.99	VA BMP Clearinghouse MTD
Eisenhower East Small Area Plan (E.E.S.A.P.) - Block 20	2007-0017 01	Filtering Practices	Alexandria Compound Sand Filter	FALSE	0.96	0.82	1.38	9.51	647	60%	40%	80%	0.83	3.80	517.41	Chesapeake Bay Program
Eisenhower East Small Area Plan (E.E.S.A.P.) - Block 19	2007-0017 02	Filtering Practices	Alexandria Compound Sand Filter	FALSE	1.02	0.86	1.24	8.56	582	60%	40%	80%	0.74	3.42	465.45	Chesapeake Bay Program
Eisenhower East Small Area Plan (E.E.S.A.P.) - Block 19	2007-0017 03	Filtering Practices	Alexandria Compound Sand Filter	FALSE	1.86	1.55	2.26	15.60	1,061	60%	40%	80%	1.36	6.24	848.77	Chesapeake Bay Program
Hoffman Properties - Blocks 11 & 12	2009-0004 01	Filtering Practices	Dry Vault Sand Filter	FALSE	3.73	3.33	7.27	50.19	3,413	60%	40%	80%	4.36	20.07	2730.07	Chesapeake Bay Program
Hoffman Properties - Blocks 11 & 12	2009-0004 02	Bioretention C/D soils, underdrain	Bioretention Filter	FALSE	0.83	0.79	1.62	11.17	759	45%	25%	55%	0.73	2.79	417.65	Chesapeake Bay Program
Victory Center - Master Plan	2010-0011 01	Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	TRUE	4.43	3.83	7.22	49.83	3,388	20%	13%	50%	1.44	6.34	1694.08	VA BMP Clearinghouse MTD
Victory Center - Master Plan	2010-0011 02	Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	TRUE	1.03	0.88	1.68	11.58	788	20%	13%	50%	0.34	1.47	393.88	VA BMP Clearinghouse MTD
Victory Center - Master Plan	2010-0011 04	Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	TRUE	3.85	2.67	6.28	43.30	2,945	20%	13%	50%	1.26	5.51	1472.28	VA BMP Clearinghouse MTD
Victory Center - Master Plan	2010-0011 05	Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	TRUE	3.32	2.34	5.41	37.34	2,539	20%	13%	50%	1.08	4.75	1269.61	VA BMP Clearinghouse MTD
Potomac Yard Park (Pond P-2 Enlargement)	2010-0012 01	Wet Ponds and Wetlands	Wet Pond	FALSE	31.68	27.7	60.46	417.15	28,367	45%	20%	60%	27.21	83.43	17019.92	Chesapeake Bay Program
The Delaney	2011-0007 01	Filtering Practices	StormFilter™ Stormwater Treatment System	TRUE	1.3378	1.3378	2.16	14.92	1,014	45%	29%	80%	0.97	4.27	811.38	VA BMP Clearinghouse MTD
The Delaney	2011-0007 02	Bioretention C/D soils, underdrain	Tree Box Filter	FALSE	0.2826	0.2584	0.46	3.15	214	45%	25%	55%	0.21	0.79	117.84	Chesapeake Bay Program
Landmark Gateway - Phase 2	2013-0005 01	Filtering Practices	StormFilter™ Stormwater Treatment System	TRUE	0.83	0.73	1.33	9.21	626	45%	29%	80%	0.60	2.64	500.87	VA BMP Clearinghouse MTD
				Totals	**79.6**	**63.8**	**129.7**	**894.6**	**60,833.7**			**Totals**	**51.7**	**192.4**	**38,015.2**	

**TN Efficiency for the Manufactured Treatment Devices was estimated from the Retrofit Curves and the VA BMP Clearinghouse TP efficiency.*

***Simple Method was used*

Grandfathered Projects

Attachment 4B

Grandfathered Projects - Offset Loads

Project	Project ID	Pre-Site Total Area (ac)	Pre-Site Impervious (ac)	Pre-Site Loading TP Rate (lb/ac/yr)	Post Site Total Area (ac)	Post Site Impervious (ac)	Post Site TP Loading Rate (lb/ac/yr)	TP LOAD to Offset [LB/YR]	TN Load to Offset [LB/YR]	TSS Load to Offset [LB/YR]
Partial Landbay I & Partial Landbay H Multi-Family	2011-0021	1.607	1.347	1.83	1.607	1.347	1.83	2.24	15.46	1,051
Lynn House - Proposed Addition	2003-0026	3.52	1.2	0.81	3.52	1.32	0.88	1.56	10.77	733
Victory Center - Phase 1	2004-0037	16.00	13.71	1.87	16	12.52	1.72	20.48	141.29	9,608
5325 Polk Avenue	2005-0012	2.38	0.15	0.24	2.38	0.77	0.78	0.80	5.55	377
Lindsay Lexus of Alexandria	2006-0006	1.63	1.52	2.03	1.63	1.31	1.76	2.16	14.88	1,012
Woodmont Park Apartments	2007-0003	17.69	8.06	1.05	17.69	9.15	1.18	13.01	89.77	6,105
VEPCO - North Alexandria Electrical Substation	2007-0009	1.63	0.4	0.62	1.63	0.64	0.92	0.78	5.40	367
Eisenhower East Small Area Plan (E.E.S.A.P.) - Block 20	2007-0017	2.81	1.96	1.55	2.81	1.81	1.44	2.80	19.31	1,313
Eisenhower East Small Area Plan (E.E.S.A.P.) - Block 19	2009-0004	2.85	0	0.11	2.85	1.53	1.22	2.21	15.25	1,037
Hoffman Properties - Blocks 11 & 12	2009-0004	4.27	3.79	1.94	4.27	3.82	1.95	6.45	44.49	3,025
Victory Center - Master Plan	2010-0011	16.00	13.71	1.87	16	11.82	1.63	19.04	131.38	8,934
Potomac Yard Park (Pond P-2 Enlargement)	2010-0012	31.68	13.31	0.98	31.68	27.7	1.91	46.52	320.97	21,826
The Delaney	2011-0007	2.33	2.24	2.09	2.33	1.7051	1.62	2.74	18.90	1,285
Landmark Gateway - Phase 2	2013-0005	6.32	5.99	2.06	6.32	4.6	1.61	7.38	50.92	3,463
							Totals	**128.2**	**884.4**	**60,137**

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 1105, Richmond, Virginia 23218
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Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

December 29, 2015

Mark B. Jinks
City Manager
City of Alexandria
301 King St., Room 3500
Alexandria, VA 22314

Transmitted electronically: mark.jinks@alexandriava.gov

RE: Virginia Pollutant Discharge Elimination System (VPDES) MS4 Permit VAR040057, City of Alexandria, Chesapeake Bay TMDL Action Plan Approval

Dear Mr. Jinks:

The Department of Environmental Quality (DEQ) has reviewed the Chesapeake Bay TMDL Action Plan received on October 1, 2015 in accordance with Section I.C of the General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4). Based on this review, DEQ has determined that the items included in the Chesapeake Bay TMDL Action Plan are consistent with the permit requirements; however, additional information is required. Additional information was received on December 14, 2015.

The Chesapeake Bay TMDL Action Plan is *provisionally approved* and is considered an enforceable part of the MS4 Program Plan. This provisional approval is conditioned upon DEQ's receipt and review of requested revisions to the Chesapeake Bay TMDL Action Plan as communicated by DEQ staff (attached). Please submit the required revisions by January 12, 2016. After review DEQ will provide the final approval of the Chesapeake Bay TMDL Action Plan.

Thank you for your cooperation through the TMDL Action Plan review and approval process. Please contact Kelsey Brooks at (804) 698-4321 or at kelsey.brooks@deq.virginia.gov if you have any questions.

Sincerely,

Allan Brockenbrough II

Allan Brockenbrough II, P.E.
Manager, Office of VPDES Permits

Copies: File
Jesse Maines (Jesse.Maines@alexandriava.gov)

Bauer, Jaime (DEQ)

From: Brooks, Kelsey (DEQ)
Sent: Tuesday, December 29, 2015 1:33 PM
To: Jesse Maines
Subject: RE: VAR040057 Chesapeake Bay TMDL Action Plan - Additional Info Required

Hi Jesse,

Thank you for sending this additional information. We have a few follow up questions/comments:

1. As I mentioned in an email sent earlier today, the submission appears to be missing attachment 3. Please send that attachment.

2. We are unable to recreate the values in the summary table. If we add the reductions for each strategy provided in the table, we calculate the following values:

	TN (lbs/yr)	TP (lbs/yr)	TSS (lbs/yr)
Total Reductions	3383.58	421.5	340475.58

Please clarify whether the total proposed reductions provided in the addendum are correct or need to be updated.

If you have any questions, please let me know. Please provide this information no later than **January 12, 2016**.

Thank you,
Kelsey

From: Jesse Maines [mailto:Jesse.Maines@alexandriava.gov]
Sent: Monday, December 14, 2015 5:26 PM
To: Brooks, Kelsey (DEQ)
Cc: William Skrabak; Lalit Sharma; Brian Rahal; Joni Calmbacher; Jesse Maines
Subject: RE: VAR040057 Chesapeake Bay TMDL Action Plan - Additional Info Required

Kelsey,

Please find attached the City's response to the additional information request. Please feel free to call or email me if you have any additional questions. If I don't talk to you before, have a great holiday!

Thanks,

Jesse Maines, MPA
Watershed Management Planner
City of Alexandria
T&ES, Storm and Sanitary Infrastructure
703.746.4643 (direct)
571.414.8237 (mobile)

From: Brooks, Kelsey (DEQ) [mailto:Kelsey.Brooks@deq.virginia.gov]
Sent: Monday, November 30, 2015 11:43 AM
To: Jesse Maines
Subject: VAR040057 Chesapeake Bay TMDL Action Plan - Additional Info Required

Hello Jesse,

The Chesapeake Bay TMDL Action Plan for the City of Alexandria is currently under review. However, the following supplemental and/or clarifying information is necessary before the review of the Action Plan can be completed:

1. **Current Program and Legal Authority –** Please provide an affirmative statement that the permittee has sufficient legal authorities in place to meet the requirements of the TMDL.
2. **Service Area Delineation –** Please provide additional information on the method the permittee used to verify the forested acres that were excluded from the service area are greater than or equal to 900m^2 contiguous and are otherwise undeveloped.
3. **Gordon Recycling Limited Liability Corporation** – Our records indicate this facility is no longer active. The permittee should not exclude the lands draining from this site from its service area. Please revise the loading calculations appropriately.
4. **Historical BMPs –** Please provide the list of Historical BMPs that are being submitted for credit towards the TMDL. The list should include the following for each BMP:
    1. The date the BMP was installed
    2. The BMP type
    3. The method that was used to determine the BMP efficiency for each POC
    4. The BMP efficiency for each POC
    5. The reductions for each POC
5. **Lake Cook –** Please clarify if the lake is being expanded – it is unclear from the information provided how the lake is treating 15 acres in its present condition, but will treat 390 acres once it is upgraded.
6. **Eisenhower Pond 19 –** The method the permittee used to determine the efficiencies used to determine the reductions for this pond is unclear from the information provided. Please provide the following information:
    1. The project's required reductions (total acres, percent impervious)
    2. The pond's total reductions
    3. The RD value that was used to determine the BMP's efficiencies
    4. The date the BMP was implemented.

    In addition the TSS value provided in the description does not appear to match the value for TSS provided in Table 15. Please verify which value is correct.
7. **Cameron Station Pond –** Similarly to the Lake Cook project it is unclear to the Department why the pond is treating 94 acres prior to the ponds upgrade and 248.1 acres after the ponds upgrade if the facility's footprint is not increasing. Please provide additional information concerning the change in the pond's drainage area.
8. **Section 8.5 –** Please provide the following information for each BMP summarized in Table 12:
    1. The date the BMP was installed
    2. The BMP type
    3. The BMP efficiency for each POC

    Please note the values in Table 12 do not appear to match the values in Table 15. Please verify which of the reported values are correct.
9. **Four Mile Run Stream Restoration –** Please note that it is not appropriate to apply the stream restoration protocols to streams that are tidally influenced. Based on the information provided in this section, it does not appear that the application of Protocol 3 is appropriate.
10. **Aggregate Method Applications –** Please note that the calculations the permittee provided in Table 7 do not appear to match the method provided in Guidance Memo 15-2005. The permittee should also take in to account

the change in pervious acres when applying the aggregate accounting method. Please revise the provided calculations.

11. **Grandfathered Projects –** Please provide the list of grandfathered projects summarized in Table 8. Also, please provide the same information as requested in comment 3 for the BMPs that were included in Table 8.
12. **Public Comment Period –** This process should have been completed prior to the Action Plan submittal. If the permittee has posted the plan and solicited comments, please let us know. If not, this process should be undertaken as soon as possible.

Please provide the above information no later than **December 14, 2015**. If there is information in the Action Plan that explains these issues that has been overlooked, please let me know.

If you have any questions, please contact me at **804-698-4321** or **kelsey.brooks@deq.virginia.gov**.

Thank you,
Kelsey Brooks

MS4 Stormwater Specialist
Department of Environmental Quality
629 E Main St, Richmond, VA 23219
P: (804) 698-4321
E: kelsey.brooks@deq.virginia.gov

DEPARTMENT OF TRANSPORTATION
AND ENVIRONMENTAL SERVICES
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Alexandria, Virginia 22313
703-746-4025
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January 7, 2016

Via Email: kelsey.brooks@deq.virginia.gov

Kelsey Brooks
MS4 Stormwater Specialist
Department of Environmental Quality
629 E Main St, Richmond, VA 23219

RE: City of Alexandria Response to DEQ Additional Information Request: MS4 VAR040057 Chesapeake Bay TMDL 5% Action Plan

Ms. Brooks:

The City received an electronic letter regarding the "Virginia Pollutant Discharge Elimination System (VPDES) MS4 Permit VAR040057, City of Alexandria, Chesapeake Bay TMDL Action Plan Approval" dated December 29, 2015 and signed by Allan Brockenbrough II, P.E. This letter was in response to the City's "Chesapeake Bay TMDL Action Plan for 5% Compliance" and the December 14, 2015 submittal of additional information based on a request from the Virginia Department of Environmental Quality (DEQ). The letter provided provisional approval of the City's Chesapeake Bay TMDL Action Plan conditioned upon DEQ's receipt and review of requested information, which is provided herein.

The responses below are provided to address the additional information and/or clarifications requested by DEQ staff in the December 29, 2015 provisional approval letter and will be considered as an addendum to the Action Plan. Your request is provided in italics below in its entirety, along with the City's responses in non-italics. With this additional information and clarification, we look forward to receiving DEQ's Final Approval of the Chesapeake Bay TMDL Action Plan.

Hi Jesse,

Thank you for sending this additional information. We have a few follow up questions/comments.

1. *As I mentioned in an email I sent earlier today, the submission appear to be missing attachment 3. Please send the attachment.*

   Response: Attachment 3 was inadvertently left off the previous response and isattached to this letter.

2. *We are unable to recreate the values in the summary table. If we add the reductions for each strategy provided in the table, we calculate the following values:*

	TN (lbs/yr)	TP (lbs/yr)	TSS (lbs/yr)
Total Reductions	3383.58	421.5	340475.58

Please clarify whether the proposed reductions provided in the addendum are correct or need to be updated.

Response: The proposed reductions provided in the December 14, 2015 response letter needed to be updated. The table below has been updated and the values match the total proposed reductions you outlined above.

Reduction Strategies	N (lbs)	100% Goal[2]	P (lbs)	100% Goal[2]	TSS (lbs/yr)	100% Goal[2]
2006-2009 BMPs	1305.10	17.2	158.00	15.48	150,452.00	8.69
Post-2009 BMPs	110.24	1.5	14.88	4.44	17,051.59	4.59
Regional Facilities – Lake Cook	1586.97	20.9	163.25	15.79	131,334.00	15.2
Regional Facilities – Pond 19	168.90	2.2	42.70	1.52	23,919.30	1.35
Retrofits on City Property	17.57	0.2	2.67	1.48	2,804.69	0.12
Urban Stream Restoration – Four Mile Run	194.80	2.6	40.00	3.87	14,914.00	1.73
Total Proposed Reductions	**3383.58**	**44.5**	**421.50**	**42.58**	**340,475.58**	**31.68**
Total Required Reductions (3 permit cycles)	*7,597.00*	*100%*	*1,004.40*	*100%*	*861,936.64*	*100%*

1. Assumes all grandfathered projects to be offset this permit cycle.

2. 100% goal is based on L2 scoping.

