



Municipal Separate Storm Sewer System (MS4) Year 3 Annual Report

2020 – 2021 Reporting Period

Permit No. VAR040057

In compliance with the "General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems"



Department of Transportation and Environmental Services
2900-B Business Center Drive
Alexandria, VA 22314
703.746.6499

October 1, 2021



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**General VPDES Permit for
Small Municipal Separate Storm Sewer Systems
Permit No. VAR040057
Year 3 Annual Report
July 1, 2020 – June 30, 2021
City of Alexandria, Virginia**



Submitted by
City of Alexandria
Department of Transportation and Environmental Services
2900-B Business Center Drive, Alexandria, VA 22314

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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."



Division Chief, T&ES
Stormwater Management

10/1/2021

Jesse E. Maines

Name

Title

Date

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General VPDES Permit for Small Municipal Separate Storm Sewer Systems Permit No. VAR040057

Year 3 Annual Report
July 1, 2020 – June 30, 2021
City of Alexandria, Virginia

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ACRONYMS

AWL – Animal Welfare League
BMP – Best Management Practice
C&I – Construction and Inspection
COVID-19 - Novel Coronavirus Disease
CSS – Combined Sewer System
CRM - Customer Relations Management
DEQ – Virginia Department of Environmental Quality
E&SC – Erosion and Sediment Control
EIU – Environmental Industrial Unit
EMO – Environmental Management Ordinance
EPC – Environmental Policy Commission
GI – Green Infrastructure
HOA – Home Owners Association
LID – Low Impact Development
MCM – Minimum Control Measure
MS4 - Municipal Separate Storm Sewer System
NMP - Nutrient Management Plans
NVRC – Northern Virginia Regional Commission
OEQ – Office of Environmental Quality
PCB - polychlorinated biphenyls
PSA - Public Service Announcement
PY – Permit Year
RCPA – Department of Recreation, Parks and Cultural Activities
SEAS - School Environmental Action Showcase
SWCB – State Water Control Board
SWM - Stormwater Management Division
SWPPP – Stormwater Pollution Prevention Plan
T&ES – Department of Transportation and Environmental Services
TMDL – Total Maximum Daily Load
VCA – Veterinary Centers of America
VESCL – Virginia Erosion and Sediment Control Law
VESCR – Virginia Erosion and Sediment Control Regulations
VPDES - Virginia Pollutant Discharge Elimination System
VSMP – Virginia Stormwater Management Program
WQSC – Water Quality Steering Committee
WQWG – Water Quality Work Group

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1 Introduction

This 2020 – 2021 MS4 Annual Report is prepared by the City of Alexandria (City) Department of Transportation and Environmental Services (T&ES) in accordance with the requirements of the General VPDES (Virginia Pollutant Discharge Elimination System) Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (9VAC25-890-40 *et seq.*). The City was originally issued General Permit VAR040057 on July 8, 2003 under the program. DEQ reissued the current five-year permit effective November 1, 2018.

Under the terms of the General Permit, the City has developed a Municipal Separate Storm Sewer System (MS4) Program Plan to implement six minimum control measures aimed at reducing the discharge of pollutants to the “maximum extent practicable.” Minimum control measures are:

1. Public Education and Outreach
2. Public Involvement and Participation
3. Illegal 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

The General Permit requires that the City submit annual reports no later than October 1st covering the reporting period of the preceding July 1st through June 30th. This annual report covers the period of July 1, 2020 through June 30, 2021. The 2018-2023 General Permit outlines the requirements for the annual report as follows (*italicized below*):

Part I C 4 The permittee shall summarize revisions to the MS4 program plan as part of the annual report as described in Part I D 2.

Part I D 2 Annual reporting requirements

2. The annual report shall include the following general information:

- a) The permittee, system name, and permit number;*
- b) The reporting period for which the annual report is being submitted;*
- c) A signed certification as per Part III K;*
- d) Each annual reporting item as specified in an MCM in Part I E; and*
- e) An evaluation of the MS4 program implementation, including a review of each MCM, to determine the MS4 program's effectiveness and whether or not changes to the MS4 program plan are necessary.*

4. For those permittees with requirements established under Part II A, the annual report shall include a status report on the implementation of the Chesapeake Bay TMDL action plan in accordance with Part II A of this permit including any revisions to the plan.

5. For those permittees with requirements established under Part II B, the annual report shall include a status report on the implementation of the local TMDL action plans in accordance with Part II B including any revisions to the plan. 6.

6. For the purposes of this permit, the MS4 program plan and annual report shall be maintained separately and submitted to the department as required by this permit as two separate documents.

PUBLIC EDUCATION AND OUTREACH (MCM #1), Part I E 1 g

- 1) A list of the high-priority stormwater issues the permittee addressed in the public education and outreach program; and*
- 2) A list of the strategies used to communicate each high-priority stormwater issue.*

PUBLIC INVOLVEMENT/PARTICIPATION (MCM #2), Part I E 2 f

- 1) A summary of any public input on the MS4 program received (including stormwater complaints) and how the permittee responded;*
- 2) A webpage address to the permittee's MS4 program and stormwater website;*
- 3) A description of the public involvement activities implemented by the permittee;*
- 4) 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*
- 5) The name of other MS4 permittees with whom the permittee collaborated in the public involvement opportunities.*

ILLCIT DISCHARGE DETECTION AND ELIMINATION (MCM #3), Part I E 3 d

- 1) A confirmation statement that the MS4 map and 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 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 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.*

CONSTRUCTION SITE STORMWATER RUNOFF CONTROL (MCM #4), Part I E 4 d

- 1) If the permittee implements a construction site stormwater runoff program in accordance with Part I E 4 a (3):*
 - (a) A confirmation statement that land disturbing projects that occurred during the reporting period have been conducted in accordance with the current department approved standards and specifications for erosion and sediment control; and*
 - (b) If one or more of the land disturbing projects were not conducted with the department approved standards and specifications, an explanation as to why the projects did not conform to the approved standards and specifications.*
 - (c) Total number of inspections conducted; and*

- (d) The total number and type of enforcement actions implemented and the type of enforcement actions*

POST CONSTRUCTION STORMWATER MANAGEMENT (MCM #5), Part I E 5 i

- 1) If the permittee implements a Virginia Stormwater Management Program in accordance with Part I E 5 a (1) and (2):*
 - (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) 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 I E 5 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; and*
- 5) A confirmation statement that the permittee electronically reported BMPs using the DEQ BMP Warehouse in accordance with Part I E 5 g and the date on which the information was submitted.*

POLLUTION PREVENTION AND GOOD HOUSEKEEPING FOR MUNICIPAL FACILITIES (MCM #6), Part I E 6 q

- 1) A summary of any operational procedures developed or modified in accordance with Part I E 6 a during the reporting period;*
- 2) A summary of any new SWPPPs developed in accordance Part I E 6 c during the reporting period;*
- 3) A summary of any SWPPPs modified in accordance with Part I E 6 f or the rationale of any high priority facilities delisted in accordance with Part I E 6 h during the reporting period;*
- 4) A summary of any new turf and landscape nutrient management plans developed that includes:*
 - (a) Location and the total acreage of each land area; and*
 - (b) The date of the approved nutrient management plan; and*
- 5) A list of the training events conducted in accordance with Part I E 6 m, including the following information:*
 - (a) The date of the training event;*
 - (b) The number of employees who attended the training event; and*
 - (c) The objective of the training event.*

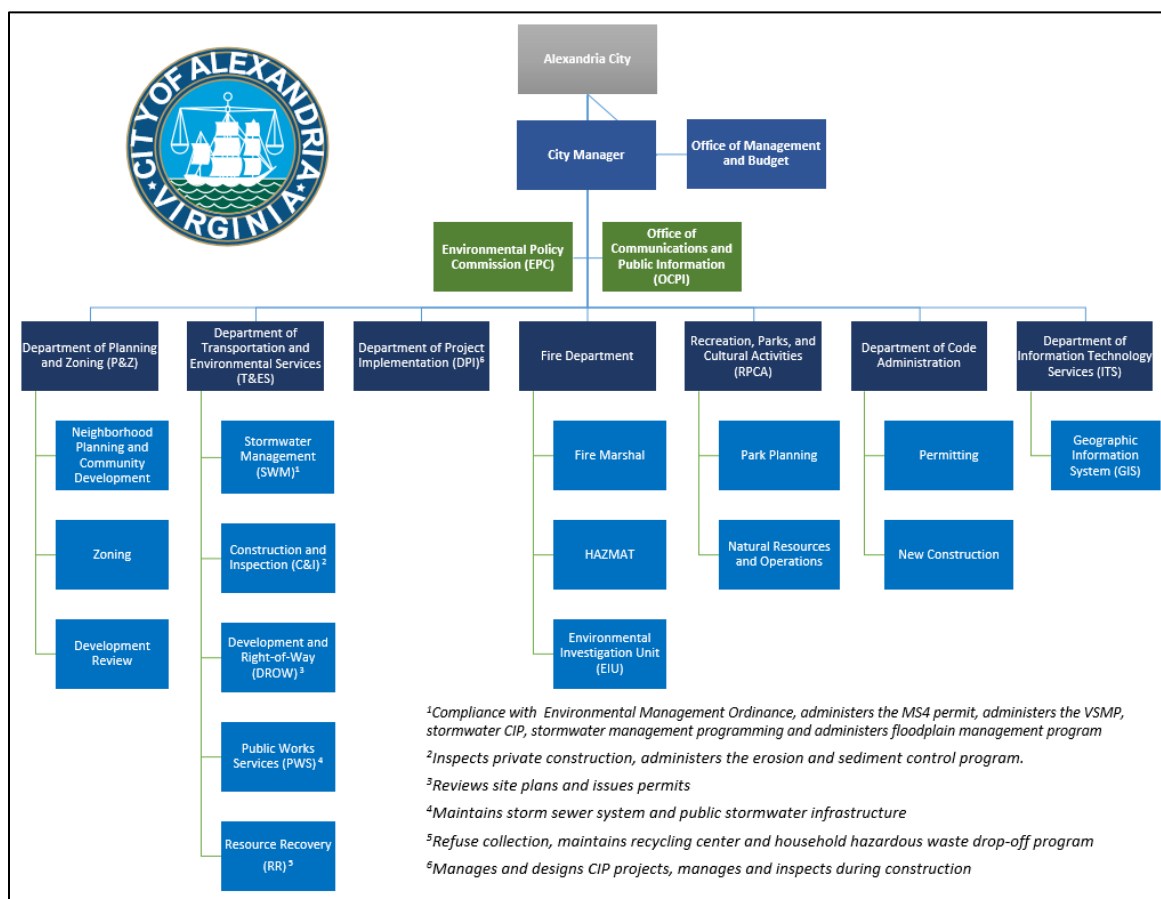
2 General Information

This section provides general information as required in Part I D 2 of the General Permit.

Name of Permittee:	System Name:	Reporting Period:	Permit Number:
City of Alexandria	City of Alexandria MS4	2019 - 2020	VAR040057
Modifications to Roles and Responsibilities: None.			
6th Order HUC:	Potomac River (PL28)	Cameron Run (PL26)	Four Mile Run (PL25)

The organizational chart outlines major stormwater activities and functions divided among several different departments and divisions. Additional information about each department is found in the MS4 Program Plan. In 2016, The City created a separate Stormwater Management Division (SWM) that has the primary responsibility for coordinating permit compliance.

Stormwater Management Organizational Chart – Roles and Responsibilities



3 2020 – 2021 Permit Conditions Compliance Status

The following provides the status of best management practices for each of the six minimum control measures (MCMs) during the 2020 – 2021 reporting period or Permit Year 3 (PY3). The City previously updated the MS4 Program Plan based on the requirements in the 2018-2023 General Permit. This annual report is organized to reflect the City’s current MS4 Program Plan, so that the BMPs under each MCM follow the format for the program plan. Each section in this report begins with a summary table describing the task, the implementation year, the measurable goal as described in the City’s MS4 Program Plan, and task status. Following the summary table is a more detailed discussion of the implementation status of each task. Additional support materials are found in the appendices.

Due to the ongoing COVID-19 global pandemic, much of the activities administered in accordance with education, outreach, public involvement and participation, and staff training remained virtual during PY3. Information regarding these activities is included in this report.

The City completed the update of the MS4 Program Plan to comply with the 2018-2023 permit requirements on May 1, 2019 and made revisions effective July 1, 2020. Additional updates to the MS4 Program Plan are effective July 1, 2021 and summarized herein.

3.1 Public Education and Outreach (MCM #1)

Table 1 summarizes activities associated with Minimum Control Measure #1 and their completion status. Additional detail is provided after the table and in Appendix A.

Table 1. Summary of Activities for MCM #1

Strategy	BMP	Measurable Goal	Status
1A – Traditional Written Materials	Distribute pamphlets and other written materials about proper fertilization, pet waste, household hazardous waste, and other water quality topics at outreach events.	Dates and location of outreach events with the approximate number of attendees.	✓ Complete
1B – Alternative Materials	Distribute promotional items (giveaways) at education and outreach events. Include the Eco-City Alexandria Clean Waterways logo on these items, where possible.	Dates and location of outreach events with the approximate number of attendees.	✓ Complete
1C - Signage	Place BMP identification signs at surface structural stormwater BMPs (bioretention, swales, green roofs, etc.)	The total number of BMPs within the City.	✓ Complete
1C - Signage	Installation, maintenance, and re-stocking of pet waste stations with appropriate signage.	Number of existing and new pet waste stations.	✓ Complete

Strategy	BMP	Measurable Goal	Status
		Number of pet waste bags used and distributed to refill stations.	
1C - Signage	Install storm drain markers.	Number of markers placed.	✓ Complete
1C - Signage	Install and maintain stream crossing signs.	Number of existing signs and number of signs added or replaced.	✓ Complete
1D – Media Materials	Use eNews (City electronic news distribution system), social media (Facebook or Twitter), television, and/or websites to convey message.	The number of individuals signed up to receive the City’s eNews. The number of Facebook Page followers and Twitter followers. The number of visits to the Stormwater Management webpage. Clean Water Partners Only Rain Summary Report of Findings.	✓ Complete
1D – Media Materials	Have a reporting mechanism on the City’s website so that residents can report potential illicit discharges.	The number of stormwater pollution related complaints received.	✓ Complete
1D – Media Materials	Use social media (Facebook, Instagram, or Twitter), website, and/or television including airing the City’s stormwater pollution prevention video on the government/community access channel.	The number of individuals signed up to receive the City’s eNews and the number of Facebook Page, Instagram, and Twitter followers. The number of visits to the Stormwater Management webpages including the TMDL, MS4, and What You Can Do to Protect Stormwater webpages.	✓ Complete
1E – Speaking Engagements	Present at no less than 2 events per year and include messages about excess nutrients, pet waste, illicit discharges and other stormwater quality issues.	Dates and locations of presentations with the approximate number of attendees.	✓ Complete

*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).

Public Education and Outreach Plan Development

The Public Education and Outreach Program identified (1) Chesapeake Bay Nutrients (phosphorus and nitrogen), (2) Pet Waste; and (3) Illicit Discharges, as high-priority water quality issues as part of the update to the Program Plan and created three distinct sets of BMPs to address these issues. A summary of specific strategies chosen from General Permit Table 1 and implemented during this reporting period for each of the high-priority water quality issues is provided at the end of this BMP section. The City also continues to implement BMPs associated with other aspects of water quality and has included these in the updated Public Education and Outreach Plan.

Clean Water Partners

The City continues to participate in the Northern Virginia Regional Commission (NVRC) Clean Water Partners, a regional educational partnership among other MS4 permittees: Fairfax County; Arlington County; Loudoun County; Fairfax Water; City of Fairfax; City of Falls Church; City of Manassas; Town of Leesburg; Town of Dumfries; Doody Calls; Northern Virginia Regional Commission; George Mason University; Virginia Coastal Zone Management Program; Fairfax County Public Schools; Prince William County Public Schools; and the Northern Virginia Soil and Water Conservation District. For the 2020 – 2021 reporting period, the Clean Water Partners used television, print, internet advertising and the “Only Rain” website (www.onlyrain.org) to distribute messages linked to specific stormwater problems associated with high-priority water quality issues, such as proper pet waste disposal, not bagging lawn clippings, planting native plants, and proper disposal of waste.

The program’s three high-priority water quality issues are specifically bacteria, nutrients, and chemical contaminants which are consistent with the City’s identified issues.

Included in Appendix A and referenced below under BMP 1D measure of effectiveness is the annual report on the Clean Water Partners program efforts with information on the effectiveness of the program based on the results of the program’s annual survey. Specifically, the program conducted an online poll survey of 500 Northern Virginia residents to determine the effectiveness of on-line efforts and a series of TV, Facebook, and Twitter ads to reveal any changes in behavior, and to aid in directing the future efforts of the campaign. As a new strategy in 2020, the Partners contracted with a digital communications firm to develop and implement a social media campaign on Facebook and Twitter. The results so far have shown that these platforms are an effective way to engage with the target audiences.

Approximately 34% of Alexandrians responding to the survey recalled seeing ads on TV, Facebook, or Twitter on reducing water pollution.

The annual survey found that due to seeing the reducing water pollution advertisements:

- 46% of respondents pick up pet waste more often;
- 32% of respondents plan to fertilize fewer times during the year; and
- 19% of respondents now properly dispose of motor oil.

The survey also documented the following regarding responding Alexandrians:

- 60% believe stormwater ends up in local streams, Potomac River or Chesapeake Bay;
- 61% recognized the “Only Rain Down the Storm Drain” logo used by the program;
- 51% have received information about reducing water pollution in the past 12 months;
- 43% had heard of water quality activities in the past 12-months; and
- 42% said that they probably or would report potential pollution to the City.

BMP 1A Traditional Written Materials

Traditional written materials are a proven and reliable strategy. The City has created stormwater educational flyers/brochures and pamphlets that are distributed at various outreach events. 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.

Measure of Effectiveness

Dates and locations of outreach events where these brochures were made available with the approximate number of attendees can be found in the table under [BMP 2C](#). No changes to the MS4 Program Plan were deemed necessary.

BMP 1B Alternative Materials

Also distributed at outreach events are promotional items, or alternative materials, which are giveaways 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.

Measure of Effectiveness

Dates and locations of outreach events where these promotional items were distributed with the approximate number of attendees can be found in the table under [BMP 2C](#). No changes to the MS4 Program Plan were deemed necessary.

BMP 1C Signage

The City continues to require all new and redevelopment projects to provide signage or labeling to identify new surface structural stormwater BMPs as part of the site plan approval process.

Additionally, the City has installed stream crossing signs at locations where hike and/or bike trails cross major waterways. The City maintains and replaces these signs as needed. No additional signs were installed during this reporting period. The City maintains 20 signs at 18 road crossings and five signs at three trail crossings. The signs promote awareness of Alexandria's surface water resources, water bodies, drainage basins, and location in the Chesapeake Bay Watershed.

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 outreach events and to work with interested residents to implement storm drain marking.

Measure of Effectiveness

- BMP signage is required for surface structural stormwater BMPs installed and a photo of the BMP sign and a copy of a final site plan sheet calling for the BMP signage can be found in Appendix A. See Appendix D for a list of all stormwater BMPs installed in this permit cycle.
- The City continues to maintain the stream crossing signs so that they are in good condition. A photo of one of the stream crossing signs can be found in Appendix A.
- Storm drain markers were installed as a requirement of development or redevelopment and a sample plan sheet with this requirement is provided in Appendix A. For FY21 approximately 30 new drain markers have been placed.
- No changes to the MS4 Program Plan were deemed necessary.

BMP 1D Media Materials

The City continues to host a stormwater quality webpage and has created a dedicated page at www.alexandriava.gov/Stormwater. The page includes information about the City's Stormwater Management Program, the Chesapeake Bay Action Plan, the City's Virginia Stormwater Management Program (VSMP), the MS4 Program – to include the Program Plan and each annual report for this permit cycle – 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, VSMP requirements, and the Construction General Permit. It also contains information and links to the City's Environmental Management, and Erosion and Sediment Control ordinances. 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, Instagram, and Twitter account. These tools are used to promote water quality events such as volunteer stream cleanups, build your own rain barrel workshops, and pre-made rain barrel sales events, and raise awareness of water quality topics.

The City also uses *Alexandria eNews* to distribute information through email on nearly 100 topics (including stormwater related messages). Users sign up for these email alerts and choose to receive 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 and the Office of Communication & Public Information (OCPI) 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).

The City maintains its online resident reporting capabilities (See BMP 3A). The City's Alex311 system information is prominent on the City's main page and subordinate pages.

Measure of Effectiveness

See the tables under the High Priority Issues for the following:

- The number of individuals signed up to receive the City's eNews.
- The number of Facebook Page followers, Instagram followers, and Twitter followers.
- The number of visits to the Stormwater Management webpage.

See Appendix A for the following:

- Sample eNews, Facebook posts, Instagram posts, and Twitter posts
- The Clean Water Partners Only Rain Summary Report of Findings

No changes to the MS4 Program Plan were deemed necessary.

BMP 1E Speaking Engagements

T&ES-SWM staff often presents at various meetings and events including rain barrel workshops, homeowner association meetings, community events, 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. City staff participated in two virtual speaking engagements focused on general stormwater education – one in partnership with the Alexandria Library and one in support of the newly launched Eco-City Academy. The City participated in seven (7) speaking engagements specific to stream restoration projects that are currently in the planning phase that are in the Chesapeake Bay TMDL Action Plan.

Measure of Effectiveness

The events were virtual, with dates and approximate number of attendees at each speaking engagement can be found in the table under General Stormwater Pollution Prevention Public Education and Outreach. No changes to the MS4 Program Plan were deemed necessary.

High-Priority Issues

#1 – Chesapeake Bay Nutrients

Chesapeake Bay nutrients (nitrogen and phosphorus) have been identified as the as the first high-priority water quality issue. The following strategies were implemented in accordance with the MS4 Program Plan and as described in the BMPs 1A, 1C, 1D, and 1E above. Documentation of each activity is found in Appendix A.

1. Distributed proper fertilization pamphlets and other written materials at outreach events, where applicable.

2. Used eNews (City electronic news distribution system), social media (Facebook or Twitter), television, and/or websites to convey messages regarding Chesapeake Bay Nutrients. Message addressed seasonally specific stormwater pollution prevention tactics for nutrients and pointed readers back to the City's website with additional information on the topic.
3. Maintained and updated a "Stormwater Management" webpage at www.alexandriava.gov/Stormwater related to the proper application and use of fertilizers to protect water quality. Also, a link to the NVRC www.onlyrain.org website was included.
4. 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).
5. Placed BMP identification signs at surface structural stormwater BMPs (bioretention, swales, green roofs, etc.) as each BMP is installed.
6. Presented at events and included a message about excess nutrients in stormwater.
7. Continued to participate in the NVRC Clean Water Partners program he partners used television, print, internet advertising and the Only Rain website to distribute messages such as over fertilization of lawns and gardens. The Clean Water Partners 2021 Summary and Survey can be found in Appendix A.

The goal of these strategies is to reach a wide audience with a message regarding the potential impact of nutrients on the Chesapeake Bay as well as specific actions that can be taken to reduce pollution. The table below provides the potential reach of different media used in the City's Public Education and Outreach Plan.

For a list of public education and outreach events, please see the table under [BMP 2C](#). In addition, Appendix A contains examples and supporting materials for these best management practices.

#2 – Pet Waste

The second high-priority water quality issue identified is bacteria from pet waste. The following activities were implemented during this permit cycle in accordance with the MS4 Program Plan to address pet waste.

1. Distributed pet waste pamphlets and other written materials at all appropriate outreach events where applicable.
2. Used eNews (City electronic news distribution system), social media (Facebook, Instagram, and Twitter), television, and/or websites to convey message of the importance of picking up after pets and disposing of the waste properly.

3. Continued to maintain City pet waste stations and supply bags for stations. A few hundred pet waste bags were provided during this permit cycle. Additional installations of stations will continue to occur, where appropriate, to make pick-up and disposal more convenient. Also, there are many residential communities in the City that install and maintain their own pet waste stations.
4. Distributed “dog bone” pet waste bag dispensers and refills at outreach event.
5. Continues to participate in the NVRC Clean Water Partners regional efforts, with the survey found in Appendix A.

The goal of these strategies is to reach a wide audience with the pet waste message and specific actions to reduce pollution.

The Clean Water Partners annual survey found that 46% of respondents picked up pet waste more often after seeing the advertisements.

For a list of public education and outreach events, please see the table in Section [BMP 2C](#). In addition, Appendix A contains examples and supporting materials for these best management practices.

#3 – Illicit Discharges

The third high-priority water quality issue identified is illicit discharges. The following activities were implemented in accordance with the MS4 Program Plan during the permit year to address illicit discharges.

1. Used eNews (City electronic news distribution system), social media (Facebook or Twitter), television, and/or websites to convey messages regarding illicit discharges.
2. Maintained the www.alexandriava.gov/Stormwater webpage which includes a page specifically related to illicit discharges for the targeted businesses and the general public, and included a link to the NVRC www.onlyrain.org website.
1. In 2016, the City developed a video about stormwater pollution prevention and the City’s Stormwater Program. This video can be found on YouTube and is also aired on both the government access channel (Channel 70) and the community access channel (Channel 69). A screen shot of the video on YouTube can be found in Appendix A.
3. Continued to participate in the NVRC Clean Water Partners regional efforts. Last permit cycle, focus transitioned from proper oil change procedures and disposal to illicit discharges. The Northern Virginia Clean Water Partners 2021 Summary and Survey can be found in Appendix A.

The goal of these strategies is to reach a wide audience with an illicit discharge message and specific actions to reduce pollution.

Table 2 provides strategy, potential target reach, and estimated reach information for the high-priority issues.

Table 2. Estimated Reach of High-Priority Issues

Media	Potential Target Reach	Estimated Permit Year Reach
eNews message	Environmental eNews Subscribers – 6,981	100% of Environmental eNews Subscribers
Social Media Message	Visitors to T&ES Facebook Page and Twitter Followers	T&ES Facebook Page has 1,795 followers. T&ES has 2,081 Twitter followers. Instagram has 1,279 followers.
Stormwater Webpage	3,242 unique page views	100% of unique page views
PSAs	TV Viewers – 50,000 subscribers (approximate)	100% of PSA Viewers

General Stormwater Pollution Prevention Public Education and Outreach

The City implemented the following activities during the permit cycle in accordance with the MS4 Program Plan.

1. Distributed other written materials about water quality and stormwater pollution prevention at outreach events. For FY2021, this information was shared virtually and the City continued to update and refine it's online stormwater presence, including the Stormwater Quality [webpage](#) which includes a link to the [City's BMP site tour](#).
2. The City developed several webpages to help engage the community with stream restoration efforts:
 - [Taylor Run Stream Restoration](#)
 - [Virtual Site Tour](#)
 - [Strawberry Run Stream Restoration](#)
 - [Lucky Run Stream Restoration](#)
3. Used social media (Facebook, Instagram, and Twitter), webpages, and/or television including airing the City's stormwater pollution prevention video on the government/community access channel.
4. Maintained stream crossing signs to promote awareness of Alexandria's surface water resources, water bodies, and drainage basins.
5. Presented at virtual events to include message about water quality and stormwater pollution prevention.

The goal of this BMP is to reach a wide audience with a general pollution prevention message as well as specific actions that can be taken to reduce pollution. The following table summarizes the City's public education and outreach activities and events where information on pollution

prevention and water quality were distributed. Appendix A contains examples from the City's general education program.

Table 3. Summary of Public Education and Outreach Activities

Activity	Date	Topic	Number of Participants (approximate)
Strawberry Run Stream Restoration Virtual Public Community Meeting	10/28/2020	Stream Restorations / Stormwater	80
Taylor Run Stream Restoration Civic Association Meeting (Invitation)	8/13/2020	Stream Restorations / Stormwater	25
Taylor Run Stream Restoration Public Community Meeting	9/29/2020	Stream Restorations / Stormwater	100
Taylor Run Stream Restoration Civic Association Meeting (Invitation)	11/10/2020	Stream Restorations / Stormwater	25
Taylor Run Stream Restoration Update to the Parks and Recreation Commission	11/19/2020	Stream Restorations / Stormwater	25
Taylor Run Stream Restoration Onsite Walkthrough with the Environmental Policy Commission	12/13/2020	Stream Restorations / Stormwater	15
Taylor Run Stream Restoration Update to the Environmental Policy Commission	12/14/2020	Stream Restorations / Stormwater	25
Taylor Run Stream Restoration Project Onsite Walkthrough	4/12/2021	Stream Restorations / Stormwater	50
Climate Change Adaption - Shoring up Your Home in a Changing World	3/23/2021	Stormwater and Flood Mitigation	20
Eco City Academy	4/5/2021	Stormwater and Water Resources	15

3.2 Public Involvement/Participation (MCM #2)

The following table is a summary of activities for Minimum Control Measure #2 and their completion status. Additional detail is provided after the table and in Appendix B.

Table 4. Summary of Activities for MCM #2

BMP	Measurable Goal	Status
2A Public Reports, Input, and Participation Procedures		
Maintain the City's web-based reporting (Alex311) and call center systems.	Include a screen shot of Alex311 and phone number for T&ES Stormwater management.	✓ Complete
Post MS4 Program Plan on webpage and document input/feedback.	Document that the program plan has been placed on the webpage and any input received on the plan.	✓ Complete
2B MS4 Program and Stormwater Pollution Prevention Webpage		
Maintain the City's MS4 and Stormwater Pollution Prevention Webpage	Provide the address of the webpage and a snapshot of the webpage.	✓ Complete
2C Local Activities Public Involvement		
Implement at least two clean-ups per year	Document sponsorship and participation in clean-up events including approximate participation	✓ <i>Due to COVID-19 pandemic, this was limited to one City-sponsored clean-up</i>
Participate in at least two educational events per year	Document sponsorship and participation in educational events, including approximate participation	✓ Complete
Continuously implement the storm drain marker program and maintain City owned pet waste stations.	Document the number of individuals marking storm drains and the maintenance of City owned pet waste stations	✓ Complete

BMP 2A Public Reports, Input, and Participation Procedures

The City implemented the following BMPs during this permit year in accordance with the MS4 Program Plan.

1. Maintained Alex311 web-based problem reporting and call center (311) 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 input. Responded to received reports, complaints, and other input.
2. Posted the updates to the MS4 Program Plan no later than 30 days after the update (10/1) to the City's Stormwater MS4 Program webpage (www.alexandriava.gov/93364). 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 input and feedback on the plan.

Measure of Effectiveness

1. A screen capture of Alex311 webpage is provided in Appendix B. Potential illicit discharge complaints, some which were received through Alex311, may be found in Appendix C. The MS4 Program Plan was updated with information on Alex311 in FY20.
2. The updated MS4 Program Plan was posted in July 2020. No comments were received for the plan. A screen shot of the stormwater webpage that shows the link to the MS4 Program Plan with the T&ES-SWM phone number is provided in Appendix B.

BMP 2B MS4 Program and Stormwater Pollution Prevention Webpage

The City has developed a website dedicated to stormwater pollution prevent, water quality and the MS4 Program at www.alexandriava.gov/Stormwater that has links to other aspects of the stormwater management program. According to 2016 Census data, over 81% of households in the United States have access to the internet. The site provides information about the program, serves as a forum to distribute educational materials, includes information on where to report suspected illegal dumping, and makes documents accessible to the public for review and comment.

In accordance with Part I.E.2.b, the City's MS4 Program and Stormwater Pollution Prevention webpage was updated to contain:

1. Current MS4 permit and coverage letter;
2. Most current MS4 Program Plan;
3. Annual reports from FY2015 to current;
4. T&ES-SWM main phone number and Alex311 link through "Contact Us" at the top of the page for reporting illicit discharges or other potential stormwater pollution concerns; and
5. Email address (MS4ProgramPlan@alexandriava.gov) for providing input on the MS4 Program Plan and other general inquiries about the program.

Measure of Effectiveness

The address to the City's MS4 Program webpage is www.alexandriava.gov/93364 and a screen shot of the webpage is provided in Appendix B. No updates to the MS4 Program Plan were deemed necessary.

BMP 2C Local Activities Public Involvement

Typically, the City sponsors, promotes, and participates in numerous local events to educate citizens about the importance of preventing stormwater pollution. However, due to the global COVID-19 pandemic, these activities were reduced, cancelled, and/or transitioned to virtual events in order to protect human health, as described below.

- The September 2020 Virginia Clean Waterways cleanup (International Coastal Cleanup) event was not held due to the COVID-19 public health emergency.
- The City attempted to schedule a cleanup in March in partnership with One Water but it was not held due to the COVID-19 public health emergency. Initiated in 2018, One Water Alexandria is a partnership between the three water entities that serve the City of Alexandria: Virginia American Water, who provides drinking water; the City of Alexandria, who owns the sanitary and storm sewer infrastructure; and Alexandria Renew Enterprises (AlexRenew), who owns the water resource recovery facility, interceptors, pump stations, and combined sewer outfalls.
- The City's annual Earth Day event was held virtually.

The City did participate in several public outreach events as documented in the following table.

Table 5. Public Stormwater Outreach Events during PY3

Activity	Date	Participants	Event Details
Virtual Water Discovery Days	9/6/2020 – 9/12/2020	150	The One Water partnership celebrated Water Discovery Day by hosting a week-long virtual event which included several educational videos related to water resources in the City of Alexandria. Links to YouTube videos and descriptions are located at www.alexandriava.gov/118792 .
Virtual Earth Day Celebration: Restore Our Earth	Week of 4/18/2021	150	In spring 2021, the Earth Day event was virtual. Of note was the City's focus on Water Resources under "Restore Our Water" and a Student Artwork video . Learn more at www.alexandriava.gov/EarthDay .
Virtual Student Environmental Action Showcase	4/22/2021	10	Regional event welcoming students from Alexandria, Arlington, Fairfax City/County, Falls Church, Loudoun, Prince William, and beyond. Learn more at www.novaoutside.org/events/seas/
Clean the Bay Day (In-Person)	6/5/2021	20	Volunteers picked up trash located along the Potomac River near Old Town.

Measure of Effectiveness

The T&ES-SWM organized, coordinated, and participated in several virtual activities focused on water quality in the City of Alexandria where staff had the opportunity to educate participants about stormwater pollution and prevention and provide online resources focused on education and outreach. These activities all create awareness regarding the importance of preventing stormwater pollution. No updates to the MS4 Program Plan were deemed necessary.

3.3 Illicit Discharge Detection and Elimination (MCM #3)

The following table is a summary of activities for Minimum Control Measure #3 and their completion status. Additional detail is provided after the table and in Appendix C.

Table 6. Summary of Activities for MCM #3

BMP	Measurable Goal	Status
3A Storm Sewer System Outfall Map and Outfall Information Table		
Maintain an up-to-date storm sewer map and outfall information table.	Keep up-to-date storm sewer map and outfall information table available on request.	✓ Complete
Update the storm sewer map and outfall table by October 1 st of each year.	Include PDF of updated storm sewer map and information table in the annual report. Provide a summary of updates.	✓ Complete
Provide GIS shapefiles to DEQ no later than July 1, 2019	Include documentation of submittal.	✓ Complete
Notify downstream MS4s of any new physical interconnections.	Include copies of previous notifications and list and provide any notifications from the permit year.	✓ Complete
3B Prohibition on Illicit Discharges		
Enforce prohibition on illicit discharges (Chapter 13 of City Code).	Report number of illicit discharges identified and report how they were controlled or eliminated. Review City IDDE Program Manual and corresponding City Code and make recommendations accordingly.	✓ Complete
3C Illicit Discharge Detection and Elimination Written Procedures		
Maintain, implement and enforce the written procedures found in the City's IDDE Program Manual.	Follow procedures and update as necessary.	✓ Complete
Investigate suspected illicit discharges.	Report number of suspected illicit discharges and provide a narrative on how they were controlled or eliminated.	✓ Complete

BMP	Measurable Goal	Status
Screen at least 50 outfalls annually such that no more than 50 are screened in the previous 12-month period.	Include documentation of the outfall screening completed during the permit year to include results, resolution, and investigation closure. Any follow-up actions will also be included.	✓ Complete
3D Alex311		
Maintain Alex311	Include a screen capture of Alex311. Document the number and types of incidents handled.	✓ Complete
3E Household Hazardous Waste (HHW) Program		
Provide HHW collection services to all residents	Provide copies of the program web site and brochures. Document program participants and the number of equivalent barrels of waste accepted.	✓ Complete
3F Identification of Permitted Stormwater Discharges		
Keep up-to-date permitted discharges information and distribute to field crews.	Provide up-to-date map and list of state-permitted stormwater discharges.	✓ Complete
3G Prohibition of Outdoor Cleaning of Restaurant Equipment		
Enforce prohibition on outdoor cleaning of restaurant equipment.	Document example SUP, if one has been done in the permit year.	✓ Complete

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

The City has previously developed and continues to maintain a storm sewer system map showing all features required in the MS4 permit, including all stormwater outfalls discharging to the waters of the Commonwealth, as well as pipes, catch basins, and inlets. The map provides a valuable tool to fully understand the storm system and aids in investigating and eliminating possible illicit discharges. The data used to develop this map is continuously updated as new systems are installed and needed refinements to the system area discovered. The updated data is used to create the map which is exported for the annual report each permit cycle. Therefore, data shown on the map reflects all changes and updates to the City's documented storm sewer system as the date on the map.

The City shall continue to identify physical interconnections with other regulated MS4s and notify in writing any downstream regulated MS4 of any new physical interconnections.

Measure of Effectiveness

The storm sewer system map and corresponding outfall information table have been updated to reflect any changes to the MS4 occurring on or before June 30th of the reporting year. Updates to the storm sewer system map are completed as redevelopment occurs and when refinements to the system are realized. The most current storm sewer system map and associated outfall table has been provided in Appendix C.

On July 30, 2020, the City provided an updated letter of adjacent MS4 jurisdictions that likely interconnections exist however, none have been identified. The letters were shared with National Park Service, George Washington Memorial Parkway, Arlington County, Fairfax County, and Virginia Department of Transportation. Copies of these notifications can be found in Appendix C. No updates to the MS4 Program Plan were deemed necessary.

BMP 3B Prohibition on Illicit Discharges

The purpose of this BMP is to ensure that the City has the legal tools necessary to effectively prohibit illicit discharges and to conduct necessary enforcement in the case of an illicit discharge. City Council has adopted appropriate measures, including civil and criminal penalties, to prohibit illicit discharges. The City Attorney has reviewed the City Code and has determined that no additional changes are needed at this time. 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 updated the Environmental Offenses ordinance to include civil penalties for identified illicit discharges.

Measure of Effectiveness

Appendix C provides a summary of illicit discharge complaints and a narrative on how each complaint was handled, including how any actual discharge was controlled or eliminated as appropriate. No pattern of illicit discharges necessitated a review of policies, procedures, or ordinances. No updates to the MS4 Program Plan were deemed necessary.

BMP 3C Illicit Discharge Detection and Elimination Written Procedures

Pursuant to the 2013-2018 General Permit program plan update requirements, the City developed the Illicit Discharge Detection and Elimination Program manual which included written policies, procedures, and legal authority for the detection, investigation, and elimination of illicit discharges. Outfall field screening is performed in accordance with the IDDE Program manual which includes the requirement outlined in Part I.E.3.c of the 2018-2023 permit. The City's IDDE Program manual was recently updated to ensure current methodology and compliance with the current permit, to include the use of civil penalties. This manual can be found in the City's MS4 Program Plan.

The City continues to maintain, implement and enforce the written policies and 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 2018-2023 permit.

- Performing 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 were prioritized for field screening by the City in accordance with the rationale and procedure found in the IDDE Program manual.
- The use of enforcement actions and legal penalties as outlined in the IDDE Program manual, when necessary.

Measure of Effectiveness

A list of illicit discharges to the MS4 including spills reaching the MS4 can be found in Appendix C. In addition, a list of all investigations performed for reported suspected illicit discharges to include results, resolution, and date of investigation closure can also be found in Appendix C.

A total of 50 outfalls were screened during the reporting period as part of the dry weather screening program, with a table summarizing the effort found in Appendix C. No updates to the MS4 Program Plan were deemed necessary.

BMP 3D Alex311

Alex311 uses a web-based reporting form, smart phone app, and call center built upon the Salesforce Customer Relationship Management (CRM) system. The Salesforce CRM system is a cloud-based repository for public complaints and service requests. The CRM is integrated with the City's asset management database, Cityworks™, for public submissions requiring asset maintenance or investigation. Illicit discharge and illegal dumping complaints are investigated by T&ES-Stormwater Management Division and the Fire Marshal's Environmental and Industrial Unit (EIU). All public submissions are tracked through the City's CRM database and Cityworks™.

The Alex 311 Call Center connects customers to information, services, and solutions using phone (703-746-HELP or 311) and web based portals to receive and process requests and complaints. The 311 Call Center enables the City to standardize best practices and knowledge base information throughout the City in support of citizen engagement, customer service, service request and case management services. The 311 Call Center provides improved tracking and information updates for customers through the life cycle of the service request, streamlined service request creation and management, and data-driven analytics such as dashboards and maps.

Measure of Effectiveness

The City (through T&ES-Stormwater and EIU reporting mechanisms) handled 32 water quality and illicit discharge related complaints or incidents during this reporting period. The T&ES SWM Division receives complaints directly from Alex311 and/or documents the information received via email, phone or another source. Reports are also made via 911. The EIU is responsible for entering this information into the EnerGov database. The SWM Division receives and enters data into Alex311 for incidents handled solely by their office. During coordinated responses, the EIU and SWM Division maintain both the EnerGov and Alex311 database. Screen shots of EnerGov, Alex311, and Cityworks™ are provided in Appendix C.

Appendix C provides a summary of the complaints and a narrative on how each discharge was controlled or eliminated. During this permit year, the City responded to a fish kill report at Lake Cook. It was determined that there was a release of chlorinated pool water from a previously unknown pipe connection to Lake Cook from the NOVA Parks Great Waves Waterpark at Cameron Run Regional Park. The previously unknown connection from a nearby pumphouse with filter was thought by NOVA Parks staff to be piped directly into their sanitary line for backwashing the previous type of filter used. Upon CCTV inspection completed by TES-PWS it was found the line leads to the Lake Cook Forebay. This release led to about 60,000 gallons of chlorinated pool water entering Lake Cook's Forebay over the course of approximately 9-12 hours. As result, approximately 100-150 fish were killed due to chlorine exposure. Upon discovery of the previously unknown connection, City staff investigating the incident directed NOVA Parks staff to halt operations to take corrective action that included blocking the connection to Lake Cook. AFD placed booms at the Lake Cook discharge point and the walking bridge to capture residual material from the pool entering Lake Cook. Staff directed the NOVA Parks staff to have the connection fixed prior to resuming their operations. Staff will also be working with AlexRenew to ensure the proper discharge permits are in order.

BMP 3E Household Hazardous Waste (HHW) Program

Participation in the household hazardous waste (HHW) program continues to be a popular and effective program with approximately 16,359 participants using the program in this permit year. Materials are calculated based on 55-gallon drums or equivalent (barrels). The number of barrels has been tracked since 2008 when the materials were put into the large barrels or drums. As a result, the City continues to track this number as "equivalent" barrels. The webpage alexandriava.gov/19206 includes information on the types of materials that may be left at the drop-off points and the schedule for drop-offs. The following table provides a snapshot of HHW program statistics.

Table 7. HHW Users and Barrels by Fiscal Year (FY)

Year	Users	Barrels (or Equivalent Barrels) of HHW
FY2008	4,987	-
FY2009	6,067	754
FY2010	7,059	875
FY2011	7,920	822
FY2012	7,698	702
FY2013	8,424	759
FY2014	9,535	516
FY2015	10,476	504
FY2016	9,976	409
FY2017	10,974	359
FY2018	11,431	309
FY2019	12,278	328
FY2020	11,975	298
FY2021	16,359	385

Measure of Effectiveness

A screen capture of the HHW webpage and the most recent program brochure is provided in Appendix C. No updates to the MS4 Program Plan were deemed necessary.

BMP 3F Identification of Permitted Stormwater Discharges

The City continues to obtain updated information annually on state-permitted stormwater discharges within the City limits and maintains a map of these discharges. The purpose of this BMP is to provide field operations staff with a visual tool for identifying permitted and non-permitted discharges.

Measure of Effectiveness

A current map and table of state-permitted stormwater discharges, current as of August 2021 based on the most recent version found on the DEQ website can be found in Appendix C. No updates to the MS4 Program Plan were deemed necessary.

BMP 3G Prohibition of Outdoor Cleaning of Restaurant Equipment

The City continues to include in the Special Use Permit (SUP) issued for restaurant facilities a standard condition that states: “Kitchen equipment shall not be cleaned outside, nor shall any cooking residue be washed into the streets, alleys, or storm sewers.”

Measure of Effectiveness

A sample of a Development Special Use Permit (DSUP) reviewed during the reporting period with the appropriate language regarding restaurant equipment is found in Appendix C. No updates to the MS4 Program Plan were deemed necessary.

3.4 Construction Site Stormwater Runoff Control (MCM #4)

The following table is a summary of activities for Minimum Control Measure #4 and their completion status. Additional detail is provided in the table below and in Appendix D.

Table 8. Summary of Activities for MCM #4

BMP	Measurable Goal	Status
4A Maintain DEQ Erosion and Sediment Control Program Consistency		
Maintain E&SC program consistency with State regulations.	Document the City program consistency with state law and regulations.	✓ Complete
4B Site Control Implementation		
Ensure that the proper controls are implemented to prevent nonstormwater discharges to the MS4.	Implement City's Policies and Procedures for Construction Site Runoff Control Inspections	✓ Complete
4C Construction General Permit Inspections and Tracking		
Require applicable land-disturbing activities secure coverage under the construction general permit.	Require construction general permits as required in accordance with City ordinance.	✓ Complete
Review and approve SWPPPs and ensure SWPPP implementation.	Review and approve SWPPPs. Document total number of inspections; provide a summary of enforcement actions included number and type.	✓ Complete
Maintain a database log for tracking all land disturbing activities.	Summarize annual land disturbing activities that secured a construction general permit	✓ Complete

BMP	Measurable Goal	Status
Inspect land-disturbing activities in compliance with the E&S ordinance, the EMO and written policies and procedures.	Document total number of inspections; provide a summary of enforcement actions included number and type.	✓ Complete
Ensure inspectors and plan reviewers are certified and keep records on file.	Document certifications held by City staff and ensure they stay up-to-date.	✓ Complete
Utilize 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.	Document total number of inspections; provide a summary of enforcement actions included number and type.	✓ Complete

BMP 4A Maintain Erosion and Sediment Control Program Consistency

The City's construction site stormwater runoff program is implemented in accordance with Part I.E.4.a of the permit.