As noted in our December 14, 2015 response letter, the City will provide annual compliance reporting on the implementation of strategies to meet the City's Bay TMDL targets per the requirements of the MS4 general permit and DEQ's Guidance.

Please feel free to contact me at jesse.maines@alexandriava.gov or 703-746-4643 should you have any additional questions.

Sincerely,



Jesse E. Maines, MPA, CPESC
Watershed Management Planner
Transportation and Environmental Services
Stormwater & Sanitary Infrastructure Division

Cc: William J. Skrabak, Deputy Director, T&ES Infrastructure and Environment
Lalit K. Sharma, PE, Division Chief, T&ES, Stormwater & Sanitary Infrastructure Division
Brian Rahal, PE, T&ES, S&SI, Stormwater Section Lead

Attachment: Attachment 3 – Aggregate Accounting 2009-2014 Offsets

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

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Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

January 12, 2016

Mark B. Jinks
City Manager
City of Alexandria
301 King St.
Room 3500
Alexandria, VA 22314

Transmitted electronically: mark.jinks@alexandriava.gov

RE: Virginia Pollutant Discharge Elimination System (VPDES) MS4 Permit VAR040057, City of Alexandria, Chesapeake Bay TMDL Action Plan Approval

Dear Mr. Jinks:

The Department of Environmental Quality (DEQ) has reviewed the Chesapeake Bay TMDL Action Plan received on October 1, 2015 in accordance with Section I.C of the General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4). Additional information was received November 19, 2015 and January 7, 2016.

As submitted, the action plan will result in the following annual reduction of pollutants of concern in the Potomac River Basin:

Pollutant of Concern	**Annual Load Reduction (lb/yr)**	**Percentage of L2 Reduction Achieved After Implementation**	**Percentage of New Source Reduction Achieved After Implementation**
Total Nitrogen	3,383.58	44.44%	5%
Total Phosphorus	421.50	39.01%	5%
Total Suspended Solids	340,475.58	39.24%	5%

The Chesapeake Bay TMDL Action Plan is hereby approved and is an enforceable part of the MS4 Program Plan. The approved action plan is based on the 2000 Urbanized Area as designated by the U.S. Census Bureau; and reductions were calculated based on land use data from 2009. Please note that additional reductions may be required to address loads from expanded urbanized area as a result of the 2010 Census in accordance with Section II.C.5 of the MS4 General Permit.

Please note any modifications to the Chesapeake Bay TMDL Action Plan shall be made in accordance with the Program Plan Modification Section of the MS4 General Permit (Section II.F).

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have thirty (30) days from the date you received this decision within which to appeal this decision by filing a notice of appeal in accordance with the Rules of the Supreme Court of Virginia with the Director, Virginia Department of Environmental Quality.

Please contact Kelsey Brooks at (804) 698-4321 or at kelsey.brooks@deq.virginia.gov if you have any questions.

Sincerely,

Allan Brockenbrough II

Allan Brockenbrough II, P.E.
Manager, Office of VPDES Permits

Copies: File
Jesse Maines (Jesse.Maines@alexandriava.gov)

DEPARTMENT OF TRANSPORTATION
AND ENVIRONMENTAL SERVICES
P.O. Box 178 - City Hall
Alexandria, Virginia 22313
703-746-4025
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February 11, 2016

Via Email: kelsey.brooks@deq.virginia.gov

Kelsey Brooks
MS4 Stormwater Specialist
Department of Environmental Quality
629 E Main St, Richmond, VA 23219

RE: City of Alexandria Response to Calculation Table in DEQ Approval Letter: MS4 VAR040057 Chesapeake Bay TMDL 5% Action Plan

Ms. Brooks:

The City received an electronic letter regarding the "Virginia Pollutant Discharge Elimination System (VPDES) MS4 Permit VAR040057, City of Alexandria, Chesapeake Bay TMDL Action Plan Approval" dated January 12, 2016 and signed by Allan Brockenbrough II, P.E. This letter provided approval of the City's "Chesapeake Bay TMDL Action Plan for 5% Compliance."

We revisited the calculations related to the grandfathered projects and realized that the required pollutant reductions needed to be updated based on each project situation. The updated grandfathered calculations are attached. As a result, values for the "Percentage of L2 Reduction Achieved" also changed (see table below). This table follows the format and calculation methods that you previously provided.

Please keep in mind that the City's requirement for projects to meet the Water Quality Volume Default (1/2" treatment over the site's entire impervious surface) is a more stringent requirement beyond the application of the average land cover condition. Because of this, grandfathered projects achieved more reductions than would be expected if only the average land cover condition were applied.

Summary - Annual Reduction of Pollutants of Concern (lb/yr)

Pollutant of Concern	Total Reductions from BMPs	Special Condition 6 Req'd Reductions - Table 3b	Total Req'd Reductions - All Cycles	Special Condition 7 New Sources Reductions	Special Condition 8 Grandfathered Reductions	BMP Removal to Meet L2	Percent of L2 Achieved
Total Nitrogen	3,383.58	379.85	7,597.03	1.63	72.79	3,309.16	43.56%
Total Phosphorus	421.50	50.22	1,004.40	0.29	-12.61	433.81	43.19%
Total Suspended Solids	340,475.58	43,096.83	861,936.64	238.92	-19,327.02	359,563.68	41.72%

As noted in our January 8, 2016 response letter, the City will provide annual compliance reporting on the implementation of strategies to meet the City's Bay TMDL targets per the requirements of the MS4 general permit and DEQ's Guidance.

I agree that the best way to proceed is with a revised approval letter with an updated calculation table. Please feel free to contact Joni Calmbacher at joni.calmbacher@alexandriava.gov or 703-746-4174 should you have any additional questions.

Sincerely,



Jesse E. Maines, MPA, CPESC
Watershed Management Planner
Transportation and Environmental Services
Stormwater & Sanitary Infrastructure Division

Cc: William J. Skrabak, Deputy Director, T&ES Infrastructure and Environment
Lalit K. Sharma, PE, Division Chief, T&ES, Stormwater & Sanitary Infrastructure Division
Brian Rahal, PE, T&ES, S&SI, Stormwater Section Lead

Attachment: Updated Attachment 4b – Grandfathered Projects – Loads, BMP Reductions, and Net Loads

Grandfathered Projects

UPDATED Attachment 4B: Grandfathered Projects - Loads, BMP Reductions, and Net Loads

Project	Project ID	Pre-Site Total Area (ac)	Pre-Site Impervious (ac)	Pre-Site Loading TP Rate (lb/ac/yr)	Post Site Total Area (ac)	Post Site Impervious (ac)	Post Site TP Loading Rate (lb/ac/yr)	Existing % Impervious	Proposed % Impervious	Situation	TP Load to Offset [lb/yr]*	TN Load to Offset [lb/yr]*	TSS Load to Offset [lb/yr]*	TP Reduced by BMPs (lb/yr)	TN Reduced by BMPs (lb/yr)	TSS Reduced by BMPs (lb/yr)
Partial Landbay I & Partial Landbay H Multi-Family	2011-0021	1.607	1.347	1.83	1.607	1.347	1.83	84%	84%	SITUATION 3	0.29	2.03	138	0.64	2.80	478.49
Lynn House - Proposed Addition	2003-0026	3.52	1.2	0.81	3.52	1.32	0.88	34%	38%	SITUATION 1	0.25	1.70	116	0.67	3.14	724.68
Victory Center - Phase 1	2004-0037	16.00	13.71	1.87	16	12.52	1.72	86%	78%	SITUATION 3	0.55	3.82	260	1.54	6.78	1,811.60
5325 Polk Avenue	2005-0012	2.38	0.15	0.24	2.38	0.77	0.78	6%	32%	SITUATION 1	1.28	8.82	600	0.22	0.98	260.99
Lindsay Lexus of Alexandria	2006-0006	1.63	1.52	2.03	1.63	1.31	1.76	93%	80%	SITUATION 3	-0.10	-0.69	-47	1.20	5.26	999.43
Woodmont Park Apartments	2007-0003	17.69	8.06	1.05	17.69	9.15	1.18	46%	52%	SITUATION 3	3.89	26.86	1,827	6.21	27.26	5,316.81
VEPCO - North Alexandria Electrical Substation	2007-0009	1.63	0.4	0.62	1.63	0.64	0.92	25%	39%	SITUATION 1	0.49	3.40	231	0.14	0.61	163.99
Eisenhower East Small Area Plan (E.E.S.A.P.) - Block 20	2007-0017	2.81	1.96	1.55	2.81	1.81	1.44	70%	64%	SITUATION 3	0.13	0.87	59	0.83	3.80	517.41
Eisenhower East Small Area Plan (E.E.S.A.P.) - Block 19	2009-0004	2.85	0	0.11	2.85	1.53	1.22	0%	54%	SITUATION 2	2.21	15.25	1,037			
Hoffman Properties - Blocks 11 & 12	2009-0004	4.27	3.79	1.94	4.27	3.82	1.95	89%	89%	SITUATION 3	0.89	6.13	417	5.09	22.87	3,147.72
Victory Center - Master Plan	2010-0011	16.00	13.71	1.87	16	11.82	1.63	86%	74%	SITUATION 3	-0.88	-6.09	-414	4.12	18.08	4,829.86
Potomac Yard Park (Pond P-2 Enlargement)	2010-0012	31.68	13.31	0.98	31.68	27.7	1.91	42%	87%	SITUATION 3	30.19	208.31	14,165	27.21	83.43	17,019.92
The Delaney	2011-0007	2.33	2.24	2.09	2.33	1.7051	1.62	96%	73%	SITUATION 3	-0.61	-4.22	-287	1.18	5.06	929.22
Landmark Gateway - Phase 2	2013-0005	6.32	5.99	2.06	6.32	4.6	1.61	95%	73%	SITUATION 3	-1.55	-10.70	-728	0.60	2.64	500.87
										Totals	**37.0**	**255.5**	**17,374**	**49.6**	**182.7**	**36,701**

Grandfathered Net Loads	**-12.6**	**72.8**	**-19,327.0**

***Negative values indicate a pollutant credit**

Phase 2: DEQ Correspondence and Action Plan Approval

Joni Calmbacher

From: Joni Calmbacher
Sent: Friday, October 18, 2019 6:24 PM
To: 'Tuthill, Anna'
Cc: Jesse Maines
Subject: City of Alexandria Phase 2 Chesapeake Bay Action Plan
Attachments: Alexandria Phase 2 ChesBay AP 2019.09.24.pdf

Anna,

Please find the City of Alexandria's Phase 2 Chesapeake Bay TMDL Action Plan attached. Should you have any questions or comments, please reach out to Jesse (contact information is below).

Jesse Maines, MPA, PMP
Jesse.Maines@alexandriava.gov
Division Chief
T&ES, Stormwater Management
703.746.4643 (direct)
571.414.8237 (mobile)

Thank you,
Joni

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

1111 E. Main Street, Suite 1400, Richmond, Virginia 23219
P.O. Box 1105, Richmond, Virginia 23218
(800) 592-5482 FAX (804) 698-4178
www.deq.virginia.gov

Matthew J. Strickler
Secretary of Natural and Historic Resources

David K. Paylor
Director
(804) 698-4000

July 12, 2021

Mark Jinks
City of Alexandria
301 King St., Rm3500
Alexandria, VA 22314

Re: Review of VAR040057 Municipal Separate Storm Sewer System (MS4) Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan for Achieving 40% Reduction Requirements

Transmitted electronically: mark.jinks@alexandriava.gov

Dear Mr. Jinks:

The Department of Environmental Quality (DEQ) has completed the review of the Chesapeake Bay TMDL action plan submitted in accordance with 9VAC25-890-40 Part II.A.11 of the MS4 General Permit. DEQ has no additional questions at this time.

Please note that permittees utilizing street cleaning as part of their Chesapeake Bay TMDL action plan should be aware of new pollution reduction calculation requirements that will take effect after June 30, 2022 in accordance with Guidance Memo No, GM-20-2003 (Appendix V.G).

Also, note that any modifications to the Chesapeake Bay TMDL Action Plan shall be summarized in your annual report in accordance with Part I.C.4 of the MS4 General Permit.

If you have any questions please contact me at Jeffrey.selengut@deq.virginia.gov or (804) 698-4265.

Sincerely,

Jeffrey Selengut
MS4 Permit Writer

Cc: Derick Winn, Central Office
Anna Tuthill, Northern Regional Office

Phase 3: DEQ Correspondence and Action Plan Approval (Forthcoming)

Transportation and Environmental Services
Stormwater Management Division
2900-B Business Center Drive
Alexandria, VA 22314

www.alexandriava.gov

Phone: 703-746-6499
Fax: 703-519-8354

November 1, 2024

Ms. Amy Hagerdon
MS4 Coordinator, NRO/Water Program
Virginia Department of Environmental Quality
13901 Crown Court
Woodbridge VA 22193
Electronically: amy.hagerdon@deq.virginia.gov

RE: Chesapeake Bay TMDL Phase 3 Action Plan

Dear Ms. Hagerdon,

The City of Alexandria is pleased to submit the *Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan* in accordance with the City's Municipal Separate Storm Sewer System (MS4) General Permit. The Action Plan is publicly available on the City's Chesapeake Bay webpage at www.alexandriava.gov/stormwater-management/chesapeake-bay.

Per the requirements of the MS4 General Permit, the City provided public notice from August 29 to September 16, 2024, and incorporated feedback into the Action Plan. The City advertised for public notice in the August 29 – September 4, 2024, edition of the Alexandria Gazette Packet. Staff presented the Action Plan to the Environmental Policy Commission on September 16, 2024, and to the Mayor and City Council during the October 22, 2024, Legislative session where it received unanimous approval for submission.

Please contact me or Jesse Maines at jesse.maines@alexandriava.gov or 703.746.4643 with any questions.

Sincerely,



Jessica E. B. Lassetter, MNR
Senior Environmental Specialist
City of Alexandria, Virginia, T&ES Stormwater Management
Office: 703.746.4127 | Cell: 703.915.5695

Attachment: Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan

Appendix E: Phase 3 Action Plan Public Notice and City Council Submission Approval

From: Alexandria eNews
To: Jessica Lassetter
Subject: City Invites Public Comment on Chesapeake Bay Action Plan for Stormwater Pollution Reduction Targets
Date: Thursday, August 22, 2024 1:41:34 PM

The City of Alexandria invites the public to provide comments on the Draft Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan (Bay Action Plan). The Bay Action Plan contains strategies for the City to meet stormwater pollution reduction targets to help clean up the Chesapeake Bay.

Bay cleanup targets are mandated through the City's Municipal Separate Storm Sewer System (MS4) General Permit, which regulates discharges of stormwater from the City's storm sewer system. The General Permit requires the development and implementation of a Bay Action Plan which includes strategies to reduce pollution entering the Bay from stormwater runoff. The General Permit is issued in five-year cycles by the Virginia Department of Environmental Quality (VDEQ).

The current General Permit requires the development and implementation of a Phase 3 Chesapeake Bay TMDL Action Plan to meet 100 percent of the pollution reduction targets on or before June 31, 2028.

Beginning Thursday, August 29, public comments can be made via email to MS4ProgramPlan@alexandriava.gov or online using the form available on the City's Chesapeake Bay webpage.

Comments may also be dropped off or mailed to:

Transportation and Environmental Services
Stormwater Management Division
Attn: Chesapeake Bay TMDL Action Plan
2900-B Business Center Drive
Alexandria, VA, 22314.

The deadline for public comment is September 16, 2024.

Once reviewed, the Phase 3 Bay Action Plan will be finalized and posted to the City's Chesapeake Bay webpage by November 1, 2024.

To request reasonable disability accommodation, contact Jessica.lassetter@alexandriava.gov or call 703.746.6499, Virginia Relay 711

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- For assistance, please email enews@alexandriava.gov







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City of Alexandria
Public Notice

City Invites Public Comment on the Phase 3 Chesapeake Bay TMDL (Total Maximum Daily Load) Action Plan

The City's Municipal Separate Storm Sewer System (MS4) General Permit regulates discharges of stormwater from the City's system and is issued by the Virginia Department of Environmental Quality (VDEQ). The permit requires the development and implementation of a Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan to reach pollution reduction targets to help clean up the Bay.

While the Phase 2 Action Plan focused on strategies to meet 40% of the nitrogen and phosphorus pollution reduction targets by June 30, 2024, the Phase 3 Action Plan includes additional strategies to meet 100% of the target dates no later than June 30, 2028.

The Draft Phase 3 Chesapeake Bay TMDL Action Plan is available to view at alexandriava.gov/go/2873.

The public is invited to comment in writing on the Draft Phase 3 Chesapeake Bay TMDL Action Plan via email to MS4ProgramPlan@alexandriava.gov or online at alexandriava.gov/go/2873. Comments may also be dropped off or mailed to:

Transportation and Environmental Services
Stormwater Management Division
Attn: Chesapeake Bay TMDL Action Plan
2900-B Business Center Drive
Alexandria, VA 22314

The deadline for public comment is September 16, 2024. Comments submitted by mail must be postmarked on or before this deadline.

Following receipt and incorporation of public comment, the Phase 3 Chesapeake Bay TMDL Action Plan will be finalized and posted to the City website by November 1, 2024.

For more information about this and other TMDLs, visit the City's Total Maximum Daily Loads webpage at alexandriava.gov/Stormwater





Tons of Trucks

The popular City of Alexandria event "Tons of Trucks" returns on Saturday, Sept. 21, from 10 a.m. to 2 p.m. at Chinquapin Park, 3210 King St. This event will occur rain or shine.

Attendees of all ages are invited to explore and get behind the wheel of their favorite City vehicles, meet the staff who help build, maintain, serve, and protect the community, and learn about the vehicles they use. Other activities include an art project with the City's Mobile Art Lab, giveaways, photo opportunities, and food truck vendors.

Visitors are invited to take free DASH Bus transportation or use Capital Bikeshare to get to the event. Onsite valet services will be provided to attendees looking to park their bikes, scooters, and strollers.

Visit alexandriava.gov/GOAlex for more information on alternative transit options.

Driving to the event? Parking is available at Alexandria City High School, 3330 King St.; the First Baptist Church, 2932 King St.; and Oakland Baptist Church, 3408 King St.

New this year and in celebration of the City's 275th anniversary, admission is now FREE. The City will also provide a sensory-friendly hour for the first 60 minutes of the event, 10 a.m.-11 a.m.

For additional information, visit alexandriava.gov/rpca/tons-of-trucks-20

Bulletin Board

From Page 3

Mentors Wanted. Two creative programs that help transform the lives of Alexandria's preteens are seeking volunteer mentors. SOHO, which stands for "Space of Her Own," and "Space of His Own," serves vulnerable fifth graders in Alexandria. The programs pair men and women with youth in need of positive adult role models, to help support and guide youth in making healthy choices and succeeding in school and in life. Visit www.spaceofherown.org and www.spaceofhisown.org. For more information on how to become a SOHO mentor, contact Sarah Maroney at sarah.maroney@alexandriava.gov or phone at 703-746-4687.

Farmer's Market Volunteers Needed. To volunteer for the Farmer's Markets, email Brian Morreale, brianmorreale@gmail.com

SUPPORT GROUPS

Postpartum Support Virginia sponsors a free, bi-monthly support group for women suffering depression and/or anxiety during pregnancy or in the first year following

See Bulletin, Page 11

ALEXANDRIA
Environmental Policy Commission

AGENDA

EPC REGULAR MEETING

City Hall, Conference Room 2000

September 16, 2024, 7:30 – 9:30 PM

7:30 – 7:35 Welcome & Introductions

7:35 – 7:45 Public Comment

7:45- 8:05 CB TMDL Action Plan, Stormwater presentation

8:05-8:25 OCA Community Engagement/Comms update presentation – Yulia Fernandez Marcos

8:25-9:15 FY25 Legislative Priority Discussion

- Review - League of Conservation Voters 2025 Leg Agenda
- Review - Last year's EPC Leg Priorities
- Del Alfonso Lopez conversation
- TBD – Alx City Lobbyist perspective

9:15-9:30 Administrative Items

- **Approval** of Meeting Minutes for June 17, 2024
- **Reports** from Commissioners/Staff
- **EAP SteerCo Subgroup** update
- **EPC Chair's** update on meetings with parallel orgs across NoVa and relevant Alx Commissions/Boards
- **Approval of** EPC FY25 Calendar

9:30 Adjourn

City of Alexandria

301 King St., Room 2400
Alexandria, VA 22314

Action Docket - Final

Tuesday, October 22, 2024

7:00 PM

Council Chamber

City Council Legislative Meeting

The October 22, 2024 Legislative Meeting of the Alexandria City Council is being held in the Council Chamber (301 King Street, Alexandria, Virginia, 22314) and electronically. Members of the City Council and staff are participating either in-person or from a remote location through a video conference call on Zoom
webinar. The meeting can be accessed by government channel 70, streaming on the City's website, and can be accessed via Zoom by the following link:

Webinar ID: 992 8230 9630
Webinar Passcode: 230062
Dial-in number: 301-715-8592
Registration :
https://zoom.us/webinar/register/WN_3r5rSHffTDKWSDayd55Wwg

If you use the Zoom webinar application, please be sure you have updated the application to the latest version for the best results. If you are unable to access the Zoom webinar, please use the Dial-In number to access the meeting.

*****PLEASE LOG-IN EARLY IF POSSIBLE*****

Links:
Meeting Agenda and Live Webcast
The meeting will be webcast live and video and audio recordings will be available a few days after the meeting.

Zoom Registration Form
If you wish to use Zoom to watch the meeting or to address Council, you must register first.

Submission of written statements is encouraged. Please verify the meeting date on the City's website. If you have prepared statement or written comments for the record you may email it to the City Clerk at CouncilComment@alexandriava.gov.

****
Individuals requiring translation services should contact the City Clerk and Clerk of Council at gloria.sitton@alexandriava.gov or at 703.746.4550. We request that you provide a 48-hour notice so that the proper arrangements may be made. Please specify the language for translation when you make the request.

Las personas que requieran servicios de traducción deben comunicarse con

el Secretario de la Ciudad y el Secretario del Consejo en gloria.sitton@alexandriava.gov o al 703.746.4550. Le solicitamos que proporcione un aviso de 48 horas para que se puedan hacer los arreglos necesarios. Por favor, especifique el idioma de traducción cuando realice la solicitud.

****

I. OPENING

1. Calling the Roll.

Mayor Wilson called the meeting to order and City Clerk called the roll. All members of City Council were present.

2. Approval of Electronic Participation Resolution (if needed).

3. Closed Session (if needed).

4. Moment of Silence and Pledge of Allegiance

City Council observed a moment of silence and recited the Pledge of Allegiance.

II. PROCLAMATIONS AND RECOGNITIONS

5. 25-2479 Presentation of a Proclamation Recognizing Red Ribbon Week in the City of Alexandria.

City Council endorsed the proclamation.

6. 25-2509 Presentation of a Proclamation Recognizing October as Cybersecurity Awareness Month.

City Council endorsed the proclamation.

III. Oral Reports from Members of Council on Boards, Commissions, and Committees.

25-2537

- Council of Governments (COG) Transportation Planning Board (TPB) (Councilman Aguirre)
- Commission on Aging (Councilman Aguirre)
- Library Board (Councilman Aguirre)
- Alexandria Campaign on Adolescent Pregnancy (ACAP)(Councilmember Bagley and Councilman Aguirre)
- Virginia Railway Express (VRE) (Councilmember Bagley)

City Council gave the reports.

IV. Oral Report from the City Manager.

7. 25-2475 Fall 2024 City Council Priorities Initiatives Updates

City Council received updates on the five priorities.

V. ACTION DOCKET

Regular Consent Calendar (8-9)

8. 25-2465 Consideration of a Grant Application to the Supreme Court of Virginia (Specialty Dockets) on behalf of the Alexandria Recovery Court

9. 25-2466 Consideration of a Grant Application to the Substance Abuse and Mental Health Services Administration on behalf of the Alexandria Recovery Court

City Council approved the consent calendar. The approval was as follows:

8. City Council: (1) retroactively approved a grant application up to $75,000 for the Alexandria Recovery Court ("ARC"); and (2) authorized the City Manager to execute all necessary documents that may be required.

9. City Council: (1) approved a grant application up to$126,225 for program supplies, client funds
(transportation, medical services, housing ,etc.), and drug testing at the Alexandria Recovery Court:; and (2) authorized the City Manger to execute all necessary documents that may be required.

VI. ACTION MATTERS

10. 25-2460 Consideration of a Request to Approve the Phase 3 Chesapeake Bay Total Maximum Daily Load Action Plan for 100% Compliance for Submittal to Virginia Department of Environmental Quality.

10. City Council: (1) approved the submission of the Phase 3 Chesapeake Bay Total Maximum Daily Load 100% Action Plan; and (2) authorized the City Manager to execute the necessary documents that may be required.

VII. ORDINANCES AND RESOLUTIONS

11. 25-2513 Consideration of a Resolution to Support a Grant Application to the Virginia Community Flood Preparedness Fund Program to implement the Valley Drive Storm Drain Improvements Flood Action Alexandria capital project. [ROLL-CALL VOTE]

City Council adopted: (1) the resolution to support a Round 5 Virginia Community Flood Preparedness Fund (CFPF) grant application; and (2) authorized the City Manager to

submit this resolution and enter into any agreements that may be required to receive these funds should the requested be approved. (RES. NO. 3251)

VIII. OTHER

12. Oral Reports and Oral Presentations by Members of City Council.

1. Councilman Chapman reported that the Deputy Mayor from Caen, Frances visited Alexandria to meet with officials and attend the event honor General Lafayette's visit to City 250 years ago.

2. Councilman Aguirre reported that Trevon Jenifer, Paraolympic medalist visited the Dunbar Alexandria Boys and Girls Club recently.

3. Councilman Aguirre reported that visited a kindergarten class at Jefferson-Houston Elementary School and read a book during Hispanic Heritage Month.

4. Councilman Aguirre reported that Mayor Wilson participated in a panel at George Mason University as part of initiative looking regional elected officials.

5. Councilman Aguirre reported that the attended a celebration at Patrick Henry Elementary School recognizing Hispanic Heritage Month. He also attended an event at Beatley Library honoring Hispanic Heritage Month.

6. Councilman Aguirre reported that he attended an event at the Charles Houston Recreation Center honoring Alexandria native Lucky Elliott.

7. Councilman Aguirre reported that attended book debut event featuring Supreme Court Justice Katanji Brown Jackson.

8. Councilman Aguirre reported that he attended the Annual Conference for Virginia Municipal League in Virginia Beach.

9. Councilman Aguirre reported that at the WMATA headquarters hosted the Board for MWAA at the Metro integrated command center.

10. Councilman Aguirre reported that he participated on a panel at American University discussing the upcoming election and the atmosphere around the current election.

11. Councilman Aguirre reported that he attended the Community Foundations Rise the Region Gala last week.

12. Councilman Aguirre reported that he and Vice Mayor Jackson attended the Spooky Mad Science fest at Patrick Henry Elementary School, focusing on STEM education.

13. Vice Mayor Jackson reported that MakerFaire was held on Sunday at Alexandria City High School.

14. Vice Mayor Jackson reported that the Torpedo Factory Arts Center is holding the CyberArts exhibit focusing on cyber security through arts.

15. Vice Mayor Jackson reported that she and her colleagues attended a reception

honoring Lafayette and there will be a historical maker placed at 301 South St. Asap.

16. Vice Mayor Jackson reported that the Carpenter's Shelter held its 20th Anniversary chili off at the Birchmere.

17. Vice Mayor Jackson reported that Paws in the Park was held at Oronoco Bay Park to raise money and awareness for the work of the Alexandria Welfare League.

18. Vice Mayor Jackson recognized those who were honored at the reception held by the Chamber of Commerce at their recent Best in Business Awards ceremony.

19. Vice Mayor Jackson also reported the Beautification Commission held their annual Beautification Awards ceremony at the Garden Alexandria.

20. Councilman Chapman reported that he attended the African Impact Awards held in New Carrollton, MD, with the 5K Run taking place in the City.

13. 25-2492 Consideration of City Council Schedule.

City Council: (1) received the updated City Council Look Ahead Schedule which includes: the Joint City Council/School Board CIP Work Session will be held Monday, November 25 at 6:00 p.m. at the ACPS headquarters, 1340 Braddock Place, School Board Room; and (2) approved the City Council Calendar from October 2024 through July 2025.

IX. ADJOURN.

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The meeting was as adjourned at 8:26 p.m.

******

NOTE: The action docket is a summary of Council's meeting deliberations prepared largely for staff follow up. Formal minutes of the meeting, when approved by Council become the official record of the meeting of Council decisions made at the meeting.

City of Alexandria, Virginia

MEMORANDUM

DATE: OCTOBER 16, 2024

TO: THE HONORABLE MAYOR AND MEMBERS OF CITY COUNCIL

THROUGH: JAMES F. PARAJON, CITY MANAGER /s/

FROM: ADRIANA CASTAÑEDA, DIRECTOR, TRANSPORTATION AND ENVIRONMENTAL SERVICES

DOCKET TITLE:
Consideration of a Request to Approve the Phase 3 Chesapeake Bay Total Maximum Daily Load Action Plan for 100% Compliance for Submittal to Virginia Department of Environmental Quality.

ISSUE: The City of Alexandria is required to submit the Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) 100% Action Plan to the Virginia Department of Environmental Quality (VDEQ) by November 1, 2024, to comply with the City's Municipal Separate Storm Sewer System (MS4) general permit.

RECOMMENDATION: That City Council:

1. Approve the submission of the Phase 3 Chesapeake Bay TMDL 100% Action Plan; and

2. Authorize the City Manager to execute the necessary documents that may be required.

BACKGROUND: In an effort to clean up the Chesapeake Bay, localities such as the City of Alexandria have been given targets for reducing nitrogen, phosphorus, and sediment. These goals are enforced through the City's General Virginia Pollution Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4) through the implementation of Water Quality Best Management Practices (BMPs) within three, five-year cycles beginning with the 2013 - 2018 MS4 general permit. The 2013 - 2018 MS4 general permit required the City to meet 5% of the targeted reduction. The subsequent 2018 - 2023 MS4 general permit required an additional 35% be met of the targets for a total 40%. Given the increasing requirements in these successive permits, the City adopted an internal policy to exceed the early requirements to be ahead of the mandatory targets for each cycle, including this last permit cycle. As a result, the City achieved the 40% reduction requirements in the 2018 - 2023 MS4 general permit well ahead of

schedule, and met over 70% of the reduction targets by the end of the 2018 - 2023 MS4 general permit cycle. In September 2019, City Council approved submission of the City's Phase 2 Chesapeake Bay TMDL 40% Action Plan.

The City's current 2023 - 2028 MS4 general permit requires the City to develop and implement the "Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan for the remaining 60% Compliance" to meet 100% of the reduction targets by June 30, 2028. This Phase 3 Action Plan must be submitted to VDEQ by November 1, 2024.

DISCUSSION: Given the City's more aggressive internal goals to outpace the targets in the MS4 general permit, the City has already exceeded 100% of the required phosphorus reduction targets and reached 80% of the nitrogen reduction targets. The Phase 3 Action Plan considers the completion of the Landmark Mall Redevelopment, the North Potomac Yard Redevelopment, and the typical annual redevelopment that would be completed prior to June 30, 2028, to meet the Phase 3 deadline. By taking into consideration these redevelopment projects, only 8% of the nitrogen target remains to be achieved using the specific strategies discussed below. This will include implementation of BMPs and the application of pollution reduction credits through bi-lateral trading for any remaining gap. Sediment reduction targets were removed from the 2023 - 2028 MS4 general permit VDEQ; therefore, is not included as part of the Phase 3 Chesapeake Bay TMDL Action Plan. However, the City has also surpassed 100% of the sediment reduction target with current reductions.

The Phase 3 Chesapeake Bay TMDL Action Plan is cumulative and builds on the 5% reductions required in Phase 1 Action Plan and the 35% reductions required in Phase 2 Action Plan to require 100% of the target reductions by June 30, 2028. The Phase 3 Chesapeake Bay TMDL Action Plan identifies strategies to comply with 100% of the pollution reduction targets for nitrogen and phosphorus in the MS4 general permit reductions. Similar to Phase 1 and Phase 2 Action Plans, the Phase 3 Action Plan includes potential strategies to take advantage of changes in technologies, site conditions, and emerging opportunities that form a comprehensive, "all of the above" approach.

The City's primary strategies to meet the Phase 3 requirements include:

- **Redevelopment:** Projects must implement stormwater BMPs to meet the state requirements, as incorporated into the City's Zoning Ordinance, as well as the City's more stringent stormwater quality requirements in the Zoning Ordinance. Because of these requirements, the City has made great strides in exceeding the target reductions for each phase. While all redevelopment counts towards the required target reductions, two noteworthy redevelopment projects scheduled to be completed for Phase 3 will have a significant impact in these reductions, the projects include the Landmark Mall Redevelopment and North Potomac Yard Redevelopment.