The City's Erosion and Sediment Control Program continues to be consistent with the Virginia Erosion and Sediment Control Law (VESCL) and attendant regulations. During the 2014 – 2015 permit year, the City reviewed the Erosion and Sediment Control (E&SC) Ordinance for consistency with the Environmental Management Ordinance (EMO) and adopted the appropriate amendments to the E&SC ordinance.

Measure of Effectiveness

The effectiveness of the City's program is measured by consistency with State regulations as determined by staff from the T&ES-SWM. No consistency issues were identified during this permit year. Following review of the E&SC ordinance in the 2014-2015 permit year, the City amended the language for consistency with the EMO. The City Council adopted the amendments on June 10, 2015. No updates to the MS4 Program Plan were deemed necessary.

BMP 4B Site Control Implementation

The City has incorporated language into its plan review checklist, policies and procedures, and Sec. 13-111 of the EMO 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 of the City's MS4 Program Plan.

Measure of Effectiveness

Implement City's *Policies and Procedures for Construction Site Runoff Control Inspections*.

BMP 4C Construction General Permit Inspections and Tracking

The City received local VSMP authority approval to administer the Construction General Permit effective July 1, 2014. Since this date, applicable construction sites had to submit stormwater pollution prevention plans (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. This requirement is found in Sec. 13-111 of the EMO. The City also revised the plan review checklist and plan review standard conditions to reflect this requirement. A copy of the SWPPP template can be found on the City's website at www.alexandriava.gov/50216.

Part I.E.4.c of the permit requires the City to conduct inspections and have written inspection procedures of land-disturbing activities. The City has developed a policies and procedures document entitled *Policies and Procedures for Construction Site Runoff Control Inspections* as described in BMP 4B and found in the City's MS4 Program Plan.

Land disturbing activities are tracked by T&ES-Development and Right-of-Way (DROW) 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.

In accordance with 9VAC25-850-40, inspectors and plan reviewers are required to maintain the appropriate certification of competency from the state.

The City continues to use 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. Stormwater staff reviewed each plan set the City receives for compliance with the EMO. If changes to the plans are required, the plans will be reviewed again to ensure compliance.

Measure of Effectiveness

Land disturbing projects that occurred during the reporting period have been conducted in accordance with the department approved standards and specifications for erosion and sediment control. No updates to the MS4 Program Plan were deemed necessary.

The following table provides an annual summary of land-disturbing activities data required to be reported under permit Section II 4.f. This data, broken down quarterly, has been provided to DEQ through the construction general permit process. A total of 43 projects were released; with a total of approximately 61.73 acres disturbed.

Table 9. Land-Disturbing Activities

Reference #	Address	Disturbed Acres	Project Released Date
GRD2020-00004	3951 Richmond Highway	0.21	7/8/2020
GRD2020-00013	4900 Seminary Road	0.27	7/13/2020
GRD2020-00034	1700 Eisenhower Av.	2.28	7/14/2020
GRD2020-00024	2506 Crest Street	0.1434	7/23/2020
CDD2019-00002	600 S Pickett Street	5.44	07/27/20
GRD2020-00022	3830 Seminary Road	0.31	7/27/2020
DSP2017-00016	3300 King St.	0.97	08/05/20
DSP2019-00002	802-808 N. Washington St.	0.6441	08/11/20
GRD2020-00038	4550 N. Pegram St.	0.6995	8/18/2020
DSP2018-00021	1300 West Braddock Road	2.1129	9/3/2020
DSP2019-00001	1300 King St.	0.55	09/29/20
GRD2021-00004	20 East Oak St.	0.0998	10/14/2020
GRD2011-00026	4646 Seminary Road	4.37	12/3/2020
GRD2021-00003	3705 Cameron Mills Rd.	0.1563	12/3/2020
GRD2020-00028	300 N. Lee St.	0.1263	12/9/2020
GRD2021-00009	1703 N. Beauregard St.	0.15	12/15/2020
DSUP2020-10020	3251 Potomac Aenue	2.21	01/11/21
GRD2021-00005	3109 Circle Hill Road	0.1088	1/19/2021
PRK2020-00003	4301 W Braddock Road	0.37	1/22/2021
GRD2021-00012	133 N. Fairfax St.	0.0919	2/9/2021
GRD2021-00006	304 E. Alexandria Av.	0.1686	2/16/2021
DSP2020-00001	1200 North Henry St.	1.18	02/25/21
GRD2021-00014	1325 N. Pickett St.	0.4015	3/2/2021
GRD2020-00014	432 Ferdinand Day Drive	0.181	3/12/2021
CIP2020-00013	4600 Duke Street	0.1	3/25/2021
DSP2018-00003	699 Prince Street	0.2601	3/30/2021
DSUP2020-00010	1101 Janney's Lane	5.29	04/05/21
GRD2021-00007	222 E Monroe Street	0.1234	4/5/2021
DSP2019-00043	3601 Potomac Avenue	14.94	4/28/2021
DSP2020-00008	3601 Potomac Avenue	0.31	4/28/2021
GRD2021-00016	2412 Richmond Hwy	0.33	5/18/2021
GRD2021-00010	10 W Bellefonte Avenue	0.0894	5/21/2021
GRD2021-00032	1201 Oronoco Street	0.006	5/26/2021
GRD2021-00029	1800 Limerick Drive	1	5/26/2021
DSUP2020-00010	1101 Janney's Lane	5.29	6/9/2021
GRD2021-00021	3630 Deanery Drive	0.86	6/10/2021
DSP2019-00026	1200 N Quaker Lane	6.14	6/11/2021
GRD2021-00038	215 E Monroe Street	0.1554	6/14/2021

DSP2017-00005	2200 Mill Road	3.02	6/17/2021
GRD2021-00002	30 E Linden Street	0.1013	6/17/2021
GRD2021-00025	2300 Valley Drive	0.1745	6/17/2021
GRD2021-00035	428 N Pitt Street	0.0834	6/17/2021
GRD2020-00039	2025 Scroggins	0.216	8/11/2020

The City performed a total of 1,060 onsite inspections – 193 outside of the MS4 boundary and 867 inside of the MS4. As described in the MS4 Program Plan, T&ES-C&I inspectors perform other duties beyond E&SC inspections. For this reason, inspectors may visit a site up to two times daily. During this time, 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. No Stop Work Orders were issued during the permit year.

The applicable City staff have obtained DEQ certifications (Stormwater Management Program Administrator, Plan Reviewer, and/or Inspector) or are in the process of obtaining these certifications. All applicable staff are currently fully certified, provisionally certified, or have the necessary training scheduled.

3.5 Post Construction Stormwater Management (MCM #5)

The following table is a summary of activities for Minimum Control Measure #5 and their completion status. Additional detail is provided after the table and in Appendix E.

Table 10. Summary of Activities for MCM #5

BMP/Task	Year	Measurable Goal	Status
5A Stormwater Facility BMP Inventory			
Maintain an updated electronic BMP database for reporting.	All	Provide a table and electronic spreadsheet of all BMPs brought online during the reporting period.	✓ Complete
5B Stormwater Facility BMP Maintenance Agreements and Guidelines			
Require the proper execute and recordation of BMP maintenance agreements.	All	Provide a sample of a properly executed and recorded BMP agreement.	✓ Complete
5C Implement Bay Act and Local VSMP Authority			
Continue to implement the Environmental Management Ordinance.	All	Comply with DEQ Bay Act reporting and review requirements and implement the ordinance.	✓ Complete
5D Stormwater Facility BMP Design Guidelines			
Require adherence to Virginia BMP Clearinghouse and Virginia BMP Handbook.	All	Ensure design is consistent with VSMP regulations and summarize any changes to standards.	✓ Complete
5E Public Stormwater BMP Facility Inspection and Maintenance			
Inspect public BMP facilities for proper operation at least once annually.	All	Document the number of BMPs inspected each year and provide summary information.	✓ Complete
5F Private Stormwater BMP Facility Inspection and Enforcement			
Inspect all BMP facilities for proper operation at least once during the permit period.	All	Document total number of inspections completed, and the number of enforcement actions, when applicable.	✓ Complete

BMP 5A VSMP Implementation

The City amended the EMO for consistency with the new VSMP regulations and maintained consistency with the Chesapeake Bay Act requirements, and received provisional approval as a local VSMP authority effective July 1, 2014 and received full approval in November 2014.

The City continues to implement a stormwater management program, including design standards, that are compliant with the Chesapeake Bay Preservation Area Designation and Management Regulations

and the VSMP regulations, as incorporated in the EMO. Section 13-109 of the EMO, requires that development and redevelopment projects subject to VSMP Part II.B technical criteria conform to the design specifications of the Virginia 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 that includes a requirement for all new private development and redevelopment projects to meet a minimum of 65% of their state phosphorous reductions using green infrastructure, which was first promulgated through a [“Use of manufactured/Proprietary Stormwater BMPs”](#) memo to industry. The Green Building Policy require City projects must meet 100% of their state phosphorous reductions through green infrastructure.

The City adopted combination of homeowner outreach and education this is implemented for owners of stormwater facility BMPs on individual residential lots.

Measure of Effectiveness

A copy of the approval letter designating the City as a local VSMP authority and a copy of the City’s adopted ordinance is provided in Appendix E. No updates to the MS4 Program Plan were deemed necessary.

BMP 5B Public Stormwater Facility Inspection and Maintenance

Pursuant to the general permit, the City inspects public facilities at least once every year. The inspections are performed according to the written policies and procedures entitled *Policies and Procedures for Post-Construction BMP Inspection and Maintenance* which can be found in Appendix E of the City’s MS4 Program Plan. The City currently owns and operates a total of 117 stormwater facility BMPs.

Measure of Effectiveness

A summary of inspection results is provided in Appendix E. Forty-eight (48) facilities required maintenance based on the annual inspection. Nine (9) facilities required “significant maintenance” which is defined as non-routine maintenance. Additional information about the significant maintenance can be found in Appendix E. No updates to the MS4 Program Plan were deemed necessary.

BMP 5C Private Stormwater Facility Inspection and Enforcement

Pursuant to the general permit, the City inspects privately-owned stormwater facilities at least once every five years. Per Section 13-109 of the EMO, facility owners must perform periodic inspection and required maintenance to ensure the long-term functioning of the facilities as originally designed to protect water quality. The inspections are performed according to the written policies and procedures entitled *Policies and Procedures for Post-Construction BMP Inspection and Maintenance* which can be found in Appendix E of the City’s MS4 Program Plan. These policies and procedures were reviewed and updated in April 2019 as part of continuous improvement and for consistency with the current permit.

Measure of Effectiveness

One hundred and twenty (120) total private stormwater facility inspections were completed this permit year, with 11 enforcement actions being sent out this permit year related to these inspections. Please note that additional enforcement actions may be taken in response to these inspections; however, these actions may not take place until the next reporting period since owners have 90 days to complete the maintenance. A list of the inspections and corresponding data is provided in Appendix E. No updates to the MS4 Program Plan were deemed necessary.

BMP 5D Stormwater Facility Inventory and Reporting

The City continues to use Microsoft Access to track all stormwater facilities and/or BMPs that were implemented to improve water quality. As required by Part I.E.5.d of the permit, tracked information includes:

- 1) Stormwater management facility or BMP type;
- 2) Stormwater management facility or BMPs location as latitude and longitude;
- 3) Acres treated by the stormwater management facility or BMP, including total acres, pervious acres, and impervious acres;
- 4) Date the facility was brought online (MM/YYYY). If the date brought online is not known, a date of June 30, 2005 will be used.
- 5) 6th Order Hydrologic Unit Code (HUC) in which the stormwater management facility is located;
- 6) Whether the facility stormwater management facility or BMP is owned or operated by the permittee or privately owned;
- 7) Whether or not the stormwater management facility or 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 stormwater management facility or BMP is privately owned, whether a maintenance agreement exists; and
- 9) The date of the permittee's most recent inspection of the stormwater management facility or BMP.

Measure of Effectiveness

During this permit year, 25 stormwater management facilities and/or BMPs were installed in the City to improve water quality. All required information for the new facilities brought online is provided in Appendix E. A map of the City's stormwater management facilities and/or BMPs is provided in Appendix E. No updates to the MS4 Program Plan were deemed necessary.

The City electronically reported the BMPs installed under the construction general permit using the construction general permit database during this reporting period.

The City electronically reported the BMPs installed this permit year (excluding the ones already submitted using the construction general permit database) using the DEQ BMP Reporting Warehouse.

BMP 5E Stormwater Facility Maintenance Agreements

The City continues to require the execution and subsequent recordation of Stormwater BMP Facilities Maintenance / Monitoring Agreement to ensure long term operation and maintenance of new BMPs per the EMO. In addition, staff has also created a BMP maintenance vendor list for use by facility owners and operators.

Measure of Effectiveness

A sample BMP maintenance agreement that was submitted during this permit year and a screen capture that the form may be downloaded from the City's website Appendix E. The City continues the program of mailing educational letters that include maintenance responsibilities to single-family property owners with on-lot BMPs. An example of the letter and sample maintenance information sent to single-family residential BMP owners during this permit year is also located in Appendix E. No updates to the MS4 Program Plan were deemed necessary.

3.6 Pollution Prevention and Good Housekeeping for Municipal Facilities (MCM #6)

For the purposes of this annual report, municipal facilities are those facilities owned or operated by the City.

The following table is a summary of activities for Minimum Control Measure #6 and their completion status. Additional detail is provided after the table and in Appendix F.

Table 11. Summary of Activities for MCM #6

BMP	Measurable Goal	Status
6A Written Pollution Prevention and Good Housekeeping Procedures		
Implement Standard Operating Procedures for Daily Operations	Document any updates to SOPs and any new SOPs.	✓ Complete (No updates to SOPs required) ✓ Two new SOPs developed
6B Stormwater Pollution Prevention Plans for High-Priority Facilities		
Implement SWPPPs and annually review and add/remove as necessary	Document any new facilities requiring SWPPPs or any removed. Continue to implement SWPPPs.	✓ Complete

6C Turf and Nutrient Management Plans		
Implement Turf and Nutrient Management Plans and annually review and add/remove as necessary	Document any new areas requiring turf and nutrient management plans or any removed. Continue to implement SWPPs.	✓ Complete
6D Prohibiting Deicing Agents with Urea		
Ensure that the City did not use deicing agents that included urea.	Statement that the City didn't using deicing agents that included urea.	✓ Complete
6E Contractor Controls and Oversight		
Ensure proper procedures and controls are implemented by City contractors.	Document any changes to process or procedures.	✓ Complete
6F Training		
Conduct yearly training to applicable employees. Training topics will rotate each year between recognizing illicit discharge and pollution prevention and good housekeeping.	A summary report on the required training, including a list of training events, the training date, the number of employees attending training and the objective of the training.	✓ Complete
6G Street Sweeping and Leaf Collection Programs		
Continue to implement the City's street sweeping and leaf collection programs.	Document lane miles swept and cubic yards of debris collected. Document the amount of leaves collected.	✓ Complete
6H Catch Basin and Inlet Cleaning Program		
Continue the City's catch basin and inlet cleaning program.	Document the number of catch basins and inlets cleaned.	✓ Complete
6I Employee Complaint Reporting Program		
Continue to implement the "Report a Problem" program.	Document ongoing implementation.	✓ Complete

6J Environmental Stakeholder Groups		
Participate in Environmental Stakeholder Groups	Presentation for WQWG meeting	✓ Complete

BMP 6A Written Pollution Prevention and Good Housekeeping Procedures

Part I.E.6.a of the permit 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 (SOPs) 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.

The City continues to implement these SOPs and are utilized as part of the employee training program in accordance with Permit Part I.E.6.b. These SOPs will be reviewed once during this permit cycle to ensure they include up-to-date information and effective procedures. During this permit cycle, two new SOPs were developed and incorporated into the MS4 Program Plan per the direction received from DEQ: (1) Disposal of Landscape Organic Waste and (2) Water Disposal from Dewatering Activities During Utility Construction and Maintenance Activities.

Measure of Effectiveness

The SOPs for Daily Operations are included in Appendix F of the City's MS4 Program Plan for those applicable operations. No SOPs required updating during this permit year and two new SOPs were created and included into the MS4 Program Plan.

BMP 6B Stormwater Pollution Prevention Plans for High-Priority Facilities

During the 2013-2018 permit cycle, the City identified its high-priority municipal facilities that may require the development and implementation of a SWPPP. This list was further refined for those high-priority municipal facilities with a high potential for discharging pollutants. Also completed during the previous permit cycle, the City developed an inspection checklist to be used at municipal facilities. The checklist covers good housekeeping practices, material storage and handling, as well as maintenance practices. The checklist is included in the SWPPPs developed for applicable municipal facilities.

The City continues to maintain and implement the SWPPPs for the identified municipal facilities. Facilities implementing SWPPPs keep an updated copy onsite, and SWPPPs have been incorporated into the pollution prevention training given to municipal employees.

Measure of Effectiveness

The following table provides the list of the municipalities with SWPPPs along with other pertinent information. Upon review of the City’s municipal facilities, no additional SWPPPs were developed or removed during the permit year. Periodic inspections continue to be completed and documented in the SWPPPs. The City updated the “Equipment and Materials Storage” SWPPP for the facility located at 133 South Quaker to indicate that this also includes the “Vehicle Wash Facility” at this location. This update was included into the MS4 Program Plan.

Table 12. Summary Public Facilities with SWPPPs

Facility	Facility Location	Site Activity	SWPPP Location
Middle Yard at 3220 Colvin Street	3220 Colvin Street	Equipment and Material Storage	3220 Colvin Street
Household Hazardous Waste & Electronics Recycling Center	3224 Colvin Street	Waste Storage and Transfer	Onsite materials storage shed
Equipment and Materials Storage and Vehicle Wash Facility	133 South Quaker Lane	Vehicle, Material and Equipment Storage and Vehicle Wash Facility	2900-B Business Center Dr. - Operations Office
Material Storage Yard	3130 Business Center Drive	Material and Waste Storage	2900-B Business Center Dr. - Operations Office
Field Operations Center	2900-A/B Business Center Drive	Vehicle, Material and Equipment Storage	Administration Desk for T&ES
Leaf Mulch Facility	4125 Eisenhower Avenue	Material Storage	3220 Colvin Street
Transportation Division Impound Lot	5249 Eisenhower Avenue	Vehicle Storage	3220 Colvin Street
Impound Lot	3000 Business Center Drive	Vehicle Storage	3220 Colvin Street
Vehicle and Equipment Maintenance Center	3550 Wheeler Avenue	Vehicle, Material and Equipment Storage	3550 Wheeler Avenue
Fuel Island	3400 Duke Street	Vehicle Fueling and Fuel Transfer	3550 Wheeler Avenue

BMP 6C Turf and Nutrient Management

Part I.E.6.i of the permit requires the maintenance and implementation of turf and landscape nutrient management plans (NMPs) that were developed during the 2013-2018 permit cycle. These plans were developed for municipal properties where nutrients were applied in acres that exceeded one acre contiguous.

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

Measure of Effectiveness

The City updated all of the existing NMPs in the 2016-2017 reporting period. The updated list and information for completed plans is presented below, which includes the location of the NMPs. The total acreage of managed turf with approved and active NMPs for facilities greater than one-acre is 60.6 acres.

Upon review of the City's municipal operations, no new locations that required turn and landscape NMPs were identified and none were removed. The plan expiration date is indicated in Table 13. These plans will be reviewed during the next permit year. The MS4 Program Plan was updated to include the revised plan expiration date.

Table 13. Nutrient Management Plans for More than One-Acre

Facility	Street Address	Latitude	Longitude	Acres	Date of Plan Expiration	Total
Armistead Boothe Field	520 Cameron Station Blvd	38°48'25.6"N	77°05'22.9"W	1.7	6/29/2023	2.87%
Armistead Boothe Park	520 Cameron Station Blvd	38°48'18.9"N	77°07'37.5"W	1.2	6/29/2023	1.97%
Ben Brenman Park	4800 Ben Brenman Park Dr.	38°48'30"N	77° 6'52"W	10.7	6/29/2023	17.57%
Duke St Dog Park	4657 Duke St	38°48'43.5"N	77° 6'45.8"W	1.1	6/29/2023	1.74%
Founders Park	351 North Union Street	38°48'27"N	77° 2'20"W	3.7	6/29/2023	6.06%
Four Mile Run Park	3700 Commonwealth Ave	38°50'24"N	77° 3'34"W	7.3	6/29/2023	12.07%
George Washington Middle School	1005 Mt. Vernon Ave	38°49'15.6"N	77°03'13.4"W	2.8	6/29/2023	4.64%
Harborside Park	487 S. Union St	38°47'58.8"N	77°02'28.5"W	1.3	6/29/2023	2.13%
Hensley Park	4200 Eisenhower Ave	38°48'12"N	77° 6'29"W	4.7	6/29/2023	7.67%
Luckett Park	3540 Wheeler Ave	38°48'26.3"N	77°05'22.8"W	1.3	6/29/2023	2.16%
Montgomery Park	901 North Royal Street	38°48'51"N	77° 2'27"W	1.1	6/29/2023	1.78%
Oronoco Park	100 Madison Street	38°48'40"N	77° 2'23"W	3.8	6/29/2023	6.25%
Potomac Yards Park	2501 Potomac Ave	38°49'44.2"N	77° 2'52.6"W	5.5	6/29/2023	9.09%
Rivergate Park	2 Montgomery Street	38°48'46"N	77° 2'17"W	2.8	6/29/2023	4.54%
Simpson Park	426 E. Monroe Ave	38°49'18"N	77° 3'4"W	5.3	6/29/2023	8.80%
West Point	1 Oronoco St.	38°48'12"N	77° 2'21"W	3.3	8/18/2023	5.45%
Windmill Hill Dog Park	501 South Union Street	38°47'58"N	77° 2'30"W	3.2	6/29/2023	5.21%
Total				60.6		100.0%

BMP 6D Prohibiting Deicing Agents with Urea

Nutrients, if improperly applied, have the potential to pollute the local waterways, the Potomac River and the Chesapeake Bay. Part I.E.6.k of the permit 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.

Measure of Effectiveness

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 during this reporting period. No updates to the MS4 Program Plan were deemed necessary.

BMP 6E Contractor Controls and Oversight

The City continues to ensure that contractors working on behalf of the City follow procedures and employ required control measures to ensure that operations do not contribute to stormwater pollution. SOPs for pesticide and herbicide application place requirements on contractors. City employees charged with oversight of City capital projects receive annual water quality training. City capital improvement projects include pollution prevention language. The City will continue to implement this BMP and report on changes annually.

Measure of Effectiveness

During the permit year, the City continued to implement SOPs (described under BMP 6A), required necessary permits and certifications, had necessary language in contracts, and provided water quality training to City employees charged with oversight of City capital projects. No updates to the MS4 Program Plan were deemed necessary.

BMP 6F Training

Staff whose normal duties require a considerable amount of field work play a valuable role in identifying and addressing illicit discharges. Employees performing applicable duties shall be trained in recognizing and reporting illicit discharges no less than once every 24-months. Training provides the appropriate tools for field staff to recognize, document relevant information and report the incident for follow up by the appropriate staff.

City staff engages 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 on pollution prevention and good housekeeping. Employees performing applicable duties shall be trained in pollution prevention and good housekeeping no less than once every 24-months.

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.

Measure of Effectiveness

The T&ES-SWM continues to provide annual training in compliance with the permit and the City's MS4 Program Plan. Due to the continued health and safety concerns and risks associated with the global COVID-19 pandemic, training was conducted virtually. Training was pre-recorded for participants to view as a video link on our internal SharePoint system. As indicated in the MS4 permit plan, this

program year's (PY3) training focused on Pollution Prevention and Good Housekeeping Training. Staff incorporated information on Recognizing and Reporting Illicit Discharges into this training as well.

Training was performed to focus on several Departments whose staff work in and around maintenance, public works, or recreational facilities, as well as, employees performing road, street, and parking lot maintenance. The Departments receiving training during PY3 was Transportation and Environmental Services (T&ES), RPCA, and General Services.. Particular focus was on staff who are responsible for the Public Facilities with SWPPPs listed under BMP 6B. Training during PY3 reached over 100 staff.

The approach taken recognizes that field staff do not always have access to computers and virtual training environments but do have access to the City-issued mobile phones to watch a video and congregate in muster rooms prior to shift work. Despite the continuation of virtual training, no updates to the MS4 Program Plan were deemed necessary. It is anticipated that future training will be a mix of in-person training, virtual, and via video. It is anticipated that the IDDE video will be shared again via T&ES internal eNews based on positive feedback from that approach.

Table 14. Summary of Pollution Prevention and Good Housekeeping Training

Date	Department	# Reached
6/3/2021 and 6/4/2021	Transportation & Environmental Services, Public Works and Maintenance	41
6/10/2021 – 6/30/2021	RPCA, Recreational Facilities	52
6/17/2021	General Services; Fleet Services, Fuel Island, Impound Lot Staff	6
6/29/2021	Resource Recovery Staff Operating in and Around Facilities	3

BMP 6G Street Sweeping and Leaf Collection Programs

The City continues to implement a City-wide street sweeping program to remove possible sources of nutrients, sediment, and impacts to biological and chemical oxygen demand in order to protect local waterways, the Potomac River and the Chesapeake Bay. Additionally, collected leaves are turned to mulch and provided to for use on residential lawns; which decreases the use of fertilizers.

Measure of Effectiveness

The City swept approximately 1,650 lane miles this permit year. The amount of street lane miles swept changes slightly each year depending on weather conditions and other factors. During this permit year, the street lane miles swept was reduced due to the global COVID-19 pandemic. No updates to the MS4 Program Plan were deemed necessary.

The City's Curbside Leaf Collection program performed the following:

1. Distributed approximately 60,563 biodegradable bags to various locations throughout city facilities.
2. Total cubic yards collected: 15,507

The City collected 709.74 tons of yard waste that was taken to MES Organics Composting Facility.

BMP 6H Catch Basin and Inlet Cleaning Program

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

Measure of Effectiveness

The City maintained approximately 2,495 catch basins and inlets during this permit year which consists of inspection, cleaning and reparations. No updates to the MS4 Program Plan were deemed necessary.

BMP 6I Employee Complaint Reporting

The City continues to implement the “Report a Problem” program to empower employees to report problems, to include illicit discharges or issues with the functioning of City assets. The program provides a way of reporting problems associated with City infrastructure, including stormwater management.

Measure of Effectiveness

A screen shot of the “Report a Problem” program from the City’s intranet is provided in Appendix F. No updates to the MS4 Program Plan were deemed necessary.

BMP 6J Environmental Stakeholder Groups

The City receives input on the stormwater program from several stakeholder groups including the Environmental Policy Commission (EPC), the Water Quality Work Group (WQWG), the Fire Department’s Environmental and Industrial Use Unit (EIU), and the Eco-City Steering Committee.

The EPC is appointed by the City Council and makes recommendations on environmental issues, including stormwater management. The City Manager has established two internal stakeholder groups to work on stormwater issues and make policy decisions to ensure regulatory compliance and shape the stormwater program. The first group, the Water Quality Steering Committee, transitioned into the Eco-City Alexandria Steering Committee during the final reporting period of the 2013-2018 permit and is comprised of deputy city managers, department heads, and staff from T&ES-IEQ, and is charged with making policy decisions and setting the course for the City’s environmental programming under the Eco-City Alexandria initiative, which include Water Resources. The second group, the Water Quality Work Group (WQWG) is an internal stakeholder group comprised of interdepartmental City staff with the deputy director of IEQ as the chair, the division chief as alternate, and other supervisory level staff. The WQWG’s mission is to develop and coordinate the City’s response across various City departments to MS4 permit requirements, including the Chesapeake Bay TMDL. The WQWG is charged with supporting development of policy, programs and plans to administer the local VSMP program and the MS4 general permit. The EIU acts as the lead for coordination of environmental issues, including water quality investigation, enforcement, and documentation.

Measure of Effectiveness

During PY2, Stormwater Management was on the EPC agenda to provide an update on the program; however, the meeting was cancelled. Stormwater Management will present during PY3. Appendix F contains the presentation from the WQWG meeting that took place in February 11, 2020. No updates to the MS4 Program Plan were deemed necessary.

3.7 Evaluation of MS4 Program Implementation

In accordance with Part I.D.2.e of the permit, the City has reviewed and assessed program implementation, including a review of each MCM and corresponding BMPs established to meet the requirements of the City's permit and have found them to be appropriate and effective. During the program year, the following updates have been made to the MS4 Program Plan:

1. Updated the Nutrient Management Plan information to include updated expiration dates.
2. Included two new SOPs: Disposal of Landscape Organic Waste and Water Disposal from Dewatering Activities During Utility Construction and Maintenance Activities.
3. Updated the SWPPP for Fleet Services to include "Vehicle Wash Facility".
4. Removed reference to the City's *Call.Click.Connect* system.

3.8 Chesapeake Bay TMDL

Finalized in December 2010 by the United States Environmental Protection Agency (EPA), the Chesapeake Bay TMDL and the associated Watershed Implementation Plans (WIPs) developed by the Commonwealth of Virginia, set limits on nitrogen, phosphorus and sediment entering the Bay. The 2013 – 2018 general permit included new special conditions to address the Chesapeake Bay TMDL.

In January 2016, the City received official approval the City's final Chesapeake Bay TMDL Action Plan for 5% Reductions from DEQ. The following table was submitted in DEQ's approval letter documenting their concurrence and approval of the City's strategies that would achieve over 39% of the total annual reductions for each pollutant of concern.

All strategies in the Phase 1 Action Plan to achieve over 39% reduction have been implemented.

- The Eisenhower Pond 19 has been completed and was reported with the permit year 2015-2016 Annual Report.
- The Four Mile Run Urban Stream Restoration Project was substantially complete in the summer of 2016 and brought online during permit year 2016-2017.
- The Windmill Hill Living Shoreline, although not documented in the Phase 1 Action Plan, was substantially complete during permit year 2017-2018.
- Several retrofits on City properties were completed in this permit cycle as documented in the Phase 2 Action Plan.

- 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.

The 2018-2023 general permit builds on the previous permit cycle and incorporates pollution reduction targets with a total of 40% reductions in the L2 Scoping loads required by the end of this permit cycle (2023). As a condition in the permit, the means and methods to achieve the 40% reductions must be included in the City's Phase 2 Chesapeake Bay TMDL Action Plan. The Phase 2 Action Plan was submitted by October 31, 2019. The final Phase 2 Action Plan can be found in Appendix G and it will be incorporated into the update of the MS4 Program Plan. In accordance with the permit, a public comment period on the draft was implemented in August 2019, with the final draft accepted by the City Council on September 24, 2019, and the final Action Plan submitted no later than October 31, 2019.

The Phase 2 Action Plan documents one additional project to meet the 40% pollution reduction targets – the Ben Brenman (Cameron Station) Pond Retrofit project. This project also received SLAF grant funding and construction began in Winter 2018/2019 and was considered substantially complete as of June 2020. Table 16 provides a summary of the required reductions per permit cycle as of the 2018-2023 MS4 General Permit specific to Alexandria, VA, as indicated in the Phase 2 Chesapeake Bay Action Plan.

Table 15. Summary of Required Reductions by Permit Cycle

Phase	Permit Cycle	Required Reduction (%)	Nitrogen (TN) (lbs/yr)	Phosphorus (TP) (lbs/yr)	Suspended Solids (TSS) (lbs/yr)
1	2013-2018	5%	380	50	43,097
2	2018-2023	35%	2,659	351	301,678
3	2023-2028	60%	4,558	602	517,162
Total		100%	7,597	1,004	861,937

As documented in this annual report, the City has programs for catch basin cleaning and street sweeping. In addition, RPCA has been implementing a tree planting program. Since Expert Panel Reports have been developed to credit these strategies, the City will be working on extracting the necessary data from our programs to compute the related pollutant reductions in accordance with the Expert Panel Reports in the near future.

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. A list of BMPs installed during the permit year is included in Appendix E.

The progress made during this reporting period toward the Chesapeake Bay required pollutant reductions are presented in the table below.

Table 16. Progress during PY3 – Individual Facilities/Retrofits (July 1, 2020 – June 30, 2021)

Project	TN Reductions (lbs/yr)	Percent of TN 100% Goal	TP Reductions (lbs/yr)	Percent of TP 100% Goal	TSS Reductions (lbs/yr)	Percent of TSS 100% Goal
Development SWM Facilities	62	0.8%	15	1.5%	7,094	0.8%

The City's overall progress toward meeting the Chesapeake Bay required pollutant reductions are presented in the table below.

Table 17. Cumulative Progress by Permit Year (2019 – Current)

Cumulative Progress	TN Reductions (lbs/yr)	Percent of TN 100% Goal	TP Reductions (lbs/yr)	Percent of TP 100% Goal	TSS Reductions (lbs/yr)	Percent of TSS 100% Goal
As of June 30, 2018	2,690	35%	402	40%	361,990	42%
As of June 30, 2019	4,314	57%	571	57%	498,151	58%
As of June 30, 2020	5,265	69%	728	72%	588,728	68%
As of June 30, 2021	5,327	70%	743	74%	595,822	69%

Progress is being made on three stream restoration projects which total 3,750 linear feet of urban stream to be restored: (1) Lucky Run, (2) Strawberry Run, and (3) Taylor Run. In total, the City is investing over \$4.47 million in these restoration projects and has been awarded over \$3.72 million in matching grant funds from Stormwater Local Assistance Fund (SLAF) to total \$8.2 million in restoration funding.

The stream restorations will benefit local water quality; enhance aesthetics and safety of natural areas; remove invasive plants and plant natives to enhance habitat for urban wildlife; and protect sanitary sewer and stormwater infrastructure investments, while counting towards Bay TMDL special conditions of the permit.

3.9 Local TMDLs

The City has four existing TMDLs with an approved WLA for the MS4 area, two of which were approved prior to July 2008 and two of which were approved between July 2008 and June 2013.

A TMDL for bacteria related to fecal coliform was approved in 2004 for the non-tidal portion of Four Mile Run, and in 2007 a TMDL for PCBs was approved for the Tidal Potomac watershed. Given that these TMDLs were approved prior to July 2008, TMDL Action Plans were completed by June 30, 2015 and were submitted with the permit year 2015-2016 Annual Report.

In 2010, the SWCB issued approval of bacteria TMDLs for Tidal Four Mile Run, and the Hunting Creek, Cameron Run, and Holmes Run watersheds. In both recent TMDLs, bacterial water quality is

based on levels of *E. coli*. Since these TMDLs were approved between July 2008 and June 2013, the corresponding TMDL Action Plans were completed by June 30, 2016 and were submitted with the 2016-2017 annual report. Based on guidance and conversations with DEQ staff, the City developed a comprehensive Bacteria TMDL Action Plan that addresses bacteria impairments for those affected watersheds. Beginning with the Non-Tidal Four Mile Run TMDL Action Plan which was due by June 30, 2015, the City incorporated the successive TMDLs for Hunting Creek, Cameron Run, and Holmes Run to create a comprehensive Bacteria TMDL Action Plan.

In accordance with the permit, these Local TMDL Action Plans were updated prior to May 2020 (18 months after the permit effective date). The permit also has a requirement for plans to be developed for TMDLs approved by EPA between July 1, 2013 and June 30, 2018 that have WLAs no later than May 2021 (30 months after permit effective date); however, the City does not have any new TMDLs that meet this criteria. Part II.B.3 of the permit provides a list of items to be included in each Local TMDL Action Plan. Based on the type of TMDL (bacteria, sediment, phosphorus, nitrogen, or PCBs), there is list of different strategies the City must choose from to address the impairments.

The City of Alexandria's Bacteria TMDL Action Plan was updated in 2020 after a 15-day public comment period (no comments were received). This Action Plan is found in Appendix G. Information pertaining to the updates are found in the PY2 Annual Report.

The City of Alexandria's Tidal Potomac PCB TMDL Action Plan was updated in 2020 after a 15-day public comment period (no comments were received). This Action Plan is found in Appendix G. Information pertaining to the updates are found in the PY2 Annual Report.

Actions taken pursuant to these updated TMDL action plans are in alignment with the education and outreach and public participation sections of the MS4 Program Plan and are included in this Annual Report under MCM #1 and #2 for pet waste (bacteria). In addition, the City developed best management practices regarding BMPs as documented in the June 30, 2015 Tidal Potomac PCB TMDL Action Plan.

The Action Plan is currently being implemented and includes the following BMPs:

1. City will include standard condition language for all site plan (DSP and DSUP) requiring a site characterization for PCBs during the redevelopment of a property where PCBs have been historically used or stored; or during the redevelopment of a property that falls into a DEQ identified high risk category for PCBs. The language was updated in permit year 2015-2016 and was included in all site plan reviews, placing the onus on the developer to perform due diligence; and is reviewed by the City.
2. The PCB brochure was developed (updated during permit year 2014-2015) that educates about residents and development community about PCBs can be found on the web site and were placed at City Hall for the public to obtain. A screen shot of the website and the brochure can be found in Appendix A.

4 Results of Information Collected and Analyzed

No information, including monitoring data, was required to be collected or analyzed under the City's permit.

5 MS4 Program Regional Efforts and Agreements

The City continues to participate in with other localities in the Northern Virginia Regional Commission's Clean Water Partners to conduct regional public education and outreach activities, as discussed in Section 3.1. A copy of the Clean Water Partners Agreement can be found in Appendix A of the City's MS4 Program Plan. The City does not rely on other government entities to satisfy permit obligations.

6 Approval Status of Qualifying Local Programs

The City relies on implementation of the Erosion and Sediment Control Ordinance, mandated by the Virginia Erosion and Sediment Control Regulations (VESCR), to help satisfy Minimum Control Measure #4 - Construction Site Stormwater Runoff Control. During permit year 2014-2015, the City's Erosion and Sediment Control (E&SC) Ordinance was reviewed and revised for consistency with amendments to the Virginia Stormwater Management Act and the Virginia Stormwater Management Program (VSMP) Regulations, and the renumbering of these, as well as the Virginia Erosion and Sediment Control Law (VESCL) and VESCR when administration of these programs was shifted from DCR to DEQ. The adoption of amendments to the City's E&SC ordinance during permit year 2014-2015 are discussed in BMP 4A.

In addition, the City relies on implementation of the EMO, mandated by the Virginia Chesapeake Bay Preservation Area Designation and Management Regulations, and the VSMP regulations as incorporated into the EMO, to help satisfy Minimum Control Measure #5 - Post Construction Stormwater Management.

The City's Erosion and Sediment Control Program has been reviewed and found consistent by the Virginia Soil and Water Conservation Board. In addition, the Chesapeake Bay Local Assistance Board (now superseded by the Virginia Soil and Water Conservation Board) has also found the City's Environmental Management Ordinance to be fully consistent with state regulations.

The City's approved VSMP Local Stormwater Management Program application included amendments to the EMO Ordinance for consistency with the new VSMP regulations and maintained 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. Documentation of approval is included in Appendix E.

7 Contact Information

Mr. Jesse Maines, MPA, PMP, Division Chief
T&ES, Stormwater Management
703.746.4643 (direct)
703.746.6499 (main)

Ms. Jessica Lassetter, MNR, Senior Environmental Specialist
T&ES, Stormwater Management
703.746.4127

8 Appendices

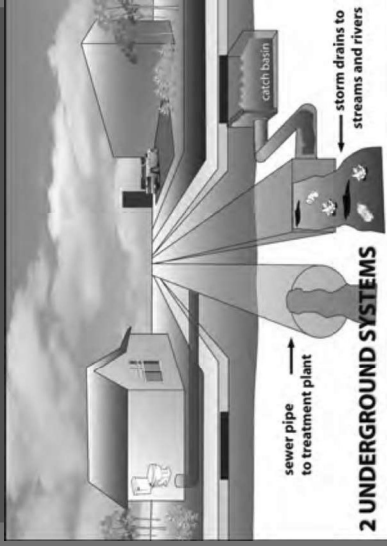


**General VPDES Permit for
Small Municipal Separate Storm Sewer Systems
Permit No. VAR040057**

Year 3 Annual Report
July 1, 2020 – June 30, 2021
City of Alexandria, Virginia

Appendix A – Minimum Control Measure #1, Public Education and Outreach

1. Best Management Practices for Landscaping and Lawncare Companies Pamphlet
2. Best Management Practices for Restaurant and Food Handling Businesses Pamphlet
3. Best Management Practice for Automotive Garages and Service Centers Pamphlet
4. Make Your Home the Solution to Stormwater Pollution Pamphlet
5. Pet Waste Pamphlet
6. Polychlorinated Biphenyls Pamphlet
7. Household Hazardous Waste & Electronics Recycling Program Pamphlet
8. BMP Sign Requirement on Plan Set with Storm Drain Marker
9. Sign for Stormwater Management Facilities
10. Photo of Stream Crossing Sign
11. City's Stormwater Management Website
12. City's Stormwater Quality Webpage about Fertilizer
13. City's Website with information about volunteering for Storm drain marking
14. Sample eNews
15. Social Media Examples from Twitter, Facebook, and Instagram
16. Northern Virginia Region Commission 2021 Only Rain Survey (Clean Water Partners)
17. Northern Virginia Clean Water Partners 2021 Summary
18. Eco-City Academy Presentation from May 2021 and Class Handout



STORM SEWERS VS. SANITARY SEWERS

Sanitary sewers collect wastewater from indoor plumbing such as toilets, sinks, washing machines, and floor drains and transport it to a sewage treatment plant. The treatment plant removes pollutants from the wastewater before it is discharged into our local waterways.

Storm sewers consist of the drains and pipes found in streets and parking lots. They are intended to collect and transport runoff from rainfall. Storm drain systems do not remove pollutants from water before it is discharged into local water bodies. This means that everything that enters the drainage system also goes directly into our local streams, the Potomac River, and the Chesapeake Bay!

Illegal Dumping

Improper disposal or dumping of anything in a storm drain other than stormwater is illegal. City Code (Title 11, Ch. 13, Sec. 11-13-2) states that: 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.

To report illegal dumping or for questions about the stormwater program contact:



The City of Alexandria
Department of Transportation & Environmental Services

Stormwater and Sanitary Infrastructure Division
2900-B Business Center Drive
Alexandria, VA 22314
Phone: 703-746-4014
www.alexandriava.gov/environment
24-Hour Nuisance Abatement Hotline:
703-836-0041

Publication date 6/18/2014

CITY OF ALEXANDRIA, VA

Best Management Practices for Stormwater Pollution Prevention



LANDSCAPING AND LAWN CARE COMPANIES

BEST MANAGEMENT PRACTICES

Best management practices (BMPs) are practices and procedures that are used to prevent stormwater pollution and improve water quality.

Pollution Prevention BMPs

- Never dump yard waste in streams or down the storm drain.
- Blow or sweep grass clippings back into yards and off of streets, sidewalks, and driveways. Grass clippings pollute our streams and can also be a safety issue when blown into streets.
- Grass clippings and other yard waste should be left on the yard, composted, bagged, or placed in reusable containers for collection to prevent them from entering the storm drain. Do not pile yard waste on top of storm drains.
- Re-plant bare areas to prevent soil erosion.
- Use native plants for landscaping. Native plants are adapted to local conditions and require less maintenance.

THE PROBLEM WITH POLLUTED RUNOFF

Everything washed or dumped into the storm drain flows untreated into our local streams, the Potomac River, and eventually the Chesapeake Bay.

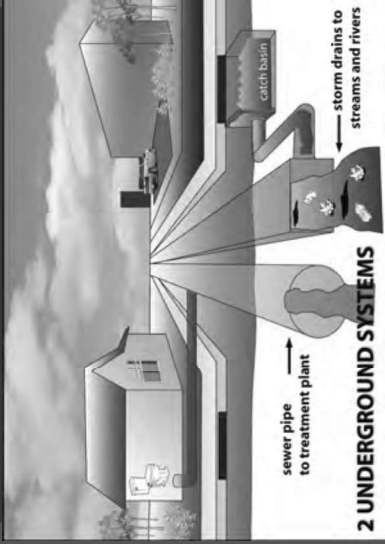


Polluted water can kill fish and aquatic life, harm wildlife populations, kill vegetation, pollute drinking water supplies, and make recreational areas hazardous and unpleasant.

Fertilizer and Pesticide Application

- Apply the right amount of fertilizer by performing a soil test through the VA Cooperative Extension. Sample boxes can be picked up at the local Cooperative Extension office.
- Only apply fertilizer once if needed, and apply in the fall.
- Do not apply fertilizers or pesticides near a stream, river, or other water body.
- Avoid applying fertilizers and pesticides immediately before it rains.
- Always sweep up excess fertilizer that spills over onto sidewalks, driveways, or streets.





STORM SEWERS VS. SANITARY SEWERS

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Publication date 6/18/2014

CITY OF ALEXANDRIA, VA

Best Management Practices for Stormwater Pollution Prevention



RESTAURANTS AND FOOD HANDLING BUSINESSES

BEST MANAGEMENT PRACTICES

Best management practices (BMPs) are practices and procedures that are used to prevent stormwater pollution and improve water quality.

Pollution Prevention BMPs

Grease and Oil

- Always use designated grease bins to dispose of used cooking oils and grease.
- Maintain grease traps and bins to prevent overflows and keep lids closed.

Wash Water

- Never empty a mop bucket outside or into the storm drain.
- Clean floor mats, garbage cans, and other large equipment at an indoor mop sink or other interior drain that is connected to the sanitary sewer.

Cleaning Spills and Drips

- Clean up nonhazardous spills quickly with a mop, rag, or absorbent material.
- Dispose of used absorbent material immediately.
- Store cleaning fluids indoors to prevent leaks and spills from reaching storm drains.

THE PROBLEM WITH POLLUTED RUNOFF

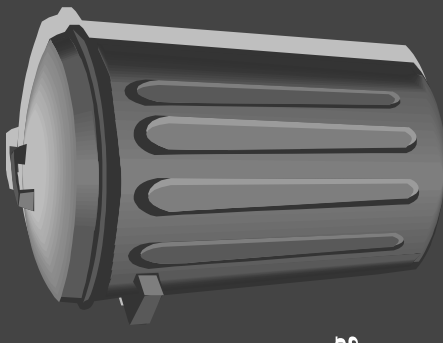
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Polluted water can kill fish and aquatic life, harm wildlife populations, kill vegetation, pollute drinking water supplies, and make recreational areas hazardous and unpleasant.