- **BMP Retrofits:** Identification of opportunities to install Green Infrastructure BMPs on City property and within the City Right-of-Way, and potential regional facilities that treat multiple properties.
- **Urban Stream Restoration:** In December 2023 the Lucky Run Stream Restoration project reached substantial completion. The pollution reduction credits achieved through this project are included in the Phase 3 Chesapeake Bay TMDL Action Plan which covers FY24 - FY28. This project helps to reduce nitrogen and phosphorous from entering the Chesapeake Bay, provides bank stabilization, protects an exposed sanitary sewer pipe, and includes native plantings to help further stabilize the area and create habitat.

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- **Bi-Lateral Trading:** The City and Alexandria Renew Enterprises (Alex Renew) entered into an agreement (the "Outfall Transfer Agreement") which state that any annual reductions in nitrogen, phosphorus, and sediment achieved with the River Renew project above annual reductions needed by Alex Renew may be used by the City towards Chesapeake Bay TMDL targets in the City's MS4 general permit. Integrating these two water quality efforts will create efficiencies for capital investments and facilitate the use of sustainable and comprehensive solutions to minimize the overall additive cost to the City ratepayers that bear sanitary sewer costs to implement the RiverRenew project and pay the Stormwater Utility fee.

Per the MS4 2023-2028 General Permit (Part II, Section 13), the City is required to provide an opportunity for public comment on the additional BMPs proposed in Phase 3. The City complied with this permit requirement by advertising the draft Phase 3 Chesapeake Bay TMDL Action Plan for 100% Compliance for public comment from August 29, 2024, to September 16, 2024, and responses submitted during that period were considered and incorporated into the plan as applicable.

FISCAL IMPACT: As noted above, the City has surpassed the cumulative Phase 3 target reduction goals for phosphorus and about 8% of the goal remaining for nitrogen. Prior year funding and funding in the currently approved 10 Year (FY 2025 to FY 2034) Capital Improvement (CIP) derived from the City's Stormwater Utility Fee revenues as well as potential State grant revenues will allow the City to achieve the remaining reductions by the end of Phase 3 (June 30, 2028). No additional funding beyond what is already in the City's 10 CIP is contemplated at present to meet the Action Plan goals and pollution reduction compliance targets in the City's MS4 general Permit.

ATTACHMENTS:

1. Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan for 100% Compliance
2. Public Comment and Response Table
3. Presentation

STAFF:

Emily A. Baker, P.E., Deputy City Manager
Alicia Wright, Acting Assistant Director, Administrative Services, T&ES
William J. Skrabak, Deputy Director, Environmental Services, T&ES
Jesse E. Maines, Division Chief, Stormwater Management, T&ES

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Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

www.deq.virginia.gov

Stefanie K. Taillon
Acting Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus
Director

February 14, 2025

Ms. Jessica Lassetter
Senior Environmental Specialist
City of Alexandria
2900-B Business Center Drive
Alexandria, VA 22314
Transmitted electronically via Jessica.lassetter@alexandriava.gov

RE: Final Third Phase Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan Review, City of Alexandria, VAR040057

Dear Ms. Lassetter:

The Virginia Department of Environmental Quality (DEQ) has performed a review of the City of Alexandria's final third phase Chesapeake Bay TMDL Action Plan (TMDL Action Plan), dated November 2024. This review evaluated the TMDL Action Plan for completeness, technical accuracy, and whether any further information was necessary to demonstrate that the 100% required reductions will be achieved by October 31, 2028, as specified in Part II.A. of the General Virginia Pollutant Discharge Elimination System Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4 General Permit).

Based on this review, the TMDL Action Plan is not complete and additional information is required as outlined below. Please note that the review of the TMDL Action Plan is not meant to be a comprehensive review of the MS4 program or overall implementation of the Chesapeake Bay TMDL Special Condition in the MS4 General Permit.

Please review the following observation(s), in which DEQ either identified deficiencies in the TMDL Action Plan's content or the TMDL Action Plan did not include an item required by the MS4 General Permit:

1. Observation: The TMDL Action Plan described a previously implemented project, the Four Mile Run stream restoration, that was completed in July 2016, in Section 10.6 (page 27-28) and Appendix C (PDF page 93-99). As noted on page 27 of the TMDL Action Plan, "The project involved a tidal wetland restoration that the City assessed using Protocol 3 – Credit for Floodplain Reconnection Volume," and further noted (on page 28) that, "although the [Technical Memorandum] references an older version of the expert panel report, staff has reviewed the memo against the most recent expert panel report and deemed that the approach remains valid, and the calculated credits are consistent with the latest expert panel recommendations." The Technical Memorandum dated September 11, 2014, and referenced above, beginning on PDF page 93 of the TMDL Action Plan confirmed that, "the proposed wetland is a tidally influenced

wetland…". However, DEQ noted that the *Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects*, revised September 8, 2014, specifically noted on page 31 on the expert panel report that, "These protocols do not apply to sections of streams that are tidally influenced, which will be included in either the Shoreline Erosion Control Expert Panel or a pending future Expert Panel for tidal wetlands." Please confirm whether the calculations accounted for this qualification in the Expert Panel report and if any amendments to the calculations for this project are necessary.

DEQ requests that the TMDL Action Plan be amended addressing the observations noted above and resubmitted via email to Amy Hagerdon (amy.hagerdon@deq.virginia.gov) or to David.a.Taylor@deq.virginia.gov **no later than Tuesday, March 18, 2025.**

Thank you for your continued efforts in implementing the MS4 General Permit and the TMDL Action Plan. If we can be of any assistance, please contact me using the information below, or contact your Regional Office MS4 Coordinator.

Sincerely,



David A. Taylor, State MS4 Compliance Coordinator
Virginia Department of Environmental Quality
(757) 705-8293
David.a.taylor@deq.virginia.gov
DEQ Central Office, Division of Water Permitting
1111 E. Main Street, Suite 1400
Richmond, VA 23219
(804) 698-4000

c: ECM
Amy Hagerdon, Regional MS4 Coordinator, DEQ Northern Regional Office

Transportation and Environmental Services
Stormwater Management Division
2900-B Business Center Drive
Alexandria, VA 22314

www.alexandriava.gov

Phone: 703-746-6499
Fax: 703-519-8354

March 18, 2025

Mr. David A. Taylor, State MS4 Compliance Coordinator
Virginia Department of Environmental Quality
DEQ Central Office, Division of Water Permitting
1111 E. Main Street, Suite 1400
Richmond, VA 23219
Electronically: David.a.taylor@deq.virginia.gov

RE: Response to DEQ Comments on the Final Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan

Dear Mr. Taylor,

Thank you for reviewing the City's *Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan* submitted November 1, 2024. The City received Virginia Department of Environmental Quality's (DEQ) observations via email February 14, 2025 (attached). In response to DEQ's observations, the City updated the *Phase 3 Chesapeake Bay TMDL Action Plan* to reflect re-calculated reductions associated with the Four Mile Run project. The updated *Phase 3 Chesapeake Bay TMDL Action Plan* is available on the City's Chesapeake Bay webpage at www.alexandriava.gov/stormwater-management/chesapeake-bay.

The Memorandum, *Update to the Phase 3 Chesapeake Bay TMDL Action Plan – Four Mile Run Reductions,* provides details on how the reductions were calculated (attached).

Further, after reviewing the *Phase 3 Chesapeake Bay TMDL Action Plan*, the City made adjustments to Anticipated Redevelopment Credits (see Memorandum, *Update to the Phase 3 Chesapeake Bay TMDL Action Plan – Anticipated Redevelopment Credits*).

All updates made to the *Phase 3 Chesapeake Bay TMDL Action Plan* will be included in the City's MS4 Annual Report for PY2.

Please contact me or Jesse Maines at jesse.maines@alexandriava.gov or 703.746.4643 with any questions.

Sincerely,

Jessica E. B. Lassetter, ENV-SP
Senior Environmental Specialist

Office: 703.746.4127 | Cell: 703.915.5695

Attachments:

VA DEQ Letter Received February 14, 2025 – RE: Final Third Phase Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan Review, City of Alexandria, VAR040057
Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan, Revised March 18, 2025
Memorandum: Update to the Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan – Four Mile Run Reductions
Memorandum: Update to the Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan – Anticipated Redevelopment Credits

Transportation and Environmental Services
Stormwater Management Division
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March 18, 2025

MEMO: Update to the *Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan – Anticipated Redevelopment Credits*

Section 12 of the *Phase 3 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan* (November 1, 2024) provides the Phase 3 Permit cycle anticipated reductions and final TMDL compliance and sub-section 12.3 provides an overview of the anticipated redevelopment SWM credits. Table 31 provides a summary of the anticipated redevelopment credits through FY2028. This table is incorporated into this Memo as Table 1.

Table 1 – Phase 3 Progress: Anticipated Redevelopment Credits (Original)

Project	TN Removed (lbs/yr)	TP Removed (lbs/yr)
Anticipated Annual Redevelopment through FY28	1,036	320

The values in this table were obtained using the projected reductions from known re-development projects discussed in the Action Plan, the actual FY24 reductions, and estimated annual reductions for FY25 – FY28. However, upon re-evaluation, staff determined that the estimated annual reductions should be scaled down to more adequately align with the anticipated annual credits. Table 2 provides a more accurate projection of the anticipated redevelopment credits. These updated reductions are reflected in the revised *Phase 3 Chesapeake Bay TMDL Action Plan* (March 2025).

Table 2 – Phase 3 Progress: Anticipated Redevelopment Credits (Updated)

Project	TN Removed (lbs/yr)	TP Removed (lbs/yr)
Anticipated Annual Redevelopment through FY28	778	163

City of Alexandria

Municipal Separate Storm Sewer System (MS4) Program Plan

Attachment 2 – Local TMDL Action Plans

City of Alexandria, Virginia

Bacteria
Total Maximum Daily Load (TMDL)
Action Plan

For compliance with 9VAC25-890, General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems, Permit No. VAR040057

June 17, 2015
Revised November 20, 2015
Revised June 30, 2016
Revised April 15, 2020
Revised April 13, 2022
Revised April 24, 2025

Prepared by:

City of Alexandria, Virginia
Department of Transportation and Environmental Services
Stormwater Management Division

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1. Introduction

This action plan was first developed and submitted by the City in 2015 in response to the Special Conditions included in the City of Alexandria's (City) General Virginia Pollutant Discharge Elimination System (VPDES) Municipal Separate Storm Sewer System (MS4) Permit, effective July 1, 2013 (2013 MS4 permit), as well as, the local TMDL Guidance memo dated issued by Virginia Department of Environmental Quality (VDEQ) in 2015. The *Non-Tidal Four Mile Run Action Plan* submitted to VDEQ in 2015 was updated to include all of the current bacteria TMDLs within the City to create a comprehensive *Bacteria TMDL Action Plan*. The 2013 MS4 permit included the requirement for the City to develop action plans to address TMDLs where a wasteload allocation (WLA) has been assigned to the MS4. This action plan was subsequently updated in 2016, 2020, and 2022. This action plan is included as an attachment to the City's *MS4 Program Plan*. This action plan identifies best management practices, measurable goals and milestones, and evaluation measures; assesses all significant sources; and includes a method to assess effectiveness of the plan in reducing the WLA pollutant.

The most recent General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Municipal Separate Storm Sewer Systems (MS4) No. VAR040057 was issued to the City from the Virginia Department of Environmental Quality (VDEQ) effective November 1, 2023 (2023 MS4 permit).

The 2023 MS4 permit contains special conditions for local total maximum daily loads (TMDL) under Part II, TMDL Special Conditions, Section B, Local TMDL Special Condition. This section of the permit requires the City to update any previously approved local TMDL action plans for TMDLs approved by the U.S. Environmental Protection Agency (EPA) prior to July 1, 2018, no later than 18-months after the permit effective date (May 1, 2025).

2. Background

This action plan updates the previously approved local TMDL action plan. The bacteria TMDLs addressed in this action plan are identified in Table 1.

Table 1. City of Alexandria's Approved Bacteria TMDLs

Approved Bacteria TMDLs
Fecal Coliform TMDL Development for Four Mile Run, Virginia (Non-Tidal) • Bacteria – fecal coliform • First listed – 1998 • EPA approval – 5/31/2002 • SWCB approval – 6/17/2004
Bacteria TMDL for the Tidal Four Mile Run Watershed • Bacteria – *E. coli* • First listed – 1996 • EPA approval – 6/14/2010 • SWCB approval – 9/30/2010
Bacteria TMDLs for the Hunting Creek, Cameron Run, and Holmes Run Watersheds • Bacteria – *E. coli* • First listed – 1998, 2006, 2004 (respectively) • EPA approval – 11/10/2010 • SWCB approval – 8/4/2011

VDEQ initially listed the Four Mile Run watershed as impaired on the Commonwealth's *Final 1998 305(b)/303(d) Water Quality Assessment Integrated Report*. Four Mile Run is a direct tributary of the Potomac River and is identified as Virginia River Segment VAN-A12R. The non-tidal portion of Four Mile Run associated with the City starts at the western border with Arlington County and extends to approximately the Mount Vernon Avenue Bridge across Four Mile Run. The *Fecal Coliform TMDL Development for Four Mile Run, Virginia* (NVRC, 2002), addresses a fecal coliform impairment and includes approximately 17.0 square miles of the watershed that was approved by the SWCB on June 17, 2004. According to Section 5.2 of the TMDL document, "there are no WLAs for fecal coliform bacteria in the non-tidal portion of the Four Mile Run watershed." In developing the *Bacteria TMDL Action Plan* to meet the requirements in the 2013 MS4 permit, the City took a proactive approach to protecting local water quality and included the non-tidal portion of Four Mile Run despite a WLA not being assigned to the City.

The impaired tidal portion of Four Mile Run associated with the City starts at approximately the Mount Vernon Avenue Bridge and continues east to the confluence with the Potomac River. The corresponding TMDL document for this section of stream is entitled *Bacteria TMDL for the Tidal Four Mile Run Watershed* (ICPRB, 2010) and was approved by the SWCB on September 30, 2010. The TMDL report provides an aggregate WLA for the City.

Hunting Creek, Cameron Run, and Holmes Run, are all located within the Potomac River basin within HUC PL26. The impaired segment of Homes Run extends from the confluence of Holmes Run and Backlick Run upstream to the mouth of Lake Barcroft in Fairfax County. The impaired segment of Cameron Run extends from approximately Telegraph Road upstream to the confluence of Holmes Run and Backlick Run. The impaired segment of Hunting Creek extends from the confluence with the Potomac River at the state boundary to Telegraph Road. The corresponding TMDL document for these impaired stream sections is entitled *Bacteria TMDLs for the Hunting Creek, Cameron Run, and Holmes Run Watersheds* (ICPRB, 2010) and was

approved by EPA in November 2010. The TMDL report provides an aggregated WLA for the City for each of the three streams.

This action plan identifies best management practices (BMP) and other interim milestone activities that were initially identified during the 2013 – 2018 MS4 permit cycle; and updated during the 2018 – 2023 MS4 permit cycle. The requirements outlined in the 2023 MS4 permit are provided in the text box.

2023 MS4 Permit Requirements

Each local TMDL action plan developed by the permittee shall include the following:

a. The TMDL project name;
b. The EPA approval date of the TMDL;
c. The wasteload allocated to the permittee (individually or in aggregate), and the corresponding percent reduction, if applicable;
d. Identification of the significant sources of the pollutants of concern discharging to the permittee's MS4 that are not covered under a separate VPDES permit. For the purposes of this requirement, a significant source of pollutants of concern means a discharge where the expected pollutant loading is greater than the average pollutant loading for the land use identified in the TMDL;
e. The BMPs designed to reduce the pollutants of concern in accordance with Part II B 5, B 6, B 7, and B 8;
f. Any calculations required in accordance with Part II B 5, B 6, B 7, or B 8;
g. For action plans developed in accordance with Part II B 5, B 6, and B 8, an outreach strategy to enhance the public's education (including employees) on methods to eliminate and reduce discharges of the pollutants; and
h. A schedule of anticipated actions planned for implementation during this permit term.

3. Legal Authorities to Reduce Pollutant of Concern

The City has a number of legal tools available to address the possible discharge of bacteria from municipal facilities, development and redevelopment projects, or private properties.

The MS4 general permit regulates discharges from properties that are owned or operated by the City. The City may use it expressed or implied authorities to regulate private lands with regard to stormwater management and MS4 permit requirements. This action plan addresses possible pollutant sources from private properties as well as municipal properties. The City may utilize its rights as the property owner or lessee to address possible sources of bacteria which may originate from the property.

Article XII of the Alexandria Zoning Ordinance (the Environmental Management Ordinance) contains the requirements for standard plan submission requirements. Standard conditions developed during the plan review and Special Use Permit (SUP) processes are enforceable through the Zoning Ordinance. Development plans and SUPs subject to standard conditions must go before the Planning Commission and City Council for consideration before approval.