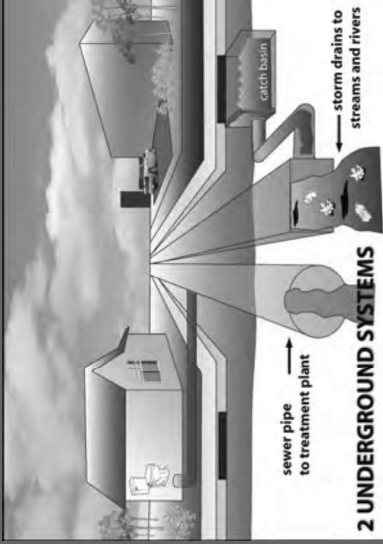
Garbage Disposal

- Avoid disposing of liquids in the garbage.
- Keep dumpster and garbage can lids closed to keep stormwater out.
- Check dumpsters and garbage cans regularly for leaks.
- Keep outdoor areas clean and clean up any spills.



Pressure Washing

- Water from pressure washing must be contained and discharged to the sanitary sewer.
- Equipment washing outside is prohibited.
- Businesses that use outside companies to do their pressure washing are still responsible if wastewater is disposed of into the storm drain.



STORM SEWERS VS. SANITARY SEWERS

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Illegal Dumping

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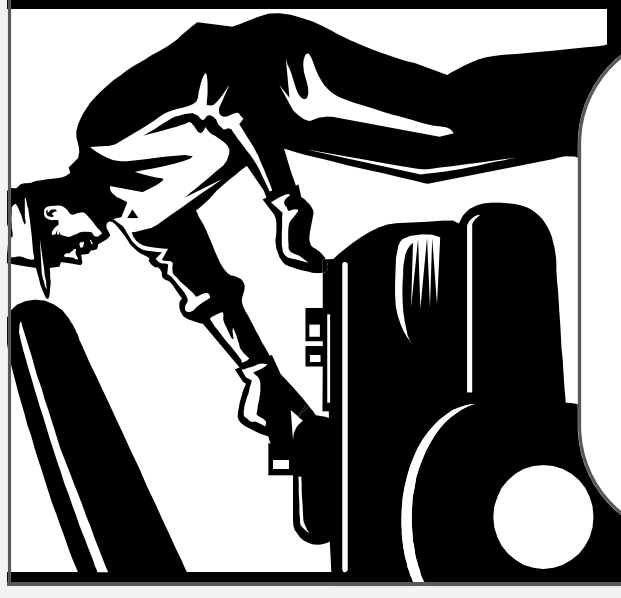
24-Hour Nuisance Abatement Hotline:

703-836-0041

Publication date 6/18/2014

CITY OF ALEXANDRIA, VA

Best Management Practices for Stormwater Pollution Prevention



AUTOMOTIVE GARAGES
AND SERVICE CENTERS

BEST MANAGEMENT PRACTICES

Best management practices (BMPs) are practices and procedures that are used to prevent stormwater pollution and improve water quality.

Pollution Prevention BMPs

- Never pour motor oil or any other fluids down storm drains.
- Never let oil or other waste fluids drain onto the ground.
- Promptly transfer waste fluids to proper containers and keep them closed.
- Conduct fluid changes and maintenance work indoors.
- Regularly check vehicles for leaks and place pans under leaking vehicles to collect fluids.
- Drain fluids promptly from junk vehicles.
- Use non-hazardous cleaners if possible.
- Minimize the number and amount of solvents used to reduce hazardous waste disposal.
- Wash water from car washing cannot enter storm drains.

THE PROBLEM WITH POLLUTED RUNOFF

Everything washed or dumped into the storm drain flows untreated into our local streams, the Potomac River, and eventually the Chesapeake Bay.



Polluted water can kill fish and aquatic life, harm wildlife populations, kill vegetation, pollute drinking water supplies, and make recreational areas hazardous and unpleasant.

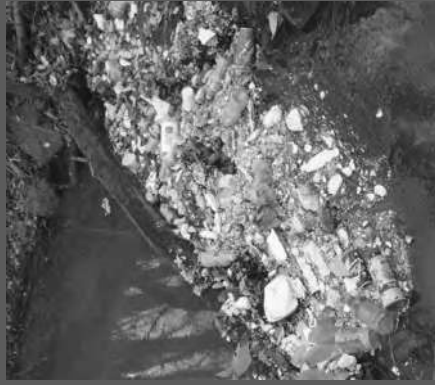
Cleaning Spills

- Clean up nonhazardous spills quickly with a mop, rag, or absorbent material such as kitty litter.
- Never wash spilled material down a storm drain or onto the ground outdoors.
- Sweep up used absorbent material and dispose of it promptly. For hazardous materials, comply with all hazardous waste disposal regulations.
- Store cleaning fluids indoors and away from storm drains.



THE PROBLEM WITH POLLUTED RUNOFF

When it rains, stormwater flows over hard surfaces like parking lots and roads and picks up pollutants such as trash, fertilizer, and oil. Everything washed or dumped into the storm drain flows untreated into our local streams, the Potomac River, and eventually the Chesapeake Bay. Polluted water can kill fish and aquatic life, harm wildlife populations, kill vegetation, pollute drinking water supplies, and make recreational areas hazardous and unpleasant.



Thank you for helping to
keep our waterways
clean!



For more information or questions about the
Stormwater Management Program contact:



The City of Alexandria
Department of Transportation & Environmental
Services

Stormwater Management Division

2900-B Business Center Drive

Alexandria, VA 22314

Phone: 703-746-6499

www.alexandriava.gov/Stormwater



CITY OF ALEXANDRIA, VA

Make Your Home the Solution
to Stormwater Pollution



WHAT YOU CAN DO TO
PREVENT STORMWATER
POLLUTION

WHAT CAN I DO?

Preventing stormwater pollution starts at home. Here are some small steps you can take to prevent stormwater pollution and improve water quality.

AROUND YOUR HOME

- Properly use and dispose of household chemicals. Use the City's Household Hazardous Waste & Electronics Recycling Facility located at 3224 Colvin Street for proper disposal of these items.
- Clean up spills immediately using dry methods. Use adsorbent materials for spills or sweep up construction debris like concrete and mortar. Never use water to rinse debris or spills into the street or storm drains.
- Wash paint brushes, mops, and other tools indoors. Never wash tools in the driveway, street, or into a storm drain.
- Install a rain barrel to collect rain water that runs off your roof and use the water on your plants.

VEHICLE AND GARAGE

- Keep your car and other vehicles well maintained and fix leaks as soon as possible.
- Take your car to a commercial car wash or wash your car on the lawn where the grass and soil absorb the water and soap.

PET CARE

- Always clean up after your pet. Bag pet waste and place it in the trash.

AROUND TOWN

- Keep our City litter free.
- Never dump anything in a storm drain. Remember, only rain down the storm drain.

AROUND YOUR YARD

- Test your soil. Virginia Cooperative Extension has test kits available. Know how much fertilizer to use and don't over fertilize. Or better yet, don't fertilize at all if it isn't necessary.
- Do not apply fertilizers or pesticides near a stream, river, or other water body.
- Never fertilize or use pesticides if it is going to rain within 24 hours.
- Always sweep up excess fertilizer that spills over onto hard surfaces, like sidewalks or driveways.
- Never dump yard waste in streams or down the storm drain.
- Use native plants instead of ornamental plants when landscaping.

What's grosser than picking up pet waste?

Stepping in it. Know what's even grosser than that? Swimming in, fishing from, and drinking water that has pet poop in it! Please pick up after your pet!

When it rains, pet waste left on the ground, especially near streets and sidewalks, gets washed into storm drains and drainage ditches which flow to your local waterways... without being treated! Not only is picking up after your pet the neighborly thing to do, it's the healthy thing to do...for you and the environment!



Thank you for helping to
keep our waters clean!



When nature calls....
Please pick up
after your pet!

For more information or questions about the
stormwater program contact:



City of Alexandria
Transportation & Environmental Services
Stormwater Management Division
2900-B Business Center Drive
Alexandria, VA 22314
Phone: 703.746.4014
www.alexandriava.gov

Publication date 4/1/2016

ECO-CITY  **ALEXANDRIA**





Are you polluting our waters?

Did you know that most of Alexandria's streams exceed Virginia's water quality standards for fecal coliform and/or E. coli bacteria?

Numerous studies clearly link pet waste to waterborne bacterial pollution.

Once in our rivers, lakes, and streams, the bacteria and pathogens end up in fish and other aquatic life.

When you dispose of pet waste improperly, raw sewage gets introduced into the places we swim, boat, fish, and gather food and water!



THE PROBLEM

Storm drains are not connected to wastewater treatment plants like the drains in your home. When pet waste is tossed into a storm drain or left on the sidewalk, street or yard, it is carried by rainwater through the storm sewer system directly into our local water bodies, without any treatment!

Pet waste is a threat to human and environmental health because it contains harmful bacteria and pathogens, some of which can cause serious diseases in humans. Pet waste also contains many other nutrient pollutants, which contribute to excessive algae growth in a water body . When these algae die, they are eaten by bacteria which depletes the water of oxygen. This can lead to death of the aquatic insects and fish in the area.

THE SOLUTION

Proper ways to dispose of pet waste include:

- Bag and place pet waste in the trash.
- Never dispose of pet waste in a storm drain. These drains lead directly to local waterways.
- Never dump used kitty litter outside. Throw it in the trash.

Encourage other pet owners to be responsible. It is an important part of the responsibility of owning a pet.

THE CITY'S TMDL APPROACH

Implementation of the TMDL is carried out by the City. The City performs the following in support of this effort:

- Special Use Permits (SUPs) for new developments require screening for PCBs as part of the site characterization.
- Municipal properties are assessed for sources of PCBs. Stormwater runoff is evaluated from properties that have a high risk of PCB contamination.
- Construction sites are monitored and inspected for erosion and sedimentation control.
- Dry weather outfall screenings are performed annually for sources of illicit discharges.



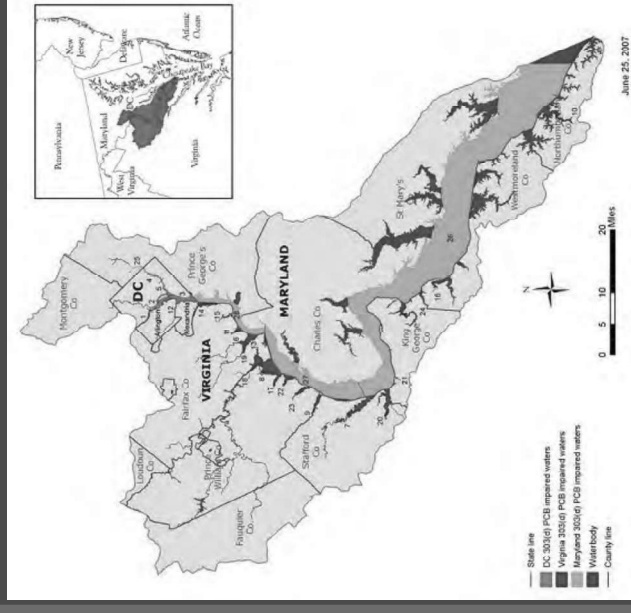
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2900-B Business Center Drive
Alexandria, VA 22314
Phone: 703.746.4014
www.alexandriava.gov

The Virginia Department of Environmental Quality
<http://www.deq.state.va.us/Programs/Water/WaterQuality/InformationTMDLs/TMDL.aspx>



Publication date 3/7/2016

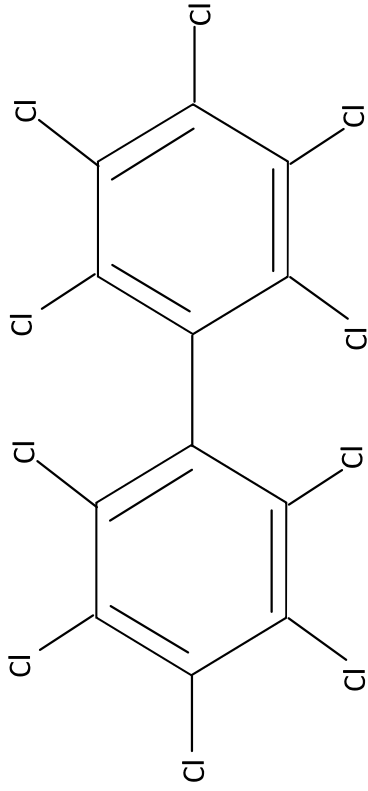


PCBS

POLYCHLORINATED BIPHENYLS

Tidal Potomac River PCB
Total Maximum Daily Load
(TMDL)

City of Alexandria, VA



PCBs

Polychlorinated
Biphenyls

Why are PCBs Harmful?



What are PCBs?

PCBs are part of a family of man-made organic chemicals known as chlorinated hydrocarbons. PCBs were manufactured in the United States from 1929 until their manufacture was banned in 1979.

Due to their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were used in many industrial and commercial applications. PCBs were used as lubricants and coolants; in electrical and hydraulic equipment; as plasticizers in paints, plastics, and rubber products; in pigments, dyes, and carbonless copy paper; and in many other applications.

Where are PCBs found?

Before the 1979 ban, PCBs entered the environment during its manufacture and use. Although they are no longer produced in the United States, PCBs may be present in products and materials produced before 1979.

PCBs can be released into the environment from poorly maintained hazardous waste sites, illegal or improper dumping of PCB wastes, leaks or releases from electrical transformers, and disposal of PCB-containing consumer products into landfills not designed to handle hazardous waste. PCBs may also be released into the environment by the burning of some wastes in incinerators.

Once in the environment, PCBs do not break down quickly and may remain for long periods of time in the air, water, and soil. In surface waters, PCBs adhere to particles in sediments. They can remain buried in sediments for a long time and be slowly released into the water and then evaporate into air.

PCBs can accumulate in the leaves and above-ground parts of plants and food crops. They also accumulate in the bodies of small organisms and fish. As a result, people who ingest fish that have been exposed to PCBs may also be exposed to the PCBs that are found in the fish they are eating.

PCBs have been known to cause cancer, and have other adverse health effects on the immune system, reproductive system, nervous system, and endocrine system.

Household Hazardous Waste & Electronics Collection Program

Many everyday products contain chemicals that are potentially hazardous to our health and the environment. It is our responsibility to properly use, store, and dispose of hazardous items. Make sure to:

- Carefully read labels and follow directions.
- Do not mix chemical substances – even similar products.
- Use only in well-ventilated areas.
- Secure lids tightly; Store in a dry, cool place away from heat, children & pets.
- Properly dispose of hazardous waste.

Eligible Participants:

City of Alexandria Residents ONLY
Businesses - visit web site for more information

Acceptable materials:

- Gasoline, Antifreeze & Motor Oil
- Battery Acid & Car Batteries
- Oil-Based & Spray Can Paint
- Flammable Caulks & Adhesives
- Lacquers, Varnishes & Thinners
- Mineral Spirits
- Fire Extinguishers
- Household/Auto Cleaning Products
- Flammable Waxes & Abrasives
- Photographic Chemicals & Products
- Lawn Care & Garden Products
- Rodent, Insect & Ant Repellent Products
- Mercury & Fluorescent Light Bulbs

Unacceptable materials:

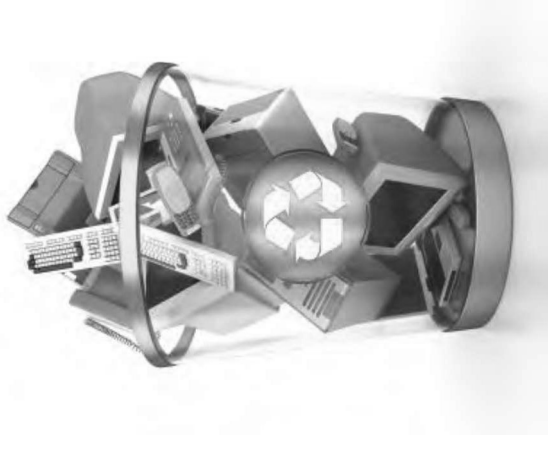
Explosives, Ammunition, Biological Waste, Radioactive Materials, Unlabeled or Unknown Substances

Acceptable Electronic Items

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- Calculators
- CD-ROM/DVD drives
- Memory & Circuit boards
- Computers (PC's)/Laptops/Notebooks
- Monitors (LCD & CRT)
- All computer peripherals: Keyboards, Mice, Cables & external Drives.
- Fax Machines & Modems
- Digital Cameras
- All rechargeable and button Batteries (Alkaline batteries can be disposed of as trash in curbside collection)
- Desktop printers (laser & ink jet) & their cartridges.
- Desktop scanners & copiers
- Stereos and speakers
- Uninterrupted Power Supplies (UPS)
- Video & Audio Equipment
- Wire/cables/extension cords
- TV's (CRT, LCD, Plasma, Rear Proj.)
- Storage Media and their cases: (DVDs, CDs, VHS, ZIP, floppy disks, etc.)
- Small kitchen appliances & microwaves
- Refrigerators and Freezers
- A/C units, Dehumidifiers or other items containing refrigerant



Household Hazardous Waste & Electronics Recycling Program



3224 Colvin Street
Alexandria, VA 22314

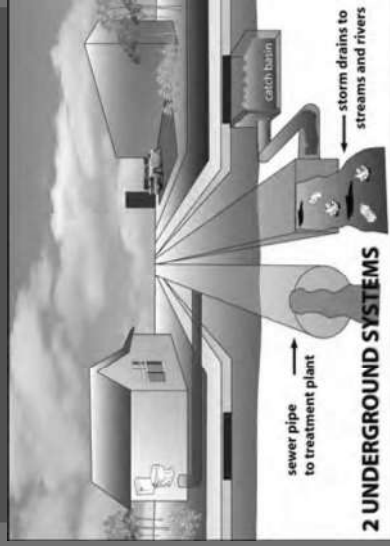
Hours of Operation
Monday & Saturday (Except holidays)
7:30 a.m. to 3:30 p.m.



T&ES - Solid Waste Division
(703) 746-4410
alexandriava.gov/recycling



Hazardous Waste - Less Toxic Option and Safe Disposal			
Hazardous Product	Hazardous Component	Less Toxic Option	Proper Disposal
Stains/Finishes	Glycols, ethers, ketones, minerals spirits, toluene, xylene, other volatile organic compounds	Water-based finishes	Store in screw top container. Save for household hazardous waste collection.
Oil-Based Paints	Alcohol, acetone, esters, ketones, petroleum distillates, other volatile compounds	Use water-based paints*	Share leftovers with friends or neighbors; save for household hazardous waste collection.
Used Oil	Hydrocarbon, heavy metals	none; use recycled oil	Can be recycled. Contact oil collection center or service station; save for household hazardous waste collection.
Bleach Cleaners	Lye, hydrogen peroxide, sodium or calcium hypochlorite	Baking soda or borax	In well-ventilated area, use up as intended. Never mix with ammonia.
Ammonia-Based Cleaners	Ammonia, ethanol	White vinegar, lemon juice	In well-ventilated area, use up as intended. Never mix with chlorine bleach.
Drain Opener	Lye, sodium hypochlorite	Prevent blockage with biological clog preventers; remove clogs with plunger or plumber's "snake"	Save for household hazardous waste collection.
Oven Cleaner	Lye, ammonia	Catch drips with foil or cookie sheets; for cleaning use baking soda, water, scouring pad	In well-ventilated area, use up as intended. Save for household hazardous waste collection.
Pesticides	Almost all pesticides are hazardous. Call US EPA for a list of banned pesticides	Remove food source, use traps and baits, or biological controls	Save for household hazardous waste collection.
Paint Thinners	Alcohol, acetone, esters, ketones, petroleum distillates, other volatile organic compounds	Water in water based paints	Store in screw top container, allow paint solids to settle to bottom & pour off clear thinner to use again. Save remainder for household hazardous waste collection.
*Water-based, Latex paints	Not considered hazardous		Share leftovers with friends or neighbors; add kitty litter or saw dust to left over and allow the paint can to dry out before throwing in the trash. Can be brought to household hazardous waste collection.



STORM SEWERS VS. SANITARY SEWERS

Sanitary sewers collect wastewater from indoor plumbing such as toilets, sinks, washing machines, and floor drains and transport it to a sewage treatment plant. The treatment plant removes pollutants from the wastewater before it is discharged into our local waterways.

Storm sewers consist of the drains and pipes found in streets and parking lots. They are intended to collect and transport runoff from rainfall. Storm drain systems do not remove pollutants from water before it is discharged into local water bodies. This means that everything that enters the drainage system also goes directly into our local streams, the Potomac River, and the Chesapeake Bay!

Illegal Dumping

Improper disposal or dumping of anything in a storm drain other than stormwater is illegal. City Code (Title 11, Ch. 13, Sec. 11-13-2) states that: 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.

To report illegal dumping or for questions about the stormwater program contact:



The City of Alexandria
Department of Transportation & Environmental Services

Stormwater and Sanitary Infrastructure Division
2900-B Business Center Drive
Alexandria, VA 22314
Phone: 703-746-4014
www.alexandriava.gov/environment
24-Hour Nuisance Abatement Hotline:
703-836-0041

Publication date 6/18/2014

CITY OF ALEXANDRIA, VA

Best Management Practices for Stormwater Pollution Prevention



LANDSCAPING AND LAWN CARE COMPANIES

BEST MANAGEMENT PRACTICES

Best management practices (BMPs) are practices and procedures that are used to prevent stormwater pollution and improve water quality.

Pollution Prevention BMPs

- Never dump yard waste in streams or down the storm drain.
- Blow or sweep grass clippings back into yards and off of streets, sidewalks, and driveways. Grass clippings pollute our streams and can also be a safety issue when blown into streets.
- Grass clippings and other yard waste should be left on the yard, composted, bagged, or placed in reusable containers for collection to prevent them from entering the storm drain. Do not pile yard waste on top of storm drains.
- Re-plant bare areas to prevent soil erosion.
- Use native plants for landscaping. Native plants are adapted to local conditions and require less maintenance.

THE PROBLEM WITH POLLUTED RUNOFF

Everything washed or dumped into the storm drain flows untreated into our local streams, the Potomac River, and eventually the Chesapeake Bay.

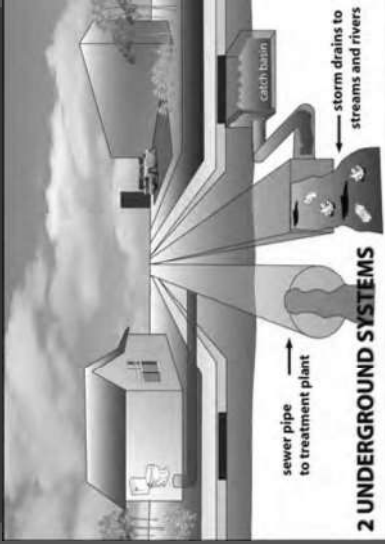


Polluted water can kill fish and aquatic life, harm wildlife populations, kill vegetation, pollute drinking water supplies, and make recreational areas hazardous and unpleasant.

Fertilizer and Pesticide Application

- Apply the right amount of fertilizer by performing a soil test through the VA Cooperative Extension. Sample boxes can be picked up at the local Cooperative Extension office.
- Only apply fertilizer once if needed, and apply in the fall.
- Do not apply fertilizers or pesticides near a stream, river, or other water body.
- Avoid applying fertilizers and pesticides immediately before it rains.
- Always sweep up excess fertilizer that spills over onto sidewalks, driveways, or streets.





STORM SEWERS VS. SANITARY SEWERS

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Publication date 6/18/2014

CITY OF ALEXANDRIA, VA

Best Management Practices for Stormwater Pollution Prevention



RESTAURANTS AND FOOD HANDLING BUSINESSES

BEST MANAGEMENT PRACTICES

Best management practices (BMPs) are practices and procedures that are used to prevent stormwater pollution and improve water quality.

Pollution Prevention BMPs

Grease and Oil

- Always use designated grease bins to dispose of used cooking oils and grease.
- Maintain grease traps and bins to prevent overflows and keep lids closed.

Wash Water

- Never empty a mop bucket outside or into the storm drain.
- Clean floor mats, garbage cans, and other large equipment at an indoor mop sink or other interior drain that is connected to the sanitary sewer.

Cleaning Spills and Drips

- Clean up nonhazardous spills quickly with a mop, rag, or absorbent material.
- Dispose of used absorbent material immediately.
- Store cleaning fluids indoors to prevent leaks and spills from reaching storm drains.

THE PROBLEM WITH POLLUTED RUNOFF

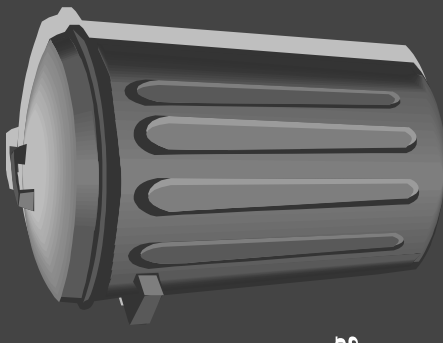
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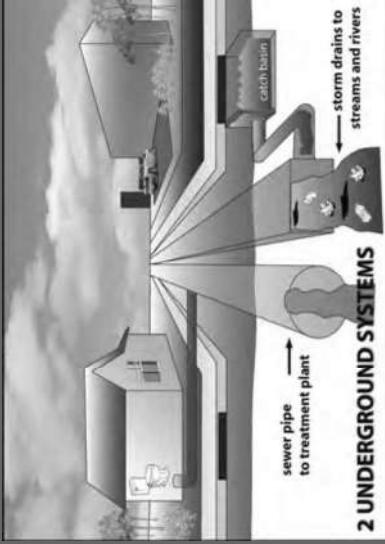
Garbage Disposal

- Avoid disposing of liquids in the garbage.
- Keep dumpster and garbage can lids closed to keep stormwater out.
- Check dumpsters and garbage cans regularly for leaks.
- Keep outdoor areas clean and clean up any spills.



Pressure Washing

- Water from pressure washing must be contained and discharged to the sanitary sewer.
- Equipment washing outside is prohibited.
- Businesses that use outside companies to do their pressure washing are still responsible if wastewater is disposed of into the storm drain.



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2900-B Business Center Drive

Alexandria, VA 22314

Phone: 703-746-4014

www.alexandriava.gov/environment

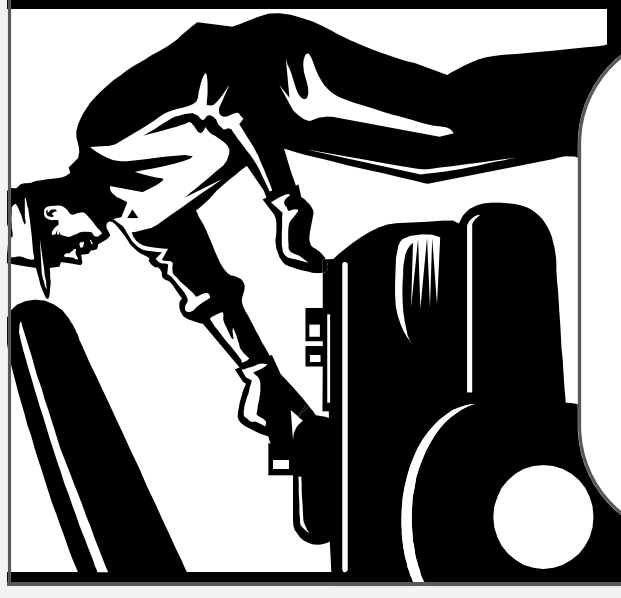
24-Hour Nuisance Abatement Hotline:

703-836-0041

Publication date 6/18/2014

CITY OF ALEXANDRIA, VA

Best Management Practices for Stormwater Pollution Prevention



AUTOMOTIVE GARAGES
AND SERVICE CENTERS

BEST MANAGEMENT PRACTICES

Best management practices (BMPs) are practices and procedures that are used to prevent stormwater pollution and improve water quality.

Pollution Prevention BMPs

- Never pour motor oil or any other fluids down storm drains.
- Never let oil or other waste fluids drain onto the ground.
- Promptly transfer waste fluids to proper containers and keep them closed.
- Conduct fluid changes and maintenance work indoors.
- Regularly check vehicles for leaks and place pans under leaking vehicles to collect fluids.
- Drain fluids promptly from junk vehicles.
- Use non-hazardous cleaners if possible.
- Minimize the number and amount of solvents used to reduce hazardous waste disposal.
- Wash water from car washing cannot enter storm drains.

THE PROBLEM WITH POLLUTED RUNOFF

Everything washed or dumped into the storm drain flows untreated into our local streams, the Potomac River, and eventually the Chesapeake Bay.



Polluted water can kill fish and aquatic life, harm wildlife populations, kill vegetation, pollute drinking water supplies, and make recreational areas hazardous and unpleasant.

Cleaning Spills

- Clean up nonhazardous spills quickly with a mop, rag, or absorbent material such as kitty litter.
- Never wash spilled material down a storm drain or onto the ground outdoors.
- Sweep up used absorbent material and dispose of it promptly. For hazardous materials, comply with all hazardous waste disposal regulations.
- Store cleaning fluids indoors and away from storm drains.



THE PROBLEM WITH POLLUTED RUNOFF

When it rains, stormwater flows over hard surfaces like parking lots and roads and picks up pollutants such as trash, fertilizer, and oil. Everything washed or dumped into the storm drain flows untreated into our local streams, the Potomac River, and eventually the Chesapeake Bay. Polluted water can kill fish and aquatic life, harm wildlife populations, kill vegetation, pollute drinking water supplies, and make recreational areas hazardous and unpleasant.



Thank you for helping to
keep our waterways
clean!



For more information or questions about the
Stormwater Management Program contact:



The City of Alexandria

Department of Transportation & Environmental
Services

Stormwater Management Division

2900-B Business Center Drive

Alexandria, VA 22314

Phone: 703-746-6499

www.alexandriava.gov/Stormwater



Publication date April 2019

CITY OF ALEXANDRIA, VA

Make Your Home the Solution
to Stormwater Pollution



WHAT YOU CAN DO TO
PREVENT STORMWATER
POLLUTION

WHAT CAN I DO?

Preventing stormwater pollution starts at home. Here are some small steps you can take to prevent stormwater pollution and improve water quality.

AROUND YOUR HOME

- Properly use and dispose of household chemicals. Use the City's Household Hazardous Waste & Electronics Recycling Facility located at 3224 Colvin Street for proper disposal of these items.
- Clean up spills immediately using dry methods. Use adsorbent materials for spills or sweep up construction debris like concrete and mortar. Never use water to rinse debris or spills into the street or storm drains.
- Wash paint brushes, mops, and other tools indoors. Never wash tools in the driveway, street, or into a storm drain.
- Install a rain barrel to collect rain water that runs off your roof and use the water on your plants.

VEHICLE AND GARAGE

- Keep your car and other vehicles well maintained and fix leaks as soon as possible.
- Take your car to a commercial car wash or wash your car on the lawn where the grass and soil absorb the water and soap.

PET CARE

- Always clean up after your pet. Bag pet waste and place it in the trash.

AROUND TOWN

- Keep our City litter free.
- Never dump anything in a storm drain. Remember, only rain down the storm drain.

AROUND YOUR YARD

- Test your soil. Virginia Cooperative Extension has test kits available. Know how much fertilizer to use and don't over fertilize. Or better yet, don't fertilize at all if it isn't necessary.
- Do not apply fertilizers or pesticides near a stream, river, or other water body.
- Never fertilize or use pesticides if it is going to rain within 24 hours.
- Always sweep up excess fertilizer that spills over onto hard surfaces, like sidewalks or driveways.
- Never dump yard waste in streams or down the storm drain.
- Use native plants instead of ornamental plants when landscaping.

What's grosser than picking up pet waste?

Stepping in it. Know what's even grosser than that? Swimming in, fishing from, and drinking water that has pet poop in it! Please pick up after your pet!

When it rains, pet waste left on the ground, especially near streets and sidewalks, gets washed into storm drains and drainage ditches which flow to your local waterways... without being treated! Not only is picking up after your pet the neighborly thing to do, it's the healthy thing to do...for you and the environment!



Thank you for helping to
keep our waters clean!



When nature calls....
**Please pick up
after your pet!**

For more information or questions about the
stormwater program contact:



City of Alexandria
Transportation & Environmental Services
Stormwater Management Division
2900-B Business Center Drive
Alexandria, VA 22314
Phone: 703.746.4014
www.alexandriava.gov

Publication date 4/1/2016

Eco-CITY  **ALEXANDRIA**



Are you polluting our waters?

Did you know that most of Alexandria's streams exceed Virginia's water quality standards for fecal coliform and/or E. coli bacteria?

Numerous studies clearly link pet waste to waterborne bacterial pollution.

Once in our rivers, lakes, and streams, the bacteria and pathogens end up in fish and other aquatic life.

When you dispose of pet waste improperly, raw sewage gets introduced into the places we swim, boat, fish, and gather food and water!



THE PROBLEM

Storm drains are not connected to wastewater treatment plants like the drains in your home. When pet waste is tossed into a storm drain or left on the sidewalk, street or yard, it is carried by rainwater through the storm sewer system directly into our local water bodies, without any treatment!

Pet waste is a threat to human and environmental health because it contains harmful bacteria and pathogens, some of which can cause serious diseases in humans. Pet waste also contains many other nutrient pollutants, which contribute to excessive algae growth in a water body . When these algae die, they are eaten by bacteria which depletes the water of oxygen. This can lead to death of the aquatic insects and fish in the area.

THE SOLUTION

Proper ways to dispose of pet waste include:

- Bag and place pet waste in the trash.
- Never dispose of pet waste in a storm drain. These drains lead directly to local waterways.
- Never dump used kitty litter outside. Throw it in the trash.

Encourage other pet owners to be responsible. It is an important part of the responsibility of owning a pet.

THE CITY'S TMDL APPROACH

Implementation of the TMDL is carried out by the City. The City performs the following in support of this effort:

- Special Use Permits (SUPs) for new developments require screening for PCBs as part of the site characterization.
- Municipal properties are assessed for sources of PCBs. Stormwater runoff is evaluated from properties that have a high risk of PCB contamination.
- Construction sites are monitored and inspected for erosion and sedimentation control.
- Dry weather outfall screenings are performed annually for sources of illicit discharges.



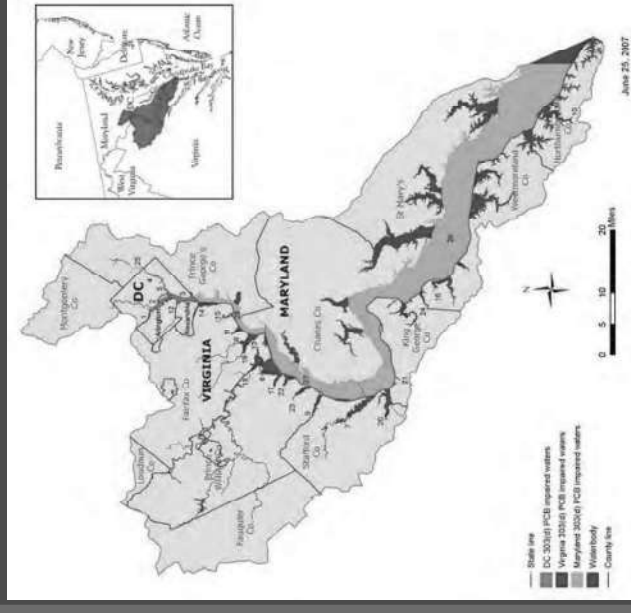
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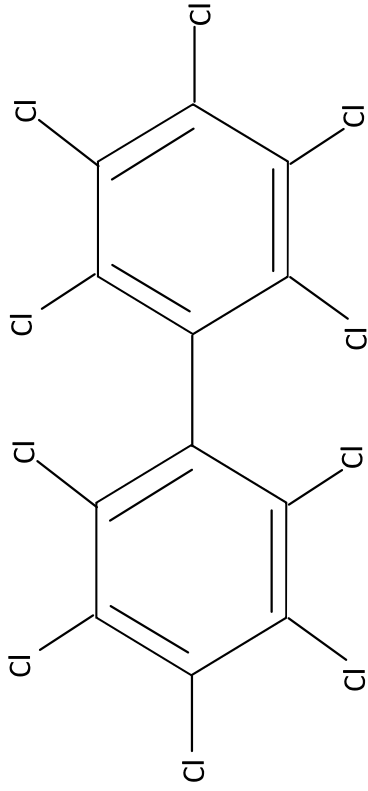


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City of Alexandria, VA



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- Secure lids tightly; Store in a dry, cool place away from heat, children & pets.
- Properly dispose of hazardous waste.

Eligible Participants:

City of Alexandria Residents ONLY
Businesses - visit web site for more information

Acceptable materials:

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- Battery Acid & Car Batteries
- Oil-Based & Spray Can Paint
- Flammable Caulks & Adhesives
- Lacquers, Varnishes & Thinners
- Mineral Spirits
- Fire Extinguishers
- Household/Auto Cleaning Products
- Flammable Waxes & Abrasives
- Photographic Chemicals & Products
- Lawn Care & Garden Products
- Rodent, Insect & Ant Repellent Products
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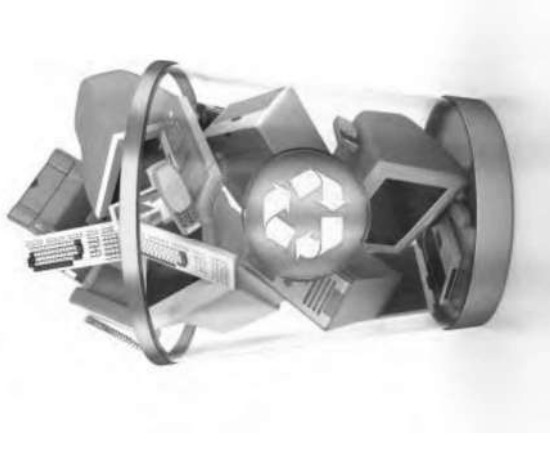
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- Memory & Circuit boards
- Computers (PC's)/Laptops/Notebooks
- Monitors (LCD & CRT)
- All computer peripherals: Keyboards, Mice, Cables & external Drives.
- Fax Machines & Modems
- Digital Cameras
- All rechargeable and button Batteries (Alkaline batteries can be disposed of as trash in curbside collection)
- Desktop printers (laser & ink jet) & their cartridges.
- Desktop scanners & copiers
- Stereos and speakers
- Uninterrupted Power Supplies (UPS)
- Video & Audio Equipment
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Hours of Operation
Monday & Saturday (Except holidays)
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T&ES - Solid Waste Division
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alexandriava.gov/recycling



Hazardous Waste - Less Toxic Option and Safe Disposal			
Hazardous Product	Hazardous Component	Less Toxic Option	Proper Disposal
Stains/Finishes	Glycols, ethers, ketones, minerals spirits, toluene, xylene, other volatile organic compounds	Water-based finishes	Store in screw top container. Save for household hazardous waste collection.
Oil-Based Paints	Alcohol, acetone, esters, ketones, petroleum distillates, other volatile compounds	Use water-based paints*	Share leftovers with friends or neighbors; save for household hazardous waste collection.
Used Oil	Hydrocarbon, heavy metals	none; use recycled oil	Can be recycled. Contact oil collection center or service station; save for household hazardous waste collection.
Bleach Cleaners	Lye, hydrogen peroxide, sodium or calcium hypochlorite	Baking soda or borax	In well-ventilated area, use up as intended. Never mix with ammonia.
Ammonia-Based Cleaners	Ammonia, ethanol	White vinegar, lemon juice	In well-ventilated area, use up as intended. Never mix with chlorine bleach.
Drain Opener	Lye, sodium hypochlorite	Prevent blockage with biological clog preventers; remove clogs with plunger or plumber's "snake"	Save for household hazardous waste collection.
Oven Cleaner	Lye, ammonia	Catch drips with foil or cookie sheets; for cleaning use baking soda, water, scouring pad	In well-ventilated area, use up as intended. Save for household hazardous waste collection.
Pesticides	Almost all pesticides are hazardous. Call US EPA for a list of banned pesticides	Remove food source, use traps and baits, or biological controls	Save for household hazardous waste collection.
Paint Thinners	Alcohol, acetone, esters, ketones, petroleum distillates, other volatile organic compounds	Water in water based paints	Store in screw top container, allow paint solids to settle to bottom & pour off clear thinner to use again. Save remainder for household hazardous waste collection.
*Water-based, Latex paints	Not considered hazardous		Share leftovers with friends or neighbors; add kitty litter or saw dust to left over and allow the paint can to dry out before throwing in the trash. Can be brought to household hazardous waste collection.

Virginia Runoff Reduction Method ReDevelopment Worksheet - v2.8 - June 2014

To be used w/ DRAFT 2013 BMP Standards and Specifications

Site Data

Project Name: Goodwin House
Date: 4/17/2015

	data input cells
	calculation cells
	constant values

Post-ReDevelopment Project & Land Cover Information

Annual Rainfall (inches)	45	
Target Rainfall Event (inches)	1.00	
Phosphorus EMC (mg/L)	0.26	
Target Phosphorus Target Load (lb/acre/yr)	0.41	
P	0.90	

Pre-ReDevelopment Land Cover (acres)	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) – undisturbed, protected forest/open space or reforested land	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres) – disturbed, graded for yards or other turf to be moved/managed	0.00	0.00	0.00	1.12	1.12
Impervious Cover (acres)	0.00	0.00	0.00	1.16	1.16
				Total	2.28

Post-ReDevelopment Land Cover (acres)	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) – undisturbed, protected forest/open space or reforested land	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres) – disturbed, graded for yards or other turf to be moved/managed	0.00	0.00	0.00	0.79	0.79
Impervious Cover (acres)	0.00	0.00	0.00	1.45	1.45
				Total	2.28

Area Check	Okay	Okay	Okay	Okay
Rv Coefficients	A soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.04	0.04	0.05
Managed Turf	0.15	0.20	0.25	0.25
Impervious Cover	0.95	0.95	0.95	0.95

Land Cover Summary	Listed	Adjusted ¹	Land Cover Summary	Post-ReDevelopment
Forest/Open Space Cover (acres)	0.00	0.00	Forest/Open Space Cover	0.00
Composite Rv(forest)	0.00	0.00	Composite Rv(forest)	0.00
% Forest	0%	0%	% Forest	0%
Managed Turf Cover (acres)	1.12	0.79	Managed Turf Cover (acres)	0.79
Composite Rv(turf)	0.25	0.25	Composite Rv(turf)	0.25
% Managed Turf	49%	41%	% Managed Turf	41%
Impervious Cover (acres)	1.16	1.16	ReDev. Impervious Cover (acres)	1.16
Rv(impervious)	0.95	0.95	Rv(impervious)	0.95
% Impervious	51%	59%	% Impervious	59%
Total Site Area (acres)	2.28	1.95	Total ReDev. Site Area (acres)	1.95
Site Rv	0.61	0.67	ReDev. Site Rv	0.67

Pre-Development Treatment Volume (acre-ft)	0.1152	0.1083	Post-Development Treatment Volume (acre-ft)	0.1083
Pre-Development Treatment Volume (cubic feet)	5.017	4.717	Post-Development Treatment Volume (cubic feet)	4.717
Pre-Development Load (TP) (lb/yr)	3.15	2.95	Post-Development Load (TP) (lb/yr)	2.95

¹Adjusted Land Cover Summary reflects the pre re-development land cover minus the previous land cover (forest/open space or managed turf) acreage proposed for new impervious cover. The adjusted total acreage is consistent with the Post ReDevelopment acreage (minus the acreage of new impervious cover). The load reduction requirement for the new impervious cover to meet the new development load limit is computed in Column I.

Pre-Development Load (TN) (lb/yr)	22.55	Post-Development Load (TN) (lb/yr)	26.33
-----------------------------------	-------	------------------------------------	-------

Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area A

Credit	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs)	Phosphorus Removed By Practice (lbs)	Remaining Phosphorus Load (lbs)	Downstream Treatment to be Employed
1. Vegetated Roof													
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.14	0	217	268	0	0.00	0.30	0.14	0.17	14. Manufactured Device
6. Bioretention													
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.22	0	303	455	25	0.00	0.48	0.28	0.21	14. Manufactured Device
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00	14. Manufactured Device
14. Manufactured BMP													
	impervious acres draining to device	0% runoff volume reduction	0.00	0.85	720.74	0	3790	50	0.38	1.93	1.15	1.15	
14. Stormwater Filters/SWM Vault	turf acres draining to device	0% runoff volume reduction	0.00	0.48	0.00	0	1655	50	0.00	0.27	0.14	0.14	

NOTE

ALL ON-SITE STORM WATER CURB INLETS AND PUBLIC CURB INLETS LOCATED WITHIN 50 FEET OF THE PROPERTY LINE SHALL BE ONLY MARKED WITH THE BELOW MARKER!!!!



Drainage Area A

Drainage Area A Land Cover (acres)	A soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres) – undisturbed, protected forest/open space or reforested land	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres) – disturbed, graded for yards or other turf to be moved/managed	0.00	0.00	0.00	0.79	0.79	0.25
Impervious Cover (acres)	0.00	0.00	0.00	1.49	1.49	0.95
				Total	2.28	

Site Results

Phosphorus	
TOTAL PHOSPHOROUS LOAD REDUCTION REQUIRED (LB/YEAR)	1.17
RUNOFF REDUCTION (cf)	521
PHOSPHOROUS LOAD REDUCTION ACHIEVED (LB/YR)	1.69
ADJUSTED POST-DEVELOPMENT PHOSPHOROUS LOAD (TP) (lb/yr)	1.90
REMAINING PHOSPHOROUS LOAD REDUCTION (LB/YR) NEEDED	CONGRATULATIONS!! YOU EXCEEDED THE TARGET REDUCTION BY 0.5 LB/YEAR!!