Section 5-7-42.1 of the City Code prohibits leaving dog waste in public parks or playgrounds, and Section 5-7-46 allows for levying fines for pet owners that do not pick up after their pets. Pet owners not cleaning up after their pet or disposing of pet waste bags in a storm drain may be subject to other parts of the City code.

For pet owners improperly disposing of pet waste, staff from the Fire Marshall's Office with the Environmental Investigations Unit (EIU) may enforce Chapter 13 of Title 11 of the City Code (Environmental Offenses), which prohibits non-stormwater discharges to the storm sewer system.

4. Planning Framework

a. Principles

The City has established the following overarching principles to guide the approach to meet the goals of this action plan:

- Utilize existing programs and efforts;
- Encourage voluntary, practical, and cost-effective practices;
- Follow an adaptive, iterative approach;
    - Replaces dependency on numerical models and traditional planning by applying a focused "learning-by-doing" approach to decision making;
- Focus on phased implementation over multiple permit cycles; and
- Identify additional funding needs.

b. Action Goals

The City has established the following goals consistent with the principles in developing the action plan:

- Consistent: The action plan is consistent with the assumptions and requirements of the TMDL and conforms to general permit requirements and current *MS4 Program Plan* efforts to reduce pollutants to the maximum extent practicable.
- Flexible: The controls, BMPs, design and methods discussed to reduce the pollutant of concern can be revised based on the observed effectiveness of these measures over multiple permit cycles, stakeholder involvement in the development of an implementation plan, change to a water quality standard, or introduction of new technologies and innovations to address the pollutant.
- Cost Effective: The City's *2023 MS4 Program Plan* incorporates both (1) pet waste and (2) illicit discharges as the top high-priority stormwater issues which both help with reducing bacteria loads to local waterways as well as our MS4 permit requirements.

5. TMDL Development and Load Determination

The following sections provide an overview about the development of the bacteria TMDLs and corresponding WLA for the City.

The Commonwealth's Surface Water Standards with General, Statewide Application, 9VAC25-260-10, designates the following uses for all water bodies: recreational uses, e.g., swimming and boating; the propagation and growth of a balanced, indigenous population of aquatic life, including game fish, which might reasonably be expected to inhabit them; wildlife; and the production of edible and marketable natural resources, e.g., fish and shellfish.

a. Four Mile Run Non-Tidal

The recreation designated use for the non-tidal section of Four Mile Run is currently listed as impaired. The impairment for the non-tidal portion of Four Mile Run was originally listed in Virginia's *Final 1998 305(b)/303(d) Water Quality Assessment Integrated Report* due to exceedances of the state's water quality criteria for fecal coliform. The fecal coliform TMDL was approved by the SWCB on June 17, 2004, and EPA decision rationale dated May 31, 2002. The impairment for the non-tidal segment begins at the headwaters of Four Mile Run just over nine miles upstream of its confluence with the Potomac River and extends to the tidal/non-tidal boundary approximately 1.5 miles upstream of the Potomac River. Although the entire Four Mile Run watershed includes approximately 19.7 square miles of Northern Virginia, only 17.0 square miles were considered for this TMDL Study. The City of Alexandria makes up about 10 percent, 1.7 square miles, of the portion of the watershed included in the study.

The TMDL was developed prior to the issuance of the City's first MS4 general permit. Per Section 5.2.1 of the *Fecal Coliform TMDL (Total Maximum Daily Load) Development for Four Mile Run, Virginia* (NVRC, 2002), since the City was expected to receive an MS4 permit soon after the TMDL was developed, WLAs for the TMDL were developed based on contributions from impervious surfaces in the study area. Per Section 5.2 of the TMDL report, there was no WLA assigned specifically to the City, however, the WLA association for MS4s in the non-tidal section of Four Mile Run MS4s is 2.04E+13 (counts/year). In general, "the Commonwealth intends for the required reductions to be implemented in an iterative process" as evidenced by the types of strategies discussed in the *Implementation Plan for Fecal Coliform TMDL (Total Maximum Daily Load) for Four Mile Run, Virginia* (NVRC, 2004).

b. Four Mile Run Tidal

The fish consumption and recreation designated uses for the tidal section of Four Mile Run are currently listed as impaired due to water quality exceedance associated with *Escherichia coli* (*E. coli*) bacteria. The tidal portion of Four Mile Run was originally listed as impaired for fecal coliform in 1996 and was listed as impaired for *E. coli* bacteria in 2008. The TMDL developed for the *E. coli* bacteria was approved by the SWCB on September 30, 2010, with the EPA decision rationale published June 14, 2010. The impairment for the tidal segment is from rivermile 1.46 (tidal/non-tidal boundary) downstream until the confluence with the Potomac River.

The *Bacteria TMDL for the Tidal Four Mile Run Watershed* (ICPRB, 2010) was built upon the TMDL for the non-tidal portion of the river, with WLAs developed only for the tidal drainage below the non-tidal portion of Four Mile Run. The model simulated fecal coliform bacteria which were converted to the equivalent *E. coli* bacteria using an instream translator. The TMDL documents an aggregate WLA of 1.53E+13 cfu/year for the City, Virginia Department of Transportation, and the George Washington Memorial Parkway. According to the TMDL, this equates to a 94 percent reduction for those regulated sources (see Table 2). A TMDL Implementation Plan has not been developed in response to this TMDL.

Table 2. *E. Coli* WLA for Four Mile Run (Tidal) for City of Alexandria

Water Name	Aggregated MS4s	WLA (cfu/yr)	Percent Reduction (%)
Four Mile Run (Tidal) VAN_A12E_FOU01A00	City of Alexandria, VDOT, G.W. Memorial Parkway	1.53E+13	94

c. Hunting Creek, Cameron Run, and Holmes Run

Hunting Creek, Cameron Run, and Holmes Run are all located within the Potomac River basin. The impaired segment of Hunting Creek extends from the confluence with the Potomac River at the state boundary to Telegraph Road. Cameron Run/Hunting Creek is currently listed as impaired for the designated uses of aquatic life, fish consumption, open-water aquatic life, and recreation beginning in 1998.

Cameron Run (VAN-A13-CAM01A04) was delisted in the *Final 2014 305(b)/303(d) Water Quality Assessment Integrated Report* and was found as supporting in the *Final 2016 305(b)/303(d) Water Quality Assessment Integrated Report*. However, Cameron Run/Hunting Creek is listed as impaired in the ***Draft 2024,*** *Final 2022 and 2018 305(b)/303(d) Water Quality Assessment Integrated Reports*.

The impaired segment of Homes run extends from the confluence of Holmes Run and Backlick Run upstream to the mouth of Lake Barcroft. The designated use of recreation has a current status of impaired. Similarly to Hunting Creek and Cameron Run, Holmes Run was listed as impaired for bacteria in 2004.

The *Bacteria TMDLs for the Hunting Creek, Cameron Run, and Holmes Run Watersheds* (ICPRB, 2010) were developed using Hydrologic Simulation Program-Fortran (HSPF) and Euler-Lagrangian Circulation (ELCIRC) models.

Table 3 presents the aggregated WLAs for the City for each stream. *E. coli* bacteria concentrations are measured in coliform forming units (cfu) expressed annually.

Table 3. *E. Coli* WLA for Holmes Run, Hunting Creek, and Cameron Run for City of Alexandria

Water Name	Aggregated MS4s	WLA (cfu/yr)	Percent Reduction (%)
Holmes Run VAN_A13R_HOR01A00	City of Alexandria and VDOT	2.40E+13	83
Hunting Creek VAN_A13E_HUT01A02	City of Alexandria, VDOT, G.W. Memorial Parkway	3.73E+13	92
Cameron Run VAN_A13R_CAM01A04	City of Alexandria and VDOT	3.20E+13	83

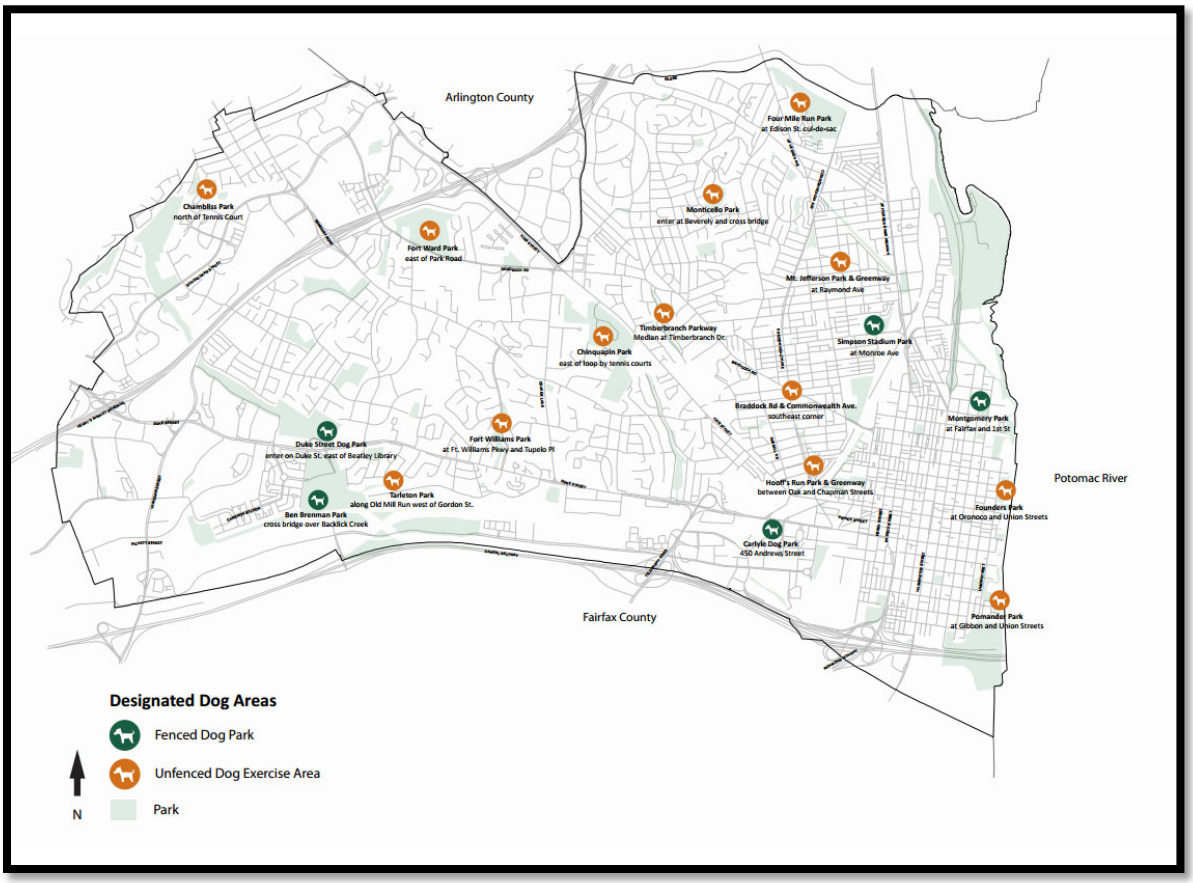
6. Possible Significant Sources of Bacteria

Potential contributors to the bacterial impairments, as documented in the TMDL reports, include wildlife (deer, raccoon, muskrat, beaver, and waterfowl), canine, human, and other. *There are no other significant sources of the pollutants of concern discharging to the permittee's MS4 that are not covered under a separate VPDES permit.*

As is the case for many streams, reductions from wildlife sources are not realistic and do not meet EPA's guidance for reasonable assurance. According to analyses of the water quality modeling, many streams with high wildlife inputs "will not attain standards under all flow regimes at all times." While there are a few options available, "the reduction of wildlife or changing a natural background condition is not the intended goal of a TMDL." According to the City's bacteria TMDLs, "Virginia and EPA are not proposing the elimination of wildlife to allow for the attainment of water quality standards."

The City does have several fenced dog parks and unfenced dog exercise areas as seen in Figure 1. These locations have been identified as having the potential to produce bacterial pollutant loadings which are greater than the average loading for the City's MS4 area. As a result, the City targets dog owners for outreach and education. In addition, the City distributes dog waste bags and supports pet waste stations. See Section 7 for additional information.

Figure 1. Dog Parks within the City of Alexandria, VA



7. Best Management Practices to Reduce Bacteria

Adaptive management is an iterative implementation process that makes progress toward achieving water quality goals while using new data and information to reduce uncertainty and adjust implementation activities. The focus is oriented towards increasingly efficiently enforcing pet waste laws, educating the public on the impact of pet waste, implementation of the illicit

discharge and dumping program, and performing routine inspection and maintenance of the infrastructure. Strategies may change if warranted by new data and information.

National Pollutant Discharge Elimination System regulations allow the use of non-numeric, BMP-based water quality based effluent limits (WQBEL) where "[n]umeric effluent limitations are infeasible; or [t]he practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA" (40 CFR 122.44(k) 3-4). Adaptive implementation principles used to implement BMPs to address bacteria sources are appropriate due to the uncertainty associated with the TMDL loading capacity and specific allocation scheme.

The non-tidal Four Mile Run TMDL does not contain specific numeric waste load allocations for MS4 permits in the watershed, but rather discusses a number of best management practices that may be employed to address possible pollutant sources within the watershed. The tidal Four Mile Run and Hunting Creek/Cameron Run/Holmes Run TMDLs includes aggregated WLAs for the City's MS4.

Many of the BMPs discussed in the *Implementation Plan for the Fecal Coliform TMDL for Four Mile Run, Virginia* (NVRC, 2004) have been and continue to be implemented by the City to address the bacteria impairment in the watershed. The City's *2023 MS4 Program Plan* includes specific local education and outreach strategies to address "Bacteria from Pet Waste" as one of the identified top three high-priority water quality issues.

Specifically, the 2023 MS4 Permit requires the selection and implementation of a minimum of three (3) strategies from Table 5 (pg. 40 – 45) for bacteria TMDLs. A complete list of strategies is included as Table 4, adapted from the 2023 MS4 Permit.

Table 4. Strategies for Bacteria Reduction Stormwater Control/Management Strategy (adapted from the 2023 MS4 Permit)

Bacteria Source	Strategies
Domestic Pets (Dogs and Cats)	• Provide signage to pick up dog waste, providing pet waste bags and disposal containers. • Adopt and enforce pet waste ordinances or policies, or leash laws or policies. • Place dog parks away from environmentally sensitive areas. • Maintain dog parks by removing disposed of pet waste bags and cleaning up other sources of bacteria. • Protect riparian buffers and provide unmanicured vegetative buffers along streams to dissuade stream access.
Urban Wildlife	• Educate the public on how to reduce food sources accessible to urban wildlife (e.g., manage restaurant dumpsters and grease traps, residential garbage, feed pets indoors). • Install storm drain inlet or outlet controls. • Clean out storm drains to remove waste from wildlife. • Implement and enforce urban trash management practices. • Implement rooftop disconnection programs or site designs that minimize connections to reduce bacteria from rooftops. • Implement a program for removing animal carcasses from roadways and properly disposing of the same (either through proper storage or through transport to a licensed facility).

Bacteria Source	Strategies
Illicit Connections or Illicit Discharges to the MS4 Dry Weather Urban Flows (Irrigations, Car Washing, Powerwashing, etc.)	• Implement an enhanced dry weather screening and illicit discharge, detection, and elimination program beyond the requirements of Part I E 3 to identify and remove illicit connections and identify leaking sanitary sewer lines infiltrating to the MS4 and implement repairs. • Implement a program to identify potentially failing septic systems. Educate the public on how to determine whether their septic system is failing. • Implement septic tank inspection and maintenance program. Implement an educational program beyond any requirements in Part I E 1 though E 6 to explain to citizens why they should not dump materials into the MS4. • Implement public education programs to reduce dry weather flows from storm sewers related to lawn and park irrigation practices, car washing, powerwashing and other nonstormwater flows. • Provide irrigation controller rebates. • Implement and enforce ordinances or policies related to outdoor water waste. • Inspect commercial trash areas, grease traps, washdown practices, and enforce corresponding ordinances or policies.
Birds (Canadian Geese, Gulls, Pigeons, etc.)	• Identify areas with high bird populations and evaluate deterrents, population controls, habitat modifications and other measures that may reduce bird associated bacteria loading. • Prohibit feeding of birds.
Other Sources	• Enhance maintenance of stormwater management facilities owned or operated by the permittee. • Enhance requirements for third parties to maintain stormwater management facilities. • Develop BMPs for locating, transporting, and maintaining portable toilets used on permittee owned sites. • Educate third parties that use portable toilets on BMPs for use. • Provide public education on appropriate recreational vehicle dumping practices.

a. Pet Ordinance

Section 5-7-46 of the City Code allows for levying fines for pet owners that do not pick up after their pets at public parks. Pet owners not cleaning up after their pet or disposing of pet waste bags in a storm drain may be subject to the City Code of Ordinances Title 11, Chapter 13 Environmental Offenses for illicit discharges to the storm drain system.

Milestones, Measurable Goals and Assessment Methods

The City has found that these two codes sections are effective in reinforcing proper behavior for pet owners. The City will review the effectiveness of the pet ordinance and the Environmental Offenses annually. This effort will include a review of the annual follow-up survey data that is provided by the Northern Virginia Regional Commission (NVRC) Clean Water Partners – of which the City is a member partner – with the previous year's survey data. Additionally, the City tracks citizen complaints and results of proactive staff efforts related to

improper disposal of pet waste in an asset management system database and/or the permit tracking system. Annual results exported from these databases associated with pet waste will be compared to the previous year's results.

The goal of these code sections is to illuminate and reinforce proper behavior. This review will seek to identify trends in behavior using these two metrics. If this review shows a precipitous upward trend in improper behavior, the City will consider revising the code to better address increased improper behavior. The results of these activities are presented in the MS4 annual report.

b. Pet Stations, Dog Parks, and Street Cans

The City continues to support the installation of pet waste stations on public and private property. The City has installed pet waste stations in public parks and continues to look for opportunities for installations. "Dog bone" shaped pet waste dispensers that can be attached to a dog leash are handed out during public outreach events as a more mobile way of dispensing pet waste bags. The City also hands out pet waste bag holders in an effort to promote dog owners to dispose of the bagged waste properly in a waste container.

The City Council approved the master plan for dog exercise areas in September 2000, which defines areas for unleashed dog exercise and established guidelines for the creation of any new fenced dog parks and exercise areas, and to ensure that these facilities do not contribute to bacteria from pet waste. The *City's Plan for Dog Parks and Dog Exercise Areas* (2011) provides detailed information and rules governing the City's designated dog park and exercise areas. One of the reasons for having dog exercise areas is to concentrate activity and provide the City with a way to focus education and outreach efforts. The plan includes recommendations for providing plastic bags at dog runs and the strategic placement of waste receptacles. The plan also requires new dog exercise areas to be located more than 75 feet from bodies of water, and in most cases outside the Resource Protection Area (RPA) associated with waterbodies and wetlands.

The City places "street cans" in parks and along public streets where residents can deposit used pet waste bags and routinely empties the cans to further encourage their use and to mitigate the emanation of odors.

Milestones, Measurable Goals and Assessment Methods

The City will continue to support installation of pet waste stations and report on new stations installed in the annual report for the corresponding reporting period. Statistics on "dog bone" pet waste dispensers is included in annual reports. Street cans will be provided and maintained for parks and public streets.

- The number of pet stations, bags used, and the number of newly installed pet waste stations will be documented and included in each annual report.
- The City will continue ongoing implementation of the master plan and revise it as necessary. Plan updates will be reported with the associated annual report.

- Street cans, especially in parks, are widely used by dog owners for disposal of pet waste. These will continue to be routinely emptied and staff will note any precipitous drop-off in pet waste in the cans that is not related to seasonal variations.

c. Illicit Discharge Detection and Elimination Program

The City has performed dry weather screening of regulated outfalls during the previous permit based on local the TMDLs. The 2023 MS4 permit requires the City to perform dry weather screening on at least 50 outfalls annually. However, as noted in the *Fecal Coliform Non-Tidal Four Mile Run TMDL*, Optical Brightener Monitoring (OBM) conducted on every outfall in the watershed "lends evidence that storm sewer outfalls are largely free from illicit connections." An analogous conclusion can be inferred from the interpretation of similar analytical data for the Tidal Four Mile Run TMDL, and Holmes Run, Cameron Run and Hunting Creek TMDL – that storm sewer outfalls in those local watersheds are largely free from illicit connections and that OBM is not the preferred assessment approach to be implemented during outfall screening. The City continues to implement screening methods found in the *Illicit Discharge Detection and Elimination Program Policies and Procedures* included in the *MS4 Program Plan* as Appendix E.

In addition to dry weather outfall screening, the City maintains a public reporting mechanism to receive complaints. Alex311 services include a webpage, mobile app, social media, and phone options to submit requests for service or information. Alex311can be used by residents and others to report suspected illicit discharges and other environmental concerns.

The reporting form can be found at the homepage at alexandriava.gov and is available on subordinate webpages. Incidents are routed to the proper staff and cases may be tracked for resolution. In general, reports of illicit discharging must be investigated within 48-hours, but are done typically as soon as possible. City staff utilize the *Illicit Discharge Detection and Elimination Program Policies and Procedures* developed and included as Appendix C of the *2023 MS4 Program Plan*.

Formal illicit discharge detection and elimination (IDDE) training is provided to staff per the schedule in the program plan, while and informal staff training is provided continually as the opportunity arises. The public also receives informal messaging on recognizing and reporting illicit discharges to the storm drain system.

Milestones, Measurable Goals and Assessment Methods

- Annually conduct dry weather screening on at least 50 outfalls and note results of the screening, to include if sanitary cross connections are found in each year's annual report.
- Report on the number of complaints received related to illicit bacteria discharges in the annual report.

d. Routine Infrastructure Cleaning and Maintenance

As part of the IDDE program, the City performs routine cleaning of storm drain inlets and catch basins, and frequent street sweeping to remove debris, organics and other items from the system so that these materials are not transported to nearby surface waters during a

subsequent storm. Street sweeping is performed routinely from March to October annually and suspended during the snow season. If blockages of the storm drain system are observed during routine maintenance, staff may perform CCTV of the lines to determine the extent of the blockage and the best course of remedial action required to remove the blockage. Proactive CCTV of storm and sewer lines is also performed on a regular basis. Assessing the condition of sanitary sewer lines can serve to catch an issue with blockage, deflection or root intrusion and prevent sanitary overflows or backups from occurring. Reconstruction and remediation of sanitary sewers such as relining old sewers, joint sealing, rerouting connections and manhole repairs are performed as warranted as part of the inflow and infiltration program.

Milestones, Measurable Goals and Assessment Methods

- The City is divided in to 11 separate sweeping areas that receive three passes annually from March to October (outside of snow season). Crews sweep approximately 30,000 lane miles each year and this information is provided in the annual report.
- Crews perform proactive catch basin and inlet cleaning from March to October annually based on 12 separate zones that correlate to the snow zones, with the goal of reaching all 12 separate zones every two years.
- Crews perform proactive catch basin and inlet cleaning following the leaf collection activities to remove leaf and organic material that may have accumulated.
- Crews perform reactive catch basin and inlet clearing according to service requests, resident complaints, and weather-related activities.
- Reactive CCTV inspections occur in response to resident complaints on sewer mains associated with private backups.

The City will continue to perform ongoing routine maintenance, cleaning and investigations of the sewer system and report related information in the associated annual report.

8. Methods to Assess Action Plan Effectiveness

The City will continue to implement those BMPs discussed in Section 7 per the milestones, measurable goals, and assessment tools.

Pursuant to the 2008 – 2013 MS4 General Permit and submitted with the 2009 – 2010 MS4 annual report, municipal facilities of concern were previously assessed as to whether these facilities may be expected to constitute a significant source of bacteria. The City has been implementing BMPs to address bacteria for successive permit cycles. Chapter 8 of the *Implementation Plan for the Fecal Coliform TMDL for Four Mile Run, Virginia* (NVRC, 2004) cites “actions taken” and “water quality data” as two types of criteria to be monitored to ensure implementation and evaluate efficacy. Implementation actions are included in Chapter 6 of this plan (NVRC, 2004). These are pollution prevention, mitigation measures, and indirect measures. Pollution prevention efforts related to Alexandria’s sewer system include the sewer rehabilitation program and routine inspection and maintenance.

As mentioned previously, implementation plans for Tidal Four Mile Run and the Hunting Creek, Cameron Run, and Holmes Run TMDLs have not yet been developed. Therefore, the following actions were identified for non-tidal Four Mile Run but can also be considered as applicable for the City's other bacteria TMDLs. The submitted delisting for Cameron Run may be partially attributed to the City's commitment to protecting our waters and preventing bacterial contamination.

a. Evaluation of Results and Adaptive Management Strategies

2023 MS4 Permit Requirements

Each local TMDL action plan developed by the permittee shall include the following:

(1) An evaluation of the results achieved by the previous action plan; and
(2) Any adaptive management strategies incorporated into updated action plans based on action plan evaluation.

The 2023 MS4 Permit requires each updated TMDL action plan to include an evaluation of the results and any adaptative management strategies. For the purposes of this Bacteria TMDL Action Plan, the City relies on the NVRC Survey discussed in Section 9 and included annually with the City's MS4 Annual Report. Through the evaluation of survey results, discussions with community members, and discussions internally with staff across different City offices (i.e., Parks and Resource Recovery), the City has generally remained consistent with the strategies incorporated into this action plan. The main target audience for this Bacteria TMDL is pet owners. The City not only provides pet waste bag dispensers during outreach events but has targeted large "Dog Walks" (i.e., Alex Dog Walk) to provide pet waste bag holders which have become very population with the community. Further, the City has created and distributed lawn signs with the "Poop Fairy" indicating that there is no such thing as a "Poop Fairy" to remind pet owners to clean up after their pets. Outreach is included in Section 10.

b. Actions Taken

In the absence of implementation plans for the Tidal Four Mile Run TMDL, and the Holmes Run, Cameron Run, and Hunting Creek TMDL, the City has taken a holistic approach to addressing bacteria impairments by applying the following items that are discussed in the *Implementation Plan for the Fecal Coliform TMDL for Four Mile Run, Virginia* (NVRC, 2004) to other watersheds draining to impaired waters in the City. Other actions discussed herein constitute additional efforts the City performs to address bacteria impairments using this holistic approach. These City-wide actions are discussed in detail below.

Sanitary Sewer Asset Renewal Program

The City is implementing a Sanitary Sewer Asset Renewal Program, which will provide for the inspection and rehabilitation of all City sanitary sewers, manholes, and City-owned portions of lateral sewers. A total of $36 million has been programmed over the next 10 years as part of the City's Sanitary Sewer Capital Improvement Program. The program commenced in Spring 2021 and inspection/rehabilitation has been occurring in three (3) phases

- *Phase I:* Del Ray East includes areas bounded by Commonwealth Avenue, Four Mile Run, Route 1, and the Metro rail lines. Inspections of sanitary manholes, sanitary sewers, and city-owned laterals took place from March 2021 to December 2021. Rehabilitation of structurally deficient manholes and sewers began October 2023. Rehabilitation of structurally deficient laterals is anticipated to commence in Spring 2025. Construction schedule and updates can be found on the capital project webpage, Sanitary Sewer Rehabilitation- Del Ray East.
- *Phase II:* Del Ray West includes areas between Russell Road, Commonwealth Avenue, West Glebe Road, and King Street. Inspections of sanitary manholes, sanitary sewers, and city-owned laterals took place from June 2022 to July 2023. Rehabilitation of structurally deficient manholes, sewers, and laterals is anticipated to commence in Winter 2025.
- *Phase III:* North Ridge includes areas between Russell Road, West Glebe Road, Cameron Mills Road, and West Braddock Road. Inspections started in June 2023 and will take approximately 9 months to complete.

Sanitary Sewer Infrastructure

- Sewer rehabilitation has taken place and continues to take place City-wide.
- Inspection and maintenance is performed as discussed in Section 7.e..

IDDE

- The *Implementation Plan for the Fecal Coliform TMDL for Four Mile Run, Virginia* (NVRC, 2004) required a pilot program that has since matured through successive permit cycles. Annual dry weather inspections are conducted on at least 50 outfalls City-wide, given that bacteria impairments within the City's watersheds.
- The local ordinance was updated in 2001 to include City Ordinance Title 11, Chapter 13 Environmental Offenses in the Environmental Management Ordinances per the

Implementation Plan for the Fecal Coliform TMDL for Four Mile Run, Virginia (NVRC, 2004), and continues to be enforced City-wide.

- The Environmental and Industrial Unit (EIU) was created in July 1, 2009, to coordinate environmental issues among departments, with staff from the EIU enforcing Chapter 13 with support from Transportation and Environmental Services.
- The City maintains a Complaint Reporting system through Alex311 for resident and staff complaint response and tracking.

Proper Pet Waste Disposal

- Consistent with the *Implementation Plan for the Fecal Coliform TMDL for Four Mile Run, Virginia* (NVRC, 2004), the entire City is targeted for the installation of pet waste stations and signage to promote responsible owner behavior. A memorandum of understanding was developed with the City's Department of Recreation, Parks, and Cultural Activities to install pet waste stations in public parks.
- The City anticipates initiating a new public awareness campaign targeted towards pet owners and picking up pet waste in public right of ways.
- The City performs additional efforts annually per Section 7.c. and will report of the activities annually.

Stormwater Treatment

- As a local Virginia Stormwater Management Program (VSMP) authority, the City administers the VSMP Regulations and the Chesapeake Bay Act. The VSMP Regulations have superseded the Bay Act for stormwater quality requirements, while existing portions of the Bay Act related to RPA protection and enhancement is retained.
- City has been awarded grants through the Stormwater Local Assistance Fund (SLAF) for retrofits under the Chesapeake Bay TMDL for Lake Cook and Ben Brenman (Cameron Station) Pond. These practices include features to enhance the exclusion of geese and improve water quality in the Cameron Run Watershed, the Potomac River, and the Chesapeake Bay.
- The City inspects and maintains public stormwater facilities, inspects private facilities, and requires private facility owners to maintain private facilities.
- The City has retrofitted publicly-owned facilities with stormwater management BMPs. The Burke Library with a StormFilter™ and bioretention facility, and pervious pavers and bioretention at Four Mile Run Park are a few examples.
- The City adopted the updated *Environmental Action Plan 2040* in 2019 which includes an updated Green Building policy effective March 2, 2020. This policy requires public development to meet 100% of the required stormwater treatment through green infrastructure.
- On January 24, 2018, the City's Transportation and Environmental Services issued Memorandum to Industry No. 01-18, "Use of Manufactured/Proprietary Stormwater BMPs". This memo outlines new requirements for new development and redevelopment to utilize non-proprietary surface BMPs approved by the Virginia BMP

Clearinghouse to remove a minimum of 65% of the total phosphorus removal required by VSMP.

Street and Infrastructure Management

- City streets are swept per Section 7.e.
- Catch basins and inlets are cleaned per Section 7.e.
- The City maintains an ArcGIS database and provides updates and maintenance, as needed.

Stream Corridor & Wetlands Restoration

- The City completed the restoration of Lucky Run.
- The Four Mile Run wetlands restoration project was completed in FY16.
- Windmill Hill Living Shoreline project on the banks of the Potomac River was completed in FY19.

Stormwater Runoff Reduction and Reuse

- The City completed a number of retrofit projects recently, to include installation of green infrastructure at Charles Barrett Elementary School and Four Mile Run Park, and the installation of a cistern at Fire Station 206.
- The City ensures that municipal redevelopment projects explore the feasibility of implementing stormwater controls beyond VSMP requirements to address Chesapeake Bay TMDL target reductions and provide other ancillary benefits.

c. Water Quality and Estimation of Discharge

Per the *Implementation Plan for the Fecal Coliform TMDL for Four Mile Run, Virginia* (NVRC, 2004), water quality data will be reported by VDEQ through its own bacteria monitoring efforts. The ultimate goal is for that the water quality in Four Mile Run will respond to actions in the watershed. This TMDL implementation plan (NVRC, 2004) was created jointly by jurisdictions in the watershed and it requires actions of all parties to improve water quality in the run. VDEQ also performs bacteria monitoring on other impaired streams in the City. The City will rely on this water quality data for other TMDLs consistent with the approach identified in the implementation plan (NVRC, 2004). The City will continue to implement structural and non-structural BMPs to address bacteria impairments in its receiving waters.

9. Outreach Strategy

The 2023 MS4 permit, Part II. B. 3. g., identifies the requirement to develop an outreach strategy that enhances the public's education (including employees) on methods to eliminate and reduce discharges of the pollutants.