Drainage Area A	A soils	B Soils	C Soils	D Soils	
Forest/Open Space (acres) – undisturbed, protected forest/open space or reforested land	Area (acres) CN	0.00 30	0.00 55	0.00 70	0.00 77
Managed Turf – disturbed, graded for yards or other turf to be moved/managed	Area (acres) CN	0.00 39	0.00 61	0.00 74	0.79 80
Impervious Cover	Area (acres) CN	0.00 98	0.00 98	0.00 98	1.49 98
				Weighted CN	92
					0.87

RV _{Developed} (in) with no Runoff Reduction	1-year storm	2-year storm	10-year storm
RV _{Developed} (in) with Runoff Reduction Adjusted CN	1.75 91	2.28 91	3.86 91

Project Description

Development or Redevelopment	Impervious	Pervious	Total
Drainage Area	1.087	0.711	1.798
Site Area	1.452	0.367	1.819
On-Site Treated	0.000	0.000	0.000
Off-Site Treated	1.452	0.367	1.819
Total Treated			
Any On-Site Disconnected by a Vegetated Buffer (25 ft)	0		
Total On-Site Treated or Disconnected			1.819

Water Treatment on-site and off-site

BMP Type	Area treated by BMP (acres)	Impervious area treated by BMP (acres)	BMP efficiency (%)
SWM Vault #1	1.819	1.452	79.8%

Miscellaneous

Total WQV treated: **YES** no
Detention on site: **YES** no

Project is within which watershed? FOUR MILE RUN

Project discharges to which body of water? FOUR MILE RUN

STORMWATER QUANTITY CHANNEL PROTECTION COMPUTATIONS (TR-55 METHOD)

CN PRE = 88
TC = 6 MINUTES
Q-PRE (1–YR, 24–HR) = 15.53 CFS
RV(PRE) = 1.91 INCHES

CN POST (ADJUSTED) = 92
TC = 6 MINUTES
Q-POST (1–YR, 24–HR) = 16.45 CFS
RV(POST) = 2.2 INCHES

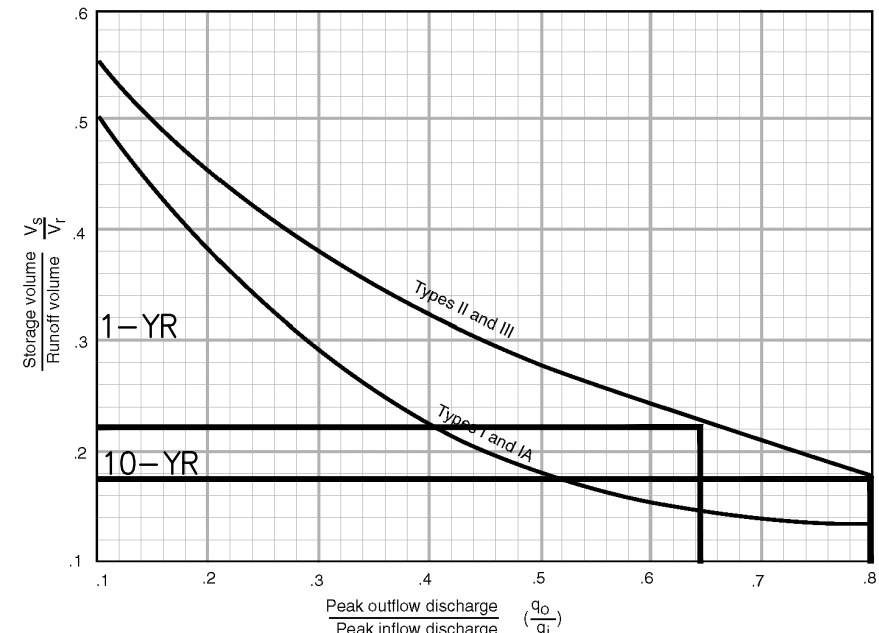
Q(ALLOWABLE) = I.F. X (Q(PRE) X RV(PRE)) / RV(POST)
= 0.80 X (15.53) X (1.91) / (2.2)
= 10.77 CFS

QO/Qi = Q(ALLOWABLE)/Q(POST) = 10.77/16.45 = 0.65

VOLUME STORAGE/RUNOFF VOLUME (Vs/Vr) = 0.22 (FROM TR-55 FIGURE 6–1)

RUNOFF VOLUME (Vr) = 53.33 X RV(POST) X AREA (SQ–MI)
= 53.33 X 3.79 X 2.28 / 640 AC/SQ–MI = 0.4180 ACRE–FT
= 18,208 CUBIC FT

STORAGE VOLUME REQ'D (VS) = VR X (VS/VR) = 18,208 X 0.22 = 4,006 CF



STORMWATER QUANTITY FLOOD–CONTROL COMPUTATIONS (TR-55 METHOD)

CN PRE = 88
TC = 6 MINUTES
Q-PRE (1–YR, 24–HR) = 23.72 CFS
RV(PRE) = 3.86 INCHES

CN POST (ADJUSTED) = 92
TC = 6 MINUTES
Q-POST (1–YR, 24–HR) = 24.51 CFS
RV(POST) = 3.79 INCHES

Q(ALLOWABLE) = 21.54 CFS

QO/Qi = Q(ALLOWABLE)/Q(POST) = 11.95/12.70 = 0.88

VOLUME STORAGE/RUNOFF VOLUME (Vs/Vr) = 0.18 (FROM TR-55 FIGURE 6–1)

RUNOFF VOLUME (Vr) = 53.33 X RV(POST) X AREA (SQ–MI)
= 53.33 X 3.79 X 2.28 / 640 AC/SQ–MI = 0.7201 ACRE–FT
= 31,365 CUBIC FT

STORAGE VOLUME REQ'D (VS) = VR X (VS/VR) = 31,365 X 0.18 = 5,646 CF

ALEXANDRIA WATER QUALITY VOLUME DEFAULT:

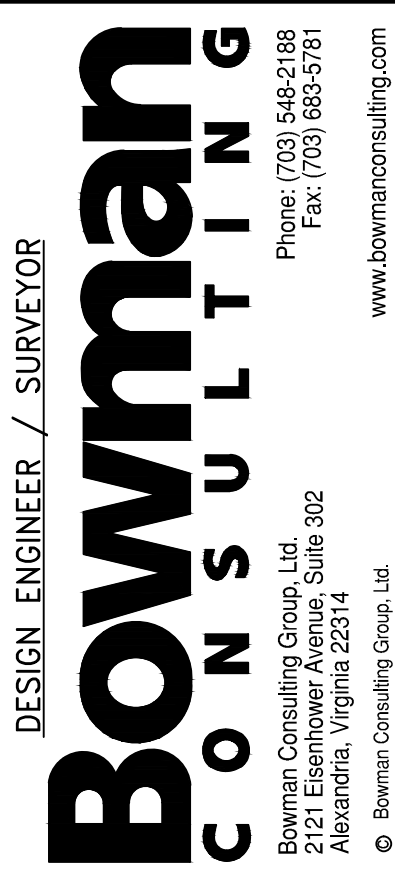
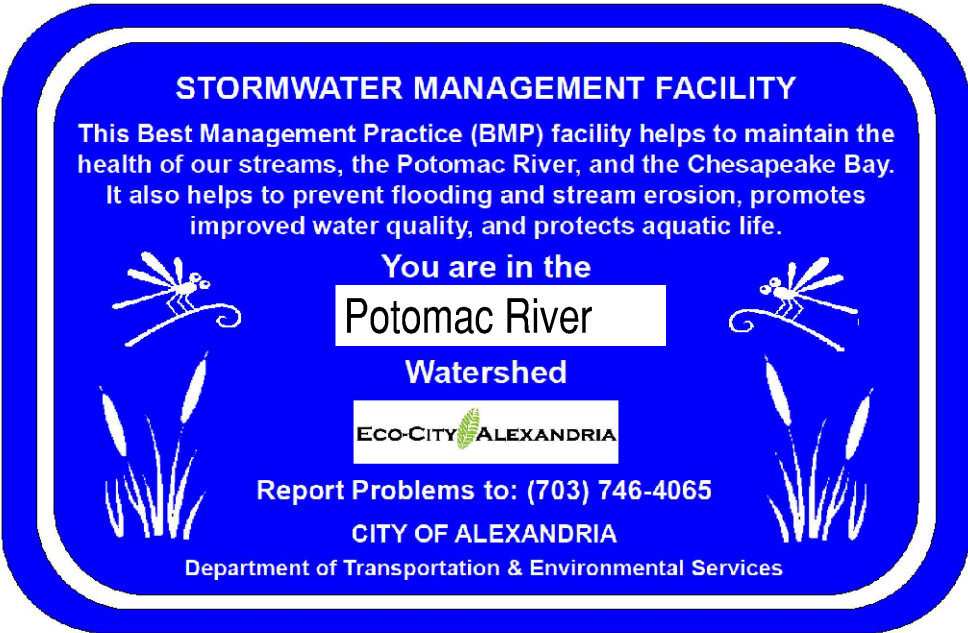
VOLUME EQUAL TO THE FIRST 0.5 INCH OF RUNOFF OVER THE TOTAL IMPERVIOUS AREA

PROPOSED IMPERVIOUS AREA WITHIN PROJECT LIMITS = 47,337 SF
REQUIRED VOLUME = PROPOSED IMPERVIOUS AREA X 0.5 INCH OF RUNOFF
= 47,337 SF X 0.5 INCH
= 1,972 CF

VOLUME REQUIREMENT:

WTV = 5,855 CF
1–YR DETENTION = 4,006 CF
10–YR DETENTION = 5,646 CF
ALEXANDRIA WQV = 1,972 CF

VOLUME REQUIREMENT = 5,855 CF (MAXIMUM)



SEAL:



NO.	DESCRIPTION	DATE	REV.	BY	APPROVED

GOODWIN HOUSE
FINAL SITE PLAN
CITY OF ALEXANDRIA, VIRGINIA

SWM-BMP COMPUTATIONS

SHEET NAME:

ESI
Peer Review

APPROVED SPECIAL USE PERMIT NO.	2014–00012
DEPARTMENT OF PLANNING & ZONING	
DIRECTOR	DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES	
SITE PLAN No.	
DIRECTOR	DATE
CHAIRMAN, PLANNING COMMISSION	DATE
DATE RECORDED	
INSTRUMENT NO.	DEED BOOK NO. PAGE NO.

Appendix A

Sign for Stormwater Management Facility



Appendix A

Sign for Stream Crossing



! City Government Phone Numbers and Hotlines Unavailable 3-6 p.m. on Wednesday

Updated 5:23 p.m. Tue, Sep 14

! COVID-19 Information & Updates

Updated 5:04 p.m. Fri, July 2

Stormwater Management

Stormwater runoff occurs when rain or snowmelt flows over the ground. Hard surfaces, like roofs, driveways, parking lots, and streets prevent stormwater from naturally soaking into the ground. If not managed properly, stormwater runoff can create stormwater pollution and/or flooding issues.

Page updated on Sep 8, 2021 at 12:06 PM

UPCOMING EVENTS

SEP
20

VIRTUAL: Environmental Policy Commission Meeting (EPC)

7:30 PM / Virtual Only

SEP
25

VIRTUAL: Environmental Policy Commission Annual Retreat

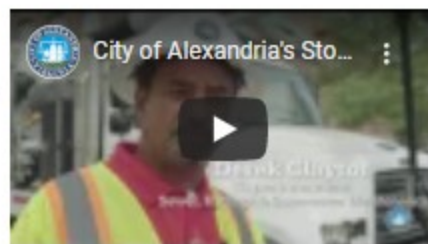
9:00 AM / Virtual Only

RELATED CONTENT

- [Stormwater Management](#)
- [Chesapeake Bay](#)
- [Sanitary Infrastructure](#)
- [Stormwater Utility Fee Information](#)
- [Rain Barrels and Water Harvesting](#)
- [Resource Protection Areas \(RPAs\)](#)
- [Stream Restoration](#)
- [Total Maximum Daily Loads \(TMDLs\)](#)
- [Urban Streams: Enjoying Our Stream Safely](#)
- [Virginia Stormwater Management Program \(VSMP\)](#)

What Do We Do?

The Stormwater Management Program helps protect water quality in the City. The program has three focus areas: 1) Stormwater Quality, 2) Flooding and Drainage Issues, and 3) Public Infrastructure Maintenance & 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.



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.



Stormwater Utility Fee Information

The City has adopted a Stormwater Utility Fee to provide funding for the stormwater management program to reduce the impact of stormwater pollution and flooding, and ensure that Alexandria is in compliance with state and federal stormwater regulations.

SHARE



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.

Around Your Yard

- [Test your soil.](#) Know how much fertilizer to use and don't over fertilize. Or better yet, don't fertilize at all if it isn't necessary!
- Never fertilize or use pesticides if it is going to rain within 24 hours. Fertilizers and pesticides can end up in streams and harm aquatic life.
- Select slow release or insoluble fertilizers, and always read and follow the instructions on the fertilizer and pesticide packaging.
- Ask your lawn care company to fertilize with care.
- Don't blow grass clippings and leaves in the street or down a storm drain, mulch grass clippings instead. Leaves and lawn clippings washed into the streams decompose, creating food for algae in the water.
- Plant a tree. Trees use nutrients and can prevent those nutrients from entering our streams. Their roots also hold the soil in place, which helps prevent erosion.
- Landscape using plants on slopes, especially if you live near stream banks, to help prevent erosion.
- Don't connect downspouts to the storm sewer system or onto paved surfaces. Instead, allow your downspouts to drain onto your lawn.
- When watering, avoid watering onto paved surfaces.
- Use plants that are native to the area and more resistant to drought.
- Use a rain barrel to capture roof runoff during storms and use that water to irrigate your lawn. Please visit the [rain barrel page](#) to learn more about rain barrels.

Pet Care

Did you know that many of Alexandria's streams exceed Virginia's standards for fecal coliform bacteria? Fecal coliform bacteria are present in the intestinal tracts of all warm-blooded animals and are an indicator that a potential health risk exists for individuals exposed to the water.



Pet waste is a significant source of fecal coliform bacteria in Alexandria. When pet waste is not properly disposed of, it can wash into nearby streams or be carried by runoff into storm drains. Stormwater is not treated. Instead, storm drains go directly into our local streams and eventually the Chesapeake Bay.

The nutrients and organic matter in pet waste can also cause significant water quality degradation. Excess nutrients can cause algae blooms that block sunlight and kill underwater vegetation. Decaying pet waste uses up dissolved oxygen in the water that fish and other aquatic species rely on to live.

SIMPLE WAYS TO LOVE YOUR PET AND THE ENVIRONMENT!

- *Always clean up after your pet* - Dog waste in parks, on the street and even in your garden can all end up polluting our streams. It may not be the most pleasant chore, but it can prevent water pollution and it's the law. Failure to do so on public property is subject to a \$100 fine (City Code§5-7-46).
- *Dispose of pet waste properly* - Bag it and place pet waste in the trash.
- *Never dispose of pet waste in a storm drain* - These drains lead directly to local waterways.
- *Encourage other pet owners to be responsible* - It is an important part of the responsibility of owning a pet. We all suffer the consequences of ignoring irresponsible pet owners.

The City has several managed dog exercise areas. For more information or locations, please contact the Alexandria Department of Recreation, Parks and Cultural Activities or visit the [Dogs in Alexandria](#) webpage.

Please visit the [Northern Virginia Clean Water Partners](#) page to learn more. If we each do a little, it can add up to a lot.

City Government Phone Numbers and Hotlines Unavailable 3-6 p.m. on Wednesday

Updated 5:23 p.m. Tue, Sep 14

COVID-19 Information & Updates

Updated 5:04 p.m. Fri, July 2

Storm Drain Markers

Page updated on Apr 2, 2018 at 4:55 PM



RELATED CONTENT

- [Environmental Quality](#)
- [Air Quality](#)
- [Noise Control](#)
- [Contaminated Lands](#)
- [Stormwater Management](#)
- [Potomac River Generating Station \(formerly GenOn\)](#)
- [News & Events](#)
- [Forms & Publications](#)
- [Related Links](#)
- [Environmental Policy Commission](#)
- [Transportation & Environmental Services](#)
- [Eco-City Alexandria](#)
- [Community Rating System \(CRS\) and National Flood Insurance Program](#)
- [Stormwater Infiltration and Inflow Program](#)

Storm drain markers feature the shad – a local fish – to remind us that anything we put in a storm drain goes directly into our local streams. All of our local streams drain to the Potomac River, which provides drinking water and recreation, habitat for aquatic animals and plants, symbolizes our heritage, and drains to the Chesapeake Bay. Keep our streams clean and safe for our children, pets, and fish like Sherlock and other wildlife.



Please visit www.alexandriava.gov/Volunteer to learn more about helping prevent water pollution by marking storm drains in Alexandria.

Four Mile Run Storm Drain Marker



Holmes Run Storm Drain Marker



SHARE



Jessica Lassetter

From: Alexandria eNews <noreply@everbridge.net>
Sent: Thursday, April 22, 2021 7:48 AM
To: Jessica Lassetter
Subject: City of Alexandria Celebrates Earth Day

City of Alexandria Celebrates Earth Day

For Immediate Release: April 22, 2021

Today, the City of Alexandria and AlexRenew celebrate Earth Day with a special collection of resources to raise awareness of actions all Alexandrians can take for a more environmentally friendly lifestyle. Earth Day was founded 51 years ago when thousands of people came together to demonstrate and demand cleaner air and water. This year's event is completely virtual, and features City agencies and organizations dedicated to protecting the environment.

Alexandria Earth Day 2021's theme is "Restore Our Earth," which focuses on being conscious of how behaviors impact the earth and taking actions to restore its ecosystems. Residents are invited to visit the [Alexandria Earth Day webpage](#) to learn more about how to help restore water, land, climate and air quality. A collection of Earth Day artwork from Alexandria City Public Schools students will also be featured.

As a continuation of the Earth Day celebration, the recipient of the annual [Ellen Pickering Environmental Excellence Award](#) will be announced by the Alexandria City Council on Tuesday, May 11. This award recognizes members of the Alexandria community who demonstrate a commitment to protecting the environment and preserving local natural resources.

Year-round opportunities to get involved include stream cleanups, becoming an Eco-City Ambassador after participating in the City's Eco-City Academy, becoming an Energy Master, and environmental education classes and activities with the Jerome "Buddie" Ford Nature Center. Residents can also attend meetings of the [Environmental Policy Commission](#) and the new [Energy and Climate Change Task Force](#) to learn about the City's ongoing efforts.

Visit alexandriava.gov/EarthDay to view the virtual Earth Day materials, and for more information about the Ellen Pickering Environmental Excellence Award, and the City's plans and initiatives to lead the community toward a green and sustainable future.

For inquiries from the news media only, contact Andrea Blackford, Senior Communications Officer, at andrea.blackford@alexandriava.gov or 703.746.3959.

For reasonable disability accommodation, contact lisa.goldberg@alexandriava.gov or call 703.746.4181, Virginia Relay 711.

###

This news release is available at alexandriava.gov/121820.

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From: [Alexandria eNews](#)
To: [Jessica Lassetter](#)
Subject: Water Discovery Day Educational Videos and Tips to Help Protect Local Water Quality
Date: Wednesday, December 2, 2020 4:04:41 PM

Eco-City Alexandria: Get Involved!

Water Discovery Day Educational Videos and Tips to Help Protect Local Water Quality

Your Actions Make a Difference!

Initiated in 2018, One Water Alexandria is a partnership between the three water entities that serve the City of Alexandria: [Virginia American Water](#), who provides drinking water; the City of Alexandria, who owns the sanitary and storm sewer infrastructure; and [Alexandria Renew Enterprises](#) (AlexRenew), who owns the water resource recovery facility, interceptors, pump stations, and combined sewer outfalls. [RiverRenew](#) is the program owned and implemented by AlexRenew, with support from the City of Alexandria which focuses on separating the combine sewer system in Old Town, Alexandria.

This past September, the One Water partnership observed the annual Water Discovery Day by hosting a week-long virtual event. The event featured educational videos and easy at-home water-focused projects targeted to school aged youth. You can check out these videos and at-home activities by visiting www.alexandriava.gov/118792.

Due to the ongoing COVID-19 pandemic, annual clean ups continue to be postponed. If you are interested in an individual cleanup, visit Volunteer Alexandria.

Below is a list of some things you can do to help protect the health of our local waterways:

- Know how much fertilizer to use and don't over fertilize. Or better yet, don't fertilize at all if it isn't necessary! Never fertilize or use pesticides if it is going to rain within 24 hours. Fertilizers and pesticides can end up in streams and harm aquatic life.
- Plant a native tree. Trees use nutrients and can prevent those nutrients from entering our streams. Their roots also hold the soil in place, which helps prevent

erosion.

- Landscape your yard using plants that are native to Alexandria. These plants are adapted to local conditions and, if planted in the right place, need less water and other care. Native plants also support butterflies, birds, bees, and other pollinators. Need ideas of what native plants are right for your yard? Visit plantnovanatives.org to learn more.
- Use native plants in your rain garden. This helps provide food and shelter for butterflies, bees, and birds. Please visit the [City's stormwater management BMP page](#) for more information, including recorded webinars, about selecting the right BMP for your yard.
- Pick up after your dog. Pet waste left on the ground gets washed into storm drains or streams by rain. Remember to place the bagged waste in a trash can and not down the storm drain.
- Keep our city litter free. Any litter you drop in the street, on the sidewalk, or in a park will likely end up in a local stream and eventually the Chesapeake Bay. Besides looking bad, it harms the environment and wildlife.
- Report spills in our waterways to Alex311. If you have any concerns about illicit or illegal discharges originating from improper disposal of items, spills, land disturbing activities, or other potential stormwater pollution concerns, or if you suspect a problem or notice something suspicious (water that is an unusual color, is cloudy, and/or has a strong smell) use Alex311 to report it to the City.
- Educate your family, friends, and neighbors about the importance of protecting our local water resources, the Potomac River, and the Chesapeake Bay.

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Transportation & Environmental Services, City of Alexandria, Virginia

January 14 · 🌐

...

Storm drains don't filter what we put into them. They run directly into our streams and rivers. To help keep them clean, properly dispose of your motor oil, pick up after your pet, take your car to a car wash and follow the directions when you spray and fertilize your yard. Please do your part to ensure only rain goes down the storm drain!



ECO-CITY ALEXANDRIA

Only **Rain** Down the Storm Drain!



👍❤️ 9

2 Shares

👍 Like

💬 Comment

➦ Share



Transportation & Environmental Services, City of Alexandria, Virginia

August 18, 2020 ·

...

This morning, City staff recorded a video for Water Discovery Day (now changed to week-- running Sept. 6-12) and co-sponsored by [American Water Alexandria Renew Enterprises](#) and the City. Sign up to participate virtually: <https://www.eventbrite.com/.../water-discovery-days-2020...>



2

3 Shares

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Comment

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Transportation & Environmental Services, City of Alexandria, Virginia

June 9 · 🌐

...

Our next Chesapeake [#BayAwarenessWeek](#) tip: consider individual actions to improve the health of the Bay, such as planting natives. Native plants also support butterflies, birds, bees, and other pollinators. Need ideas of what native plants are right for your yard? Visit plantnvanatives.org to learn more.



Plant Natives



**Landscape your yard using plants
that are native to Alexandria.
These plants are adapted to local
conditions and, if planted in the
right place, need less water and
other care.**

👍 10

3 Shares

👍 Like

💬 Comment

➦ Share



Transportation & Environmental Services, City of Alexandria, Virginia

June 4 · 🌐

...

REMINDER: We're kicking off Chesapeake #BayAwarenessWeek by holding a cleanup tomorrow morning (Sat. Jun 4) from 9-11 a.m. at Oronoco Bay Park located at 100 Madison St. Be sure to bring your own gloves and water/snacks as well as sun protection and follow the latest COVID-19 guidance provided by the City.