The City has identified "Bacteria from Pet Waste" as one of the top three high-priority water quality issues in the *2023 MS4 Program Plan*. BMPs to address bacteria were introduced in the City's inaugural permit for the 2003 – 2008 permit cycle, the 2008 – 2013 permit cycle, the 2013 – 2018 permit cycle, the 2018 – 2023 permit, and the current 2023 – 2028 permit. This is in addition to the City's continued participation as an active partner in the NVRC Clean

Water Partners regional education and outreach program. The goal of these efforts is to reduce bacteria pollution from pet sources by educating owners of the importance of picking up after their pets, while making it convenient for them to dispose of the waste after picking it up. Therefore, dog owners continue to be targeted with education and outreach efforts.

The City's education and outreach strategy utilizes messaging via multi-media and message delivery. Given that addressing bacteria from pet waste is one of the City's high-priority water quality issues, the goal of the outreach effort is to reach at least 20% of pet owners annually to comply with permit requirements. The City's proposed efforts are captured in the *MS4 Program Plan* and actions are included in the annual report

- Create and distribute annually at least one education message for distribution via the City's electronic email alert system (*eNews*) and estimate the number of dog owners reached.
- Create and distribute annually at least one message on social media about picking up after pets and properly disposal of the waste and estimate the number of dog owners reached.
- Distribute the Pet Waste brochure annually at appropriate events, at the Animal Shelter, and local businesses, and estimate the number of residents reached.
- Provide education on proper pet waste disposal during speaking engagements.
- Participate in the NVRC Clean Water Partners regional efforts and estimate the number of Alexandria residents reached through messaging.
- Promote the distribution of the "No Such Thing as the Poop Fairy" pet waste yard signs.

The effectiveness of the City's education and outreach strategy will be assessed annually using the NVRC Survey that is conducted following the annual campaign. The survey has been conducted for a number of years and is useful in showing trends over time. Results will be provided in each annual report for the corresponding permit term.

10. Schedule

The 2023 MS4 permit, Part II. B. 3. h., identifies the requirement to incorporate a schedule of anticipated actions planned for implementation during the permit term (2023 – 2028). The best management practices described in this action plan have been and are currently being implemented.

The *2023 MS4 Program Plan* includes a schedule of strategies associated with pet waste and illicit discharge. Within these two "sources" are several strategies designed to reduce the load of bacteria to the MS4. Figure 1 provides the schedule associated with pet waste and Figure 2 provides the schedule associated with illicit discharge. These Figures are both presented in the City's 2023 MS4 Program Plan and reported on annually in the MS4 report.

Figure 1. Pet Waste Outreach Strategy Implementation Schedule

Strategy Name	Description	Impact on Stormwater Discharges	Target Audience	Responsible Parties	Implementation Schedule	Documentation	Measurable Goal
Traditional Written Materials	Distribute pet waste pamphlets and other written materials at outreach events	Provide education and outreach written materials on the proper disposal of pet waste to reduce the amount of bacteria that is carried to waterways	Individuals attending outreach events / pet owners	T&ES-SWM	Distribute materials at outreach events	Sample written materials distributed	Dates and location of outreach events with the approximate number of attendees
Signage	Installation, maintenance, and re-stocking of pet waste stations with appropriate signage "Poop Fairy" yard signs	Provide waste stations and/or bags for waste stations to make it convenient for pet owners to properly dispose of pet waste to reduce the amount of bacteria that is carried to waterways Inform public that they are responsible for picking up pet waste	Individuals using the area with their pet	T&ES-SWM in coordination with RPCA and general public	Provide bags to refill pet waste stations as needed Distribute "Poop Fairy" yard signs during outreach events and as requested	Photo of new pet waste station, documentation of existing pet waste stations Photo of "Poop Fairy" yard signs in neighborhoods	Number of existing and new pet waste stations Number of pet waste bags used and distributed to refill stations Number of "Poop Fairy" yard signs distributed
Media Materials	Use eNews (City electronic news distribution system), social media (Facebook, Instagram, or X), television, and/or websites to convey message	Provide education and outreach on the proper disposal of pet waste to reduce the amount of bacteria that is carried to waterways	General public / pet owners	T&ES-SWM in coordination with OCCE and NVRC Clean Water Partners for regional efforts	Annually distribute one (1) eNews and one (1) social media post. Implement television advertising and post information on the City's Stormwater Quality webpage	eNews, social media posts, screen captures of webpage	The number of individuals signed up to receive the City's eNews. The number of T&ES Facebook, Instagram, and X followers. The number of visits to the Stormwater Management webpage. Clean Water Partners Only Rain Summary Report of Findings
Speaking Engagements	Present at no less than two (2) events per year and include a message about proper disposal of pet waste	Provide education on the proper disposal of pet waste to reduce the amount of bacteria that is carried to waterways	Individuals attending the activity, event, or class / pet owners	T&ES-SWM	Annually present at no less than two (2) events per year	Presentation materials	Dates and locations of presentations with the approximate number of attendees

Figure 2. Illicit Discharge Outreach Strategy Implementation Schedule

Strategy Name	Description	Impact on Stormwater Discharges	Target Audience	Responsible Parties	Implementation Schedule	Documentation	Measurable Goal
Traditional Written Materials	Distribute household hazardous waste pamphlets and other written materials at outreach events.	Provide education and outreach written materials on the proper disposal of household hazardous waste to reduce illicit discharges	Individuals attending outreach events	T&ES-SWM in coordination with T&ES-RR	Distribute materials at outreach events	Sample written materials distributed	Dates and location of outreach events with the approximate number of attendees
Signage	Install storm drain markers	Reduce dumping and increase awareness by visually alerting residents that anything that goes down the storm drain goes to the local waterway and is not treated	Individuals traveling past storm drains with the markers	T&ES-SWM in coordination with P&Z, private developers, and general public	Provide markers to public and private developers as needed	Graphic of the storm drain marker and sample plan sheet with the requirement for private developers to place the markers on all storm drains within 50-ft of the project	Number of markers placed
Media Materials	Use eNews (City electronic news distribution system), social media (Facebook, Instagram or X), television, and/or websites to convey message	Provide education and outreach on the proper disposal of non-stormwater materials to reduce illicit discharges along with recognizing and reporting illicit discharges	General public	T&ES-SWM in coordination with OCCE and NVRC Clean Water Partners for regional efforts	Annually distribute one (1) eNews and one (1) social media post. Implement television advertising and post information on the City's Stormwater Quality webpage	eNews, social media posts, screen captures of webpage	The number of individuals signed up to receive the City's eNews. The number of T&ES Facebook, Instagram, and X followers. The number of visits to the Stormwater Management webpage. Clean Water Partners Only Rain Summary Report of Findings
	Have a reporting mechanism on the City's website so that residents can report potential illicit discharges (Alex311)	Ensure the reporting of potential illicit discharges is convenient so that City staff can investigate and determine the source	General public	T&ES-SWM and EIU	Have the reporting mechanism continuously available	Screen capture of the webpage with the reporting mechanism	The number of stormwater pollution related complaints received
Speaking Engagements	Present at no less than two (2) events per year and include a message about illicit discharges	Provide education on the proper disposal of non-stormwater materials to reduce illicit discharges	Individuals attending the activity, event, or class	T&ES-SWM	Annually present at no less than two (2) events per year	Presentation materials	Dates and locations of presentations with the approximate number of attendees

11. References

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City of Alexandria, Virginia

Tidal Potomac Polychlorinated Biphenyls (PCB) Total Maximum Daily Load (TMDL) Action Plan

For compliance with 9VAC25-890, General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems, Permit No. VAR040057

June 28, 2015
Revised November 20, 2015
Revised April 14, 2020
Revised April 24, 2025

Prepared by:

City of Alexandria, Virginia
Department of Transportation and Environmental Services
Stormwater Management

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1. Introduction

The General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Storm Water from Municipal Separate Storm Sewer Systems (MS4) No. VAR040057 was issued to the City of Alexandria (City) by Virginia Department of Environmental Quality (VDEQ) effective November 1, 2023 (2023 MS4 permit).

This permit contains "Special Conditions" for local total maximum daily loads (TMDL) under Part II, TMDL Special Conditions, Section B, Local TMDL Special Condition that requires the City update any previously approved local TMDL action plan for TMDLs approved by U.S. Environmental Protection Agency (EPA) prior to July 1, 2018, no later than 18-months after the permit effective date (May 1, 2025).

This action plan builds on the action plan that was initially developed by the City and first submitted in 2015 in response to the Special Conditions included in the City's General VPDES MS4 Permit, effective July 1, 2013 (2013 MS4 permit) and subsequently updated in 2020 in response to the 2018 MS4 permit. The 2013 MS4 permit included the requirement for the City to develop initial action plans to address TMDLs where a wasteload allocation (WLA) was assigned to the MS4. The 2013 MS4 permit required the action plans be developed and incorporated into the updated MS4 program plan and implemented over multiple permit cycles using an iterative approach to adequately reduce the pollutant in a manner consistent with the assumptions and requirements of the specific WLA in the TMDL. This action plan identifies best management practices, measurable goals and milestones, and evaluation measures; assess all significant sources; and includes a method to assess effectiveness of the plan in reducing the WLA pollutant.

In accordance with Table 1 in the 2013 MS4 permit, the City must develop action plans no later than June 30, 2015, for TMDLs approved by the State Water Control Board (SWCB) or EPA prior to July 2008, and no later than June 30, 2016, for TMDLs approved between July 2008 and June 2013. The updated action plan was developed based on the initial requirements in the 2013 MS4 permit as well as the local TMDL Guidance memo dated issued by VDEQ (April 2015), updated based on new information required under the 2018 MS4 Permit, and is now updated to align with the requirements outlined in the 2023 MS4 permit.

2. Background

The City of Alexandria's (City) MS4 was assigned a WLA for polychlorinated biphenyls (PCB) in fish tissue in the Tidal Potomac PCB TMDL report completed by Interstate Commission on the Potomac River Basin (ICPRB) in 2007. The TMDL covers the Commonwealth of Virginia, the State of Maryland, and Washington, DC, and was approved by EPA on April 11, 2008. The TMDL was approved prior to July 9, 2008, and the initial PCB TMDL Action Plan was required to be submitted with the MS4 Program Plan submitted October 1, 2015. This action plan was updated in 2020 and provided best management practices and other interim milestone activities to be implemented during the 2018 – 2023 permit term, as well as activities that will continue beyond the current MS4 permit cycle. Requirements outlined in the 2023 MS4 permit are incorporated into this action plan. This includes best management practices and other interim milestone activities to be implemented during the 2023 – 2028 permit term, as well as activities that will continue beyond the current MS4 permit cycle. Any new or modified requirements will be considered and incorporated as applicable. To date, an implementation plan has not yet been developed for this TMDL.

2023 MS4 Permit Language

For each PCB TMDL action plan, the permittee shall include an inventory of potentially significant sources of PCBs owned or operated by the permittee that drains to the MS4 that includes the following information:

(1) Location of the potential source;

(2) Whether or not the potential source is from current site activities or activities previously conducted at the site that have been terminated (i.e., legacy activities); and

(3) A description of any measures being implemented or to be implemented to prevent exposure to stormwater and the discharge of PCBs from the site.

PCBs were used as coolants and insulators, particularly in transformers, hydraulic equipment and electrical equipment. The manufacture of PCBs was banned in 1979 however, they are considered to be a "legacy pollutant" as they are very persistent in the environment and do not readily decompose under normal conditions. They also tend to sink into the sediment of waterways or terrestrial soils. PCBs may be released into the environment through leaks or fires in PCB containing equipment, accidental spills during transport, illegal or improper disposal, burning of PCB containing oils in incinerators, leaks from hazardous waste sites, and historical releases during manufacture, use, and disposal.

3. Legal Authorities to Reduce Pollutant of Concern

The City has a number of legal tools available to address the possible discharge of PCBs from municipal facilities, development and redevelopment projects, or private properties. This action plan addresses possible pollutant sources from municipal properties as well as private properties.

The MS4 general permit regulates discharges from properties that are owned or operated by the City and discharges from private properties which drain to the MS4. The City may use expressed or implied authorities to regulate private lands with regard to stormwater management and MS4 permit requirements. The City may utilize its rights as the property owner or lessee to address possible sources of PCBs which may originate from City owned or operated properties.

Article XIII of the Alexandria Zoning Ordinance (the Environmental Management Ordinance) contains the requirements for standard plan submission requirements. Standard conditions developed during the plan review process and Special Use Permit (SUP) process are enforceable through the Zoning Ordinance. Development plans and SUPs subject to standard conditions must go before the Planning Commission for approval. Contaminated lands issues must be addressed by the applicant prior to approval.

Implementation of the City's Erosion and Sediment Control (E&SC) program derives authority from Chapter 4 of Title 5 (Transportation and Environmental Services, T&ES) of the Code of the City of Alexandria. This code requires that land-disturbing activities greater than or equal to 2,500 square feet develop an E&SC plan to be submitted for review and approval. Disturbances less than this threshold must implement E&SC measures, as needed, to prevent transport and deposition of sediment offsite. City staff performs inspections of land-disturbing activities per the requirements of the ordinance.

Chapter 13 of Title 11 of the City Code (Environmental Offenses) prohibits non-stormwater discharges to the storm sewer system. T&ES works closely with the Fire Marshall's Office

Environmental Investigations Unit (EIU) to investigate and enforce illegal dumping and illicit discharge (IDDE) incidents.

4. Planning Framework

a. Principles

The City has established the following overarching principles to guide the approach to meet the goals of this action plan:

- Utilize existing programs and efforts;
- Encourage voluntary, practical, and cost-effective practices;
- Follow an adaptive, iterative approach;
    - Replaces dependency on numerical models and traditional planning by applying a focused “learning-by-doing” approach to decision making;
- Focus on phased implementation over multiple permit cycles; and
- Identify additional funding needs as necessary.

b. Action Goals

The City has established the following goals consistent with the principles in developing the action plan:

- Consistent: The action plan is consistent with the assumptions and requirements of the TMDL and conforms to general permit requirements and current MS4 program plan efforts to reduce pollutants to the maximum extent practicable.
- Flexible: The controls, best management plans (BMP), and design and methods discussed to reduce the pollutant of concern can be revised based on the observed effectiveness of these measures over multiple permit cycles, stakeholder involvement in the development of an implementation plan, changes to water quality standards, or introduction of new technologies and innovations to address the pollutant.
- Cost Effective: The 2008 – 2013, 2013 – 2018, 2018 – 2023, and 2023 – 2028 MS4 general permits contained special conditions associated with existing TMDLs, which were integrated into program plan compliance activities. The appropriateness of existing efforts is considered first before revising these efforts. The cost of revising current efforts or creating additional measures, along with the incremental benefit of each, is taken into consideration.

5. TMDL Development and Load Determination

The Tidal Potomac PCB TMDL report (ICPRB, 2007) includes a study area of the tidal waters of Virginia on the Potomac River. As indicated in the TMDL report, the 2006 Water Quality Assessment Guidance Manual was used to develop the TMDL and provides specific descriptions of the geographic extent of the impairments. The Tidal Potomac PCB TMDL (ICPRB, 2007) includes regulated stormwater as a permitted point source and includes municipal and county level MS4 permittees with the following qualifier: "Some of the permits may cover areas located in direct drainage as well as tributary watershed segments, but the stormwater WLAs apply only to the direct drainage areas". The TMDL document lists the impaired segments and associated WLAs, and contains an additional qualifier related to the applicable TMDLs which states "[d]irect drain loads were allocated to watershed segments and to FIPS [Federal Information Processing Standards] code jurisdictions within segments, and apply only to the portion of jurisdictions that are in direct drain watersheds." And finally, the TMDL states that "…the NPDES [National Pollutant Discharge Elimination System] regulated stormwater WLAs, shown in Tables 5-7 and 12 apply only to the direct drainage portions of the MS4 permitted jurisdictions…tributary stormwater WLAs have not been characterized as part of this TMDL effort." While it is clear that the WLA does not apply to the entire MS4 area, the City continues to target reduction strategies for the entire MS4 area, as appropriate. Figure 1 indicates the location of direct drain watersheds in green which were used to calculate the WLA for MS4 permits.