Learn more: alexandriava.gov/104501



TOMORROW: Clean the Bay Day

Join us on Saturday, June 5, to participate in the Chesapeake Bay Foundation's 33rd annual Clean the Bay Day.

Learn more at:
alexandriava.gov/104501



2



Like



Comment



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Transportation & Environmental Services, City of Alexandria, Virginia

April 22 · 🌐

...

Happy #Earthday!



AlexandriaVA.gov

April 22 · 🌐

NEWS :: Today, the City and AlexRenew celebrate Earth Day with a special collection of resources to raise awareness of actions all Alexandrians can take for a m... See More

i



ALEXANDRIAVA.GOV

City of Alexandria Celebrates Earth Day

Celebrate Earth Day with a special collection of resources, including actions for a more environmentally friendly lifestyle.



Like



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alexandriavates



Keep our City Litter Free!

Any litter you drop in the street, on the sidewalk, or in a park will likely end up in a local stream and eventually the Chesapeake Bay.



12 likes

alexandriavates Aside from looking bad, litter harms the environment and wildlife. When it rains, litter such as disposable masks and gloves dropped on the... [more](#)

June 10



alexandriavates



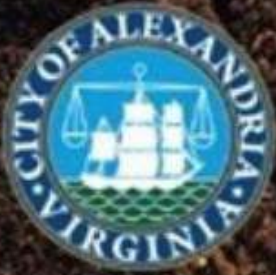
15 likes

alexandriavates Thanks to everyone who came out Sat. to #CleantheBay day at Oronoco Bay Park! We'll be sharing tips this week for other ways you can help keep the Bay clean as part of Chesapeake #BayAwarenessWeek.

June 7



alexandriavates



Plant Natives



Landscape your yard using plants that are native to Alexandria. These plants are adapted to local conditions and, if planted in the right place, need less water and other care.



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June 9



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Eco-CITY ALEXANDRIA

Only Rain Down the Storm Drain



11 likes

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January 14



alexandriavates



18 likes

alexandriavates Staff is all set up and ready for members of the community to come on out to the Taylor Run Open House. Grab your mask, and come see in person... [more](#)

April 12



Alexandria T&ES @Alexandr... · 4/15/21 ...

During the month of March, City crews and contractors inspected and cleaned (as necessary) over 10,000 linear feet of storm sewer pipe and over 700 storm sewer structures.



6





Alexandria T&ES @Alexandr... · 4/14/21 ...
#Earthday has gone virtual this year. Visit alexandriava.gov/Earthday and learn about ways you can play a role in the theme this year, Restore the Earth. Water plays a big role in our daily lives, check out the section 'Restore Our Water'!



EARTHDAY 2021:

'RESTORE THE EARTH'



Lake Cook



2



2





Alexandria T&ES @Alexandr... · 6/10/21 ...

Aside from looking bad, litter harms the environment and wildlife. Learn more about what additional actions you can take to help protect the Chesapeake Bay watershed by visiting: alexandriava.gov/104501

[#BayAwarenessWeek](#)



Northern Virginia Regional Commission 2021 Only Rain NVRC Survey

Summary Report of Findings

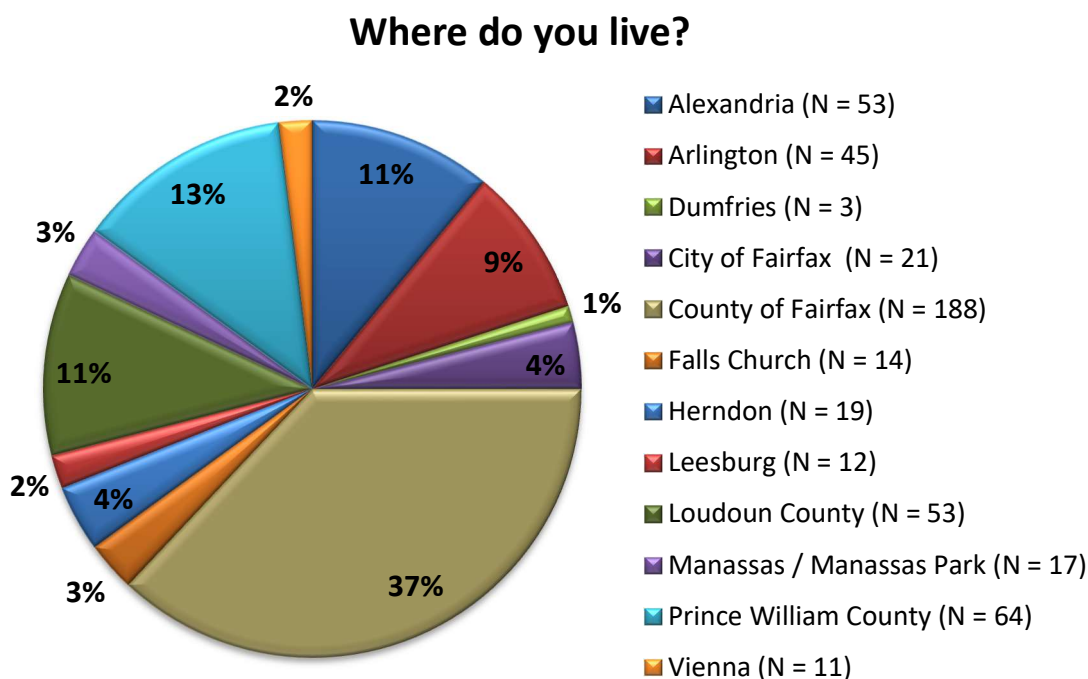
8/2/2021

Amplitude Research, Inc.

Study Methodology & Respondent Characteristics

The Northern Virginia Regional Commission (NVRC) hired Amplitude Research, Inc. to conduct a survey of residents of northern Virginia to measure beliefs and attitudes related to pollution of the Potomac River and Chesapeake Bay.

Amplitude Research administered the study online in late June and July of 2021. In the end, 500 surveys were completed by web panelists who live in one of the areas of Virginia shown in the chart below. (In the legend, “N =” indicates the number of respondents in each city, county, or town.)



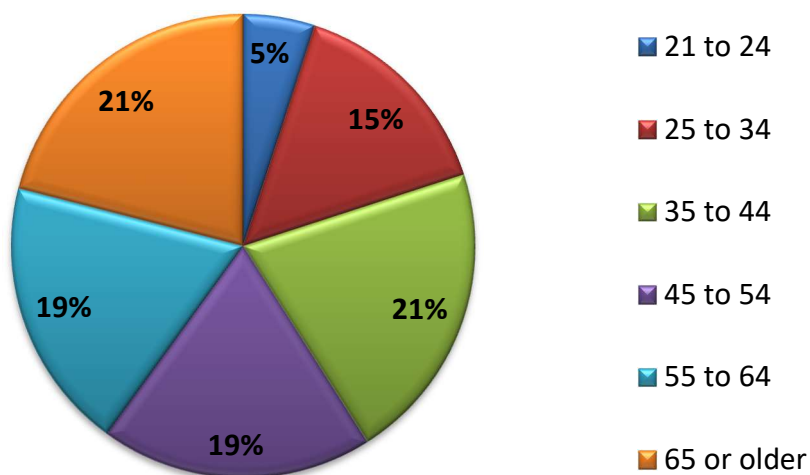
Later in this report, the results for some of the questions are “broken out” by area, in addition to presenting the results for the total sample. However, the specific areas listed above were grouped together into larger areas so that each larger area used for analysis had a reasonable number of respondents.

Residents from Leesburg and Loudoun County were combined into a single category labeled “**Leesburg / Loudoun**,” since the town of Leesburg lies within Loudoun County. The City of Fairfax, Falls Church, Herndon, and Vienna were combined with Fairfax County to create the category “**Fairfax Inclusive**,” since these cities and towns lie within the Fairfax County area. Although the City of Fairfax and City of Falls Church are distinct areas, their location falls within the larger area circumscribed by Fairfax County. Prince William County was added in 2021 (while Stafford County was removed). Given the proximity of Dumfries, Manassas, and Manassas Park, these were combined with Prince William County to get the category “**Prince William Inclusive**.”

Alexandria and **Arlington** each had a sufficient number of respondents so that each of these areas can be examined separately.

The minimum age to participate in the survey was 21. As shown in the chart below, each age group was well represented in the survey. Although a small proportion were age 21 to 24, this category has fewer years than the other categories shown. For analysis purposes later in this report, the categories “21 to 24” and “25 to 34” were combined into the broader category of “21 to 34.”

Which category includes your age?



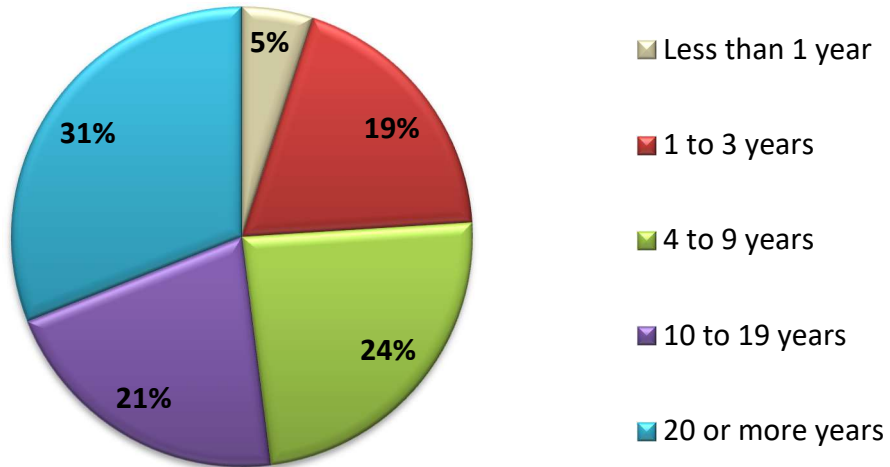
The survey respondents were split between males (51%) and females (49%), while slightly more than three-fourths (79%) indicated that they own their residence, and 21% reported renting.

The chart on the next page shows how long respondents have lived in their current residence.

A survey was conducted in each year between 2011 and 2020 that included many of the same or similar questions, targeted a similar geographic area (except the addition of Prince William County and removal of Stafford County this year), and had a similar demographic mix as in this 2021 study. Later in this report, comparisons between years are shown where appropriate. Initially, the title used for the study was “NVRC Resident Survey.” Starting in 2013, the study title was changed to “Only Rain NVRC Survey,” since a new question was added about awareness of the “Only Rain” logo. A number of new questions were added to the 2018 survey and were kept in the 2019 and 2020 surveys. For this reason, many parts of this report have comparisons between just 2018, 2019, and 2020.

Although some questions have been asked for 11 years (i.e., 2011 through 2021), results in this report are shown for a maximum of 10 years for better readability. Having more than ten years in a chart can get cumbersome for the reader, as the bars and number font size get too small.

For how many years have you lived in your current residence?



Sampling Variability

While examining the survey findings, it is helpful to keep in mind that the results are based on a sample and are therefore subject to sampling variability, often referred to as “sampling error.” The degree of uncertainty for an estimate (e.g., a particular percentage from the survey) arising from sampling variability is represented through the use of a margin of error. A sampling margin of error at the “95% confidence level” can be interpreted as providing a 95% probability that the interval created by the estimate plus and minus the margin of error contains the true value. (The “true” value would be known only if everyone in the target market was surveyed rather than just a sample.) In addition to sampling variability, results may be subject to various sources of non-sampling error (e.g., non-response bias, respondent misinterpretation of question wording, etc.). The degree of non-sampling error is not represented by the sampling margin of error and is usually unknown.

For a “sample size” of 500 survey respondents, the “maximum” margin of sampling error for percentages from the survey is ± 4.4 percentage points at the 95% confidence level. Here, “maximum” refers to the margin of error being highest for proportions from the survey near 50%, while the margin of error declines as percentages get further from 50%. For example, given the same sample size of 500 respondents, a result from the survey near 10% or 90% would have a margin of sampling error of ± 2.6 percentage points.

The margin of sampling error increases as the sample size decreases. Thus, when a question is asked of only a subset of the total sample, the associated margin of sampling error is larger than that quoted above. Also, even if a question is asked of all respondents, when examining results for a particular subgroup, the margin of sampling error depends on the number of respondents in that subgroup. For example, the “maximum” margin of sampling error would be ± 9.8 percentage points at the “95% confidence level” when based on a subgroup of 100 survey respondents. In some parts of this report, results are shown for subgroups that include a fairly small number of respondents, and caution is recommended when thinking about these findings.

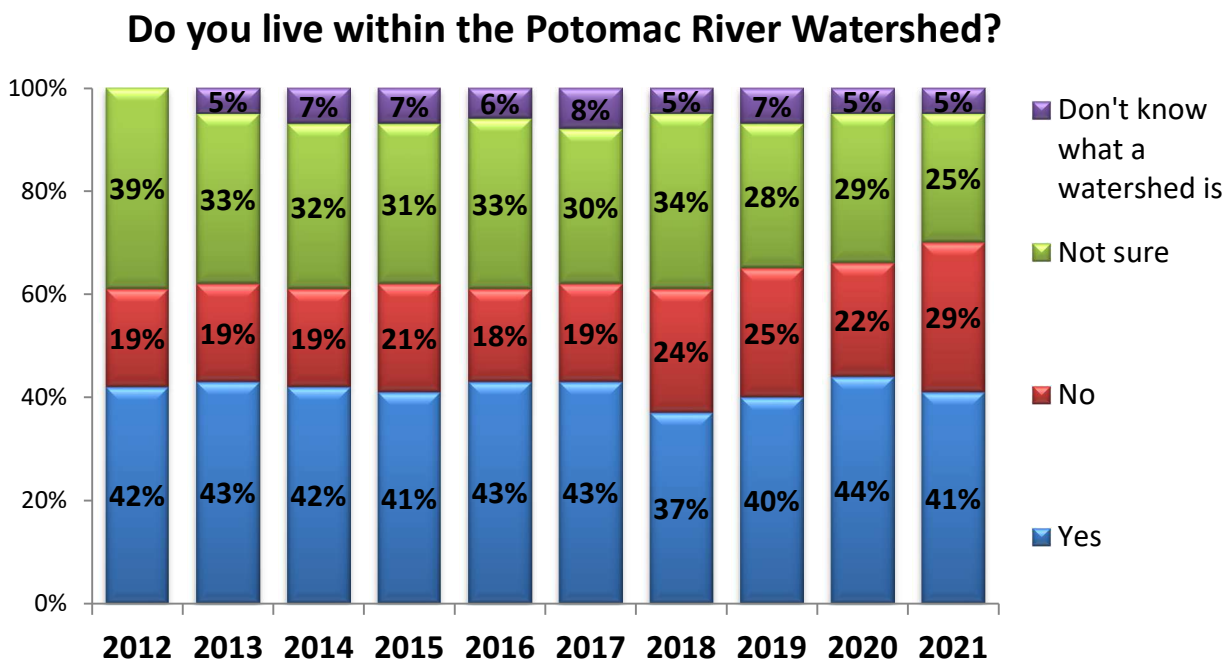
This suggests that results for different subgroups can be considered “similar” when the differences are small (i.e., small enough to be within the range of sampling error).

Results from different years can be considered similar when differences between the years are small. If the difference between two years is referred to as “statistically significant,” this essentially means that the difference in the survey results is large enough to be highly confident (i.e., at the “95% confidence level”) that there has been a real change. That is, a “statistically significant” difference in the survey results from one year to the next is larger than what would usually be expected from sampling error alone.

In this report, when a result from 2021 is described as “significantly” higher (or lower) than the result from a previous year, this means that the difference between these years is “statistically significant.” Also, when one subgroup is described as “more likely” (or “less likely”) than another subgroup to answer in a particular way, this is based on a statistically significant difference.

Potomac River Watershed

- Early in the survey, respondents were asked if they lived within the “Potomac River Watershed.” As shown in the chart below, approximately four-in-ten (41%) in 2021 believed that they did in fact live within the Potomac River Watershed. This 2021 result (41%) did not differ significantly from 2020 (44%).



- When breaking the results out by area, as shown in the table below, the proportion answering “Yes” was lowest in the Prince William Inclusive area, but the differences between areas were not statistically significant.

<i>Live Within Potomac River Watershed</i>	<i>Alexandria</i>	<i>Arlington</i>	<i>Fairfax Inclusive</i>	<i>Leesburg / Loudoun</i>	<i>Prince William Inclusive</i>
Yes	43%	38%	45%	35%	33%
No	34%	15%	27%	43%	28%
Not sure	19%	40%	23%	17%	32%
Don't know what a watershed is	4%	7%	5%	5%	7%
<i>N = number of respondents</i>	53	45	253	65	84

- As shown in the next table, the proportion believing that they live within the Potomac River Watershed increased with the time lived in their current residence.

Live Within Potomac River Watershed	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Yes	26%	38%	43%	53%
No	33%	38%	32%	16%
Not sure	34%	18%	20%	27%
Don't know what a watershed is	7%	6%	5%	4%
<i>N = number of respondents</i>	119	119	108	154

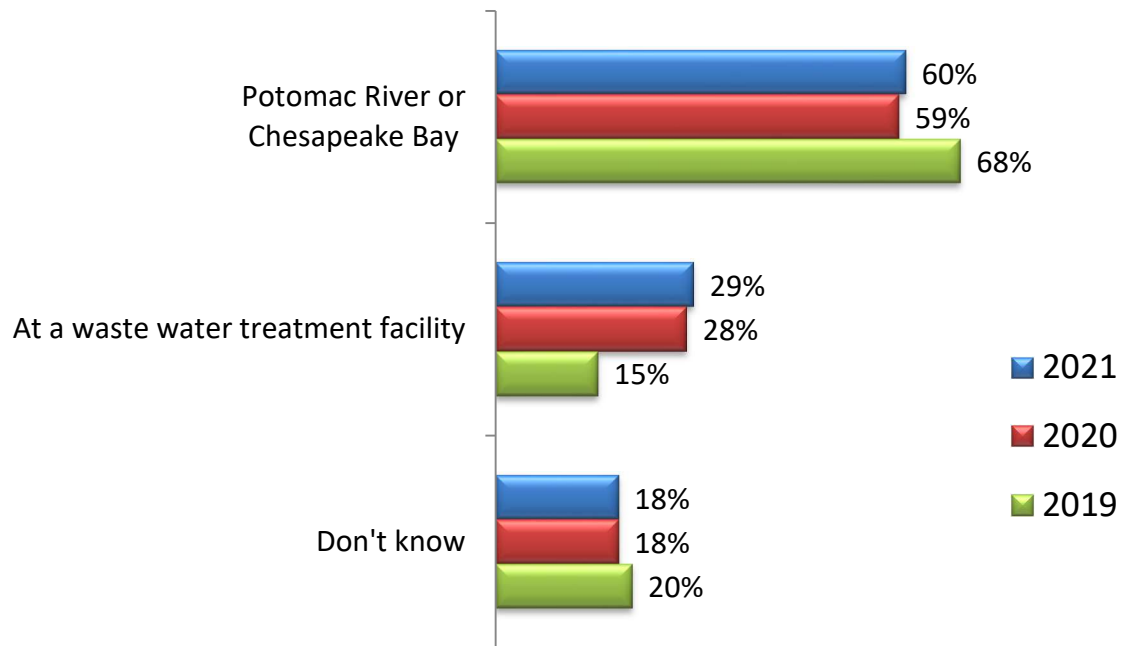
- The proportion believing that they live within the Potomac River Watershed also increased with age.

Live Within Potomac River Watershed	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Yes	33%	36%	39%	42%	53%
No	42%	39%	28%	24%	11%
Not sure	20%	19%	27%	30%	31%
Don't know what a watershed is	5%	6%	6%	4%	5%
<i>N = number of respondents</i>	100	108	94	95	103

- When examining the results by other subgroups, males were more likely than females, and homeowners were more likely than renters to believe that they live within the Potomac River Watershed.

Live Within Potomac River Watershed	Male	Female	Homeowners	Renters	Hispanic Respondents
Yes	51%	30%	46%	23%	33%
No	27%	30%	29%	30%	22%
Not sure	20%	31%	22%	36%	36%
Don't know what a watershed is	2%	9%	3%	11%	9%
<i>N = number of respondents</i>	254	246	395	105	36

"Storm water" runoff is rain or other water that flows into the street, along the gutter and into the storm drain. To the best of your knowledge, where do you believe storm water eventually ends up?



- More than half (60%) in 2021, similar to 2020 (59%), felt that storm water runoff eventually ends up in the Potomac River or Chesapeake Bay, but this was significantly lower than in 2019 (68%). The results are shown for three years only because of a change to the questionnaire in 2019.
- Results by various subgroups are shown on the next page. For example, the proportion selecting Potomac River or Chesapeake Bay was significantly higher among respondents who have lived in their residence for 20 or more years and among those age 55 or older.

**Believed Destination
of Storm Water**

	Alexandria	Arlington	Fairfax Inclusive	Leesburg / Loudoun	Prince William Inclusive
Potomac River or Chesapeake Bay	57%	67%	62%	51%	60%
At a waste water treatment facility	36%	31%	29%	31%	20%
Don't know	19%	9%	17%	25%	23%
<i>N = number of respondents</i>	53	45	253	65	84

**Believed Destination
of Storm Water**

	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Potomac River or Chesapeake Bay	58%	55%	54%	69%
At a waste water treatment facility	31%	28%	32%	25%
Don't know	18%	24%	21%	12%
<i>N = number of respondents</i>	119	119	108	154

**Believed Destination
of Storm Water**

	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Potomac River or Chesapeake Bay	58%	55%	53%	68%	66%
At a waste water treatment facility	28%	45%	37%	20%	13%
Don't know	21%	15%	16%	16%	23%
<i>N = number of respondents</i>	100	108	94	95	103

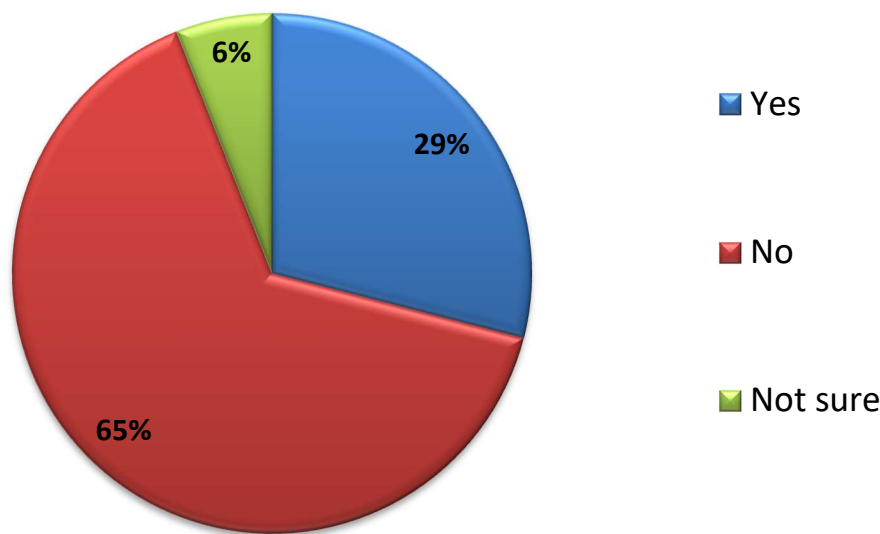
**Believed Destination