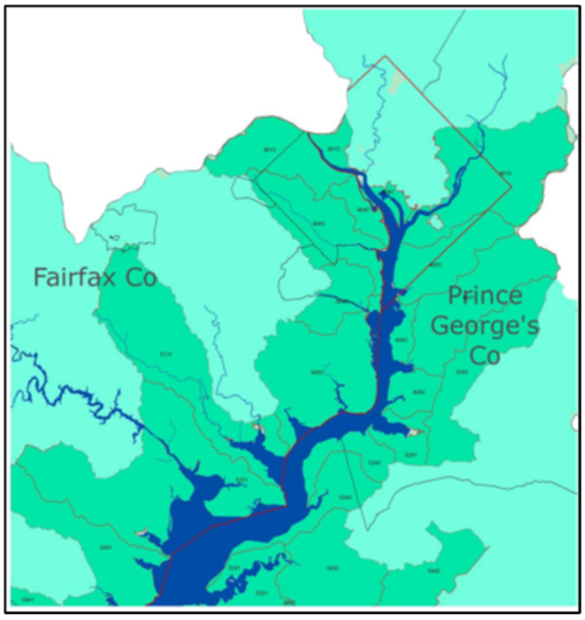


Figure 1. Direct Drain Watershed Segments in Upper Basin (ICPRB, 2007)

The TMDL states that the data and information used for setting loads are not detailed enough to determine WLAs for individual regulated outfalls; therefore, loads from regulated NPDES stormwater outfalls are expressed in the TMDL document as single stormwater WLAs for each impaired waterbody. These stormwater WLAs are calculated by multiplying the PCB direct drainage load by the percent of developed land. Table 1 provides the WLAs associated with impaired segments in the City.

Table 1. WLAs Associated with Impaired Segments for City of Alexandria

Impaired Waterbody	Watershed Code	WLA for Regulated Stormwater (g/yr)
Lower Potomac and Four Mile Run	4960	2.98
Lower Potomac and Hooff's Run & Hunting Creek	4980	0.503
Hooff's Run & Hunting Creek	5090	6.79
	Total	10.3

6. Best Management Practice, Controls, and Design

As referenced in the Tidal Potomac PCB TMDL (ICPRB, 2007), adaptive management is an iterative implementation process that makes progress toward achieving water quality goals while using new data and information to reduce uncertainty and adjust implementation activities. The focus is oriented towards increasingly efficient management and restoration. Strategies may change if warranted by new data and information. The jurisdictions involved in the Tidal Potomac PCB TMDL effort agreed that following the adaptive implementation guidelines are appropriate due to the uncertainty associated with the TMDL loading capacity and specific allocation scheme. Therefore, implementation strategies may include additional data collection concurrently with activities to reduce PCB loadings.

NDPES regulations allow the use of non-numeric, BMP-based water quality based effluent limits (WQBEL) where "[n]umeric effluent limitations are infeasible; or [t]he practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA [Clean Water Act]." (40 CFR 122.44(k)3-4) According to the implementation section of the TMDL document, non-numeric WQBELs are used to comply with the provisions of the WLA "because BMPs are appropriate and reasonably necessary to achieve water quality standards and to carry out the goals of the CWA for the Tidal Potomac PCB TMDL." The TMDL document further states that these BMPs are intended to focus on PCB source tracking and elimination at the source, rather than end-of-pipe controls, and that the TMDL program does not impart new implementation authorities. Therefore, consistent with the Commonwealth's approach, the City's main focus is to "use existing programs in order to attain its water quality goals".

This approach focuses on the development and implementation of procedures based on historical activity and land use that identifies potential high-risk properties. It also focuses on enhanced education and outreach, and employee training to eliminate and reduce potential PCB loads. Based on this understanding and current permit requirements, the City will continue to implement the following strategies, which are discussed in greater detail in the preceding sections:

- Site review and evaluation of municipal facilities;
- Focus on screening for PCBs during the plan review process for development and redevelopment projects; and

a. Implementation of the erosion and sediment control program; Site Evaluation and Inspections for Municipal Facilities

In the 2008 – 2013 MS4 permit special conditions, the City was required to 1) perform outfall reconnaissance and to 2) evaluate all owned or operated properties for potential sources of the

pollutant identified in the WLA. Within three years of the July 8, 2008, effective date, the City had to "conduct a site review and characterize the runoff for these properties where it determines that the pollutant identified in the WLA is currently stored, or has been transferred, transported or historically dispose of in a manner that would expose it to precipitation." ***Through this evaluation, the City determined that it does not have any facilities that should be categorized as a "high risk" for PCBs and the stormwater runoff characterization was not warranted for this WLA pollutant.*** This evaluation was conducted during the 2009 – 2010 reporting period and included in the associated annual report. The City reassessed possible significant sources of PCBs from facilities of concern owned or operated by the City that are not covered under a separate VPDES permit through the analyses of historical use during the 2013 – 2018 review. A significant source of pollutants from a facility of concern means a discharge where the expected pollutant load is greater than the average pollutant load for the land use identified in the TMDL. Additionally, municipal facility inspections are required to be conducted according to the requirements of Stormwater Pollution Prevention Plans (SWPPP). ***The City does not own or operate any sites which may have potentially significant sources of PCBs.*** A significant source of pollutants from a facility of concern means a discharge where the expected pollutant load is greater than the average pollutant load for the land use identified in the TMDL.

i. Evaluation of Municipal Facilities

The City performed an assessment of municipal properties for sources of PCBs and searched for any "high risk" facilities that currently store, or have transferred, transported or disposed of PCBs in a manner that would expose it to precipitation and found none. The City also characterized stormwater runoff from "high risk" properties and found no evidence of PCBs. During the 2009 – 2010 permit reporting period, the property at 3550 Commonwealth Avenue was purchased by the City's Department of Recreation, Parks & Cultural Activities (RPCA) using Open Space funding. It previously operated as an electrical substation from the mid 1950's until recently. Due to historic transformer oil drippings confined to the equipment area, the site was remediated to remove the PCB-impacted soil documented as part of the Phase I/II Environmental Site Assessment (ESA) completed for the City in November 2008, with the remediation and confirmatory sampling completed by the seller per an agreement with the City. The consultant doing the remediation work provided a "Confirmation of Remediation Report for the Former Hume Substation" dated December 3, 2009.

A combination of historical data, aerial photos, interviews with City personnel, and review of the Alexandria County Land Records was used to ascertain the likelihood of past PCB contamination at municipal properties and found none. This research focused on those properties which may have operated at one time under one of DEQ's high risk categories for PCBs. Identified high risk category sites for potential sources of residual PCBs, which includes the following SICs: 26&27 (Paper and Allied Products), 30 (Rubber and Misc. Plastics), 33 (Primary Metal Industries), 34 (Fabricated Metal Products), 37 (Transportation Equipment), 49 (Electrical, Gas, and Sanitary Services), 5093 (Scrap Metal Recycling), and 1221&1222 (Bituminous Coal). The City evaluated the most current EPA PCB Transformer Registration Database to determine if any municipal properties are registered sites, indicating the presence and location of PCB-containing transformers that may be located on municipal properties, and found none.

Finally, the City reviewed data to determine if a Phase I ESA was performed and available for any municipal properties in conjunction with a real estate transaction or intention of develop / redevelop a property, and found none.

Milestones, Measurable Goals and Assessment Methods

ii. Municipal Facility Inspections

The City developed a facility inspection reporting form for use during the evaluation of municipal facilities determined to have the potential to discharge pollutants. This form was based on inspection requirements and sample forms used for facilities to comply with coverage under industrial stormwater permits. The SWPPPs created for high-priority municipal facilities include the requirement for quarterly visual inspections and annual comprehensive compliance evaluations. While the SWPPP lists possible site pollutants that may be discharged, the quarterly and annual inspections are conducted comprehensively such that other pollutants may be identified if present. Additionally, should any future evaluations of public facilities demonstrate the likelihood of the presence of PCBs due to past use, the SWPPP will include specific procedures to identify possible discharges of PCBs.

Milestones, Measurable Goals and Assessment Methods

The City performs inspections of high-priority municipal facilities based on the SWPPPs, as required by the MS4 Permit. All SWPPP inspections are performed and documented in the SWPPP for that facility on a routine basis. A summary of the implementation and inspections performed during the reporting period are included in the appropriate associated annual report and included in the SWPPP.

b. Remediation Projects

If environmental investigations reveal the onsite presence of PCBs on a City owned or operated property, further investigations will be performed to determine the extent of onsite contamination. Remediation may be conducted if it is determined that remediation of the site is warranted. During the 2009 - 2010 reporting period under the 2008 - 2013 MS4 general permit, a PCB remediation project was conducted at the Hume Substation tract as described in Section 6.a.i. The resultant cleanup of the 0.53 acre former substation site resulted in a minor reduction in the overall City loading rate as modeled in the associated annual report.

Milestones, Measurable Goals and Assessment Methods

The City will coordinate with VDEQ in the ongoing consideration and execution of cleanup efforts for City-owned and operated facilities, as warranted. City projects whose past use includes any of the SIC codes identified in the identified high-risk category must include site investigations for PCBs.

c. Plan Review for Development and Redevelopment

The City adopted a standard condition used during the site plan review process for development projects and in and development SUPs requiring the screening for PCBs as part of the site characterization for sites that fall into VDEQ's identified high risk categories for PCBs. This standard condition was adopted during the 2009 - 2010 reporting period for the 2008 MS4 Permit and was revised during the 2014 - 2015 reporting period. The language reads:

The applicant shall screen for PCBs as part of the site characterization if any of the past uses are within the identified high risk category sites for potential sources of residual PCBs, which includes the following SICs: 26&27 (Paper and Allied Products), 30 (Rubber and Misc. Plastics), 33 (Primary Metal Industries), 34 (Fabricated Metal Products), 37 (Transportation Equipment), 49 (Electrical, Gas, and Sanitary Services), 5093 (Scrap Metal Recycling), and 1221&1222 (Bituminous Coal).

If environmental investigations discover the presence of PCBs onsite, the applicant must develop, implement, and submit for review, the proper environmental management plans prior to approval of the final site plan. These may include, but are not limited to, a Site Characterization Report/Extent of Contamination Study detailing the location, applicable contaminants, and the estimated quantity of any contaminated soils and/or groundwater at or in the immediate vicinity of the site; a Risk Assessment indicating any risks associated with the contamination; a Remediation Plan detailing how any contaminated soils and/or groundwater will be dealt with, including plans to remediate utility corridors. Utility corridors in contaminated soil shall be over excavated by two feet and backfilled with "clean" soil; a Health and Safety Plan indicating measures to be taken during remediation and/or construction activities to minimize the potential risks to workers, the neighborhood, and the environment.

The City developed a brochure about PCBs and why they are a concern in Alexandria. This brochure may be provided to target property owners during routine interactions (inspections, permit reviews, etc.) or during the redevelopment process.

Milestones, Measurable Goals and Assessment Methods

The City continues to include the standard condition and SUP language during the development review process.

- During the final site plan, staff ensures environmental reports are provided. All subject properties whose current or past use falls into one of the listed SIC codes are required to perform site investigations for PCBs.
- Annual MS4 reports include a sample of the language, a discussion of projects required to perform site testing, and a summary of findings, as warranted.

d. Implementation of Erosion and Sediment Control Program

Reductions in sediment loads from construction sites and development areas also will be of benefit for addressing the discharge of PCBs. The City administers the Virginia Erosion & Stormwater Management Program (VESMP). Staff are trained and receive certification through the Commonwealth for reviewing site plans for development and redevelopment, and for inspecting construction sites. Since PCBs may be associated with soils, the City will use designation of a responsible land disturber (RLD) per the Virginia Erosion and Sediment Control Regulations (VESCR) and project specifications to hold construction contractors responsible for the proper implementation and maintenance of E&SC measures during development and redevelopment. The local E&SC program requires that any land-disturbing activity equal to or greater than 2,500 square feet must submit a grading plan and E&SC plan for review and approval prior to commencing a land-disturbing activity.

Additionally, the City has operated a local Virginia Stormwater Management Program (VSMP) effective July 1, 2014 (updated to VESMP effective July 1, 2024). Inspections related to VESMP requirements are performed by the same staff. Inspection reports are completed every five

business days and 48 hours following a measurable storm event. However, the inspectors also perform inspections for right-of-way, excavation, and other local permits. Therefore, the inspection staff visits active construction sites approximately every day; sometimes performing multiple visits in the same day. This level of oversight far exceeds regulatory requirements and helps provide extra assurance that E&SC measures are properly installed and maintained to control the export of soils.

Milestones, Measurable Goals and Assessment Methods

The City continues to implement the local VESMP requirements, to include construction site inspection and reporting. The following take place:

- Ensure all applicable projects submit for coverage under the VPDES Construction General Permit, which includes updated SWPPP requirements for discharges to PCB impaired waters.
- Ensure all Chesapeake Bay land-disturbing activities have an approved grading plan prior to commencement.
- Ensure all required inspections are conducted by City staff.
- Ensure all corrective actions are complete within seven days.

e. Promotion of Elimination and Reduction

The standard condition language used during site plan review and SUPs also serves to educate the development community on PCBs and raise awareness of the possibility to encounter PCBs during redevelopment of private properties in the City. Given that the manufacture of PCBs was banned in 1979, the general public is unlikely to encounter PCBs. To be proactive, the City developed a brochure about PCBs and why they are a concern in Alexandria. This brochure is provided to target property owners during normal interactions (inspections, permit reviews, etc.) or during the redevelopment process. The brochure can be shared with staff and residents and is available on the City's TMDL website at www.alexandriava.gov/stormwater-management/total-maximum-daily-loads-tmdls.

Employees receive training on pollution prevention and good housekeeping and recognizing and reporting illicit discharges. It is unlikely that staff will encounter PCBs during routine daily activities. However, if the site review and evaluation demonstrate the possible presence of PCBs at a municipal facility, staff working around of near the location will be trained measures to avoid exposure and how to identify possible discharges that may contain PCBs.

Finally, City staff perform investigations in response to public complaints about possible illicit discharges to the storm sewer system and surface waters. Staff from the Fire Marshall's Office with the EIU may enforce Chapter 13 of Title 11 of the City Code (Environmental Offenses), which prohibits non-stormwater discharges to the storm sewer system. EIU staff educates residents about illicit discharges, which may include distribution of the PCB brochure and related information.

Milestones and Measurable Goals

- Ensure inclusion of standard conditions during site plan and SUP reviews.
- Ensure information on PCBs is included in the City's website and update the information if appropriate.
- Ensure the PCB brochure is available to staff.

- Enhance illicit discharge employee training to include education on PCBs and document this training biennially.

7. Methods to Assess Action Plan Effectiveness

2023 MS4 Permit Requirements

Each local TMDL action plan developed by the permittee shall include the following:

(1) An evaluation of the results achieved by the previous action plan; and
(2) Any adaptive management strategies incorporated into updated action plans based on action plan evaluation.

The 2023 MS4 Permit requires each updated TMDL action plan to include an evaluation of the results and any adaptative management strategies. For the purposes of this PCB TMDL Action Plan, the City continues to actively require the screening of PCBs when warranted through the site development process. No further strategies are included herein based on this evaluation.

Demonstration of adequate progress may be achieved through tracking, monitoring, and/or reporting of BMP implementation, and/or other strategies as approved by VDEQ as part of the PCB TMDL Action Plan. Consistent with the Commonwealth's approach and the types of implementation strategies discussed in the TMDL document, the City will implement those BMPs discussed in Section 6. The successful implementation of the milestones and measurable goals of this action plan continue to demonstrate the effectiveness of the plan.

The Site Review was performed during the 2017 – 2018 reporting period. Site inspections associated with the development and implementation of SWPPPs for identified municipal facilities began during the 2017 – 2018 reporting period and are ongoing based on the City's internal implementation schedule. Remediation projects will occur on an as-needed basis. Plan review for development and redevelopment projects, to include review of SUP applications, is an ongoing process and standard conditions are included on all site plans related to the City's requirement to screen for PCBs, if warranted, based on past use. Sites whose historical use includes SIC codes that have been identified by VDEQ as having a likelihood of being associated with PCBs are required to screen for PCBs during environmental investigations. The City implements an aggressive VESMP that includes daily site visits and the requisite inspection reports completed at the required intervals. This level of oversight far exceeds the regulatory requirements and helps provide extra assurance that control measures and properly installed and maintained to control sediment export. Finally, the City has a robust illicit discharge and dumping investigation and enforcement program, along with an active education and outreach program for the possible presence of PCBs.

8. References

Developing Your Stormwater Pollution Prevention Plan: A Guide for Industrial Operators, Publication No. 833-B-09-002. U.S. Environmental Protection Agency. February 2009.

Guidance Memo No. GM-16-2006, TMDL Action Planning for Local Total Maximum Daily Loads as Required in the Small MS4 General Permit (VAR04) Effective July 1, 2013 and MS4 Individual Permits. Commonwealth of Virginia Department of Environmental Quality, Water Division. November 21, 2016.

Total Maximum Daily Loads of Polychlorinated Biphenyls (PCBs) for Tidal Portions of the Potomac and Anacostia Rivers in the District of Columbia, Maryland, and Virginia. Interstate Commission on the Potomac River Basin. September 2007, with revisions October 2007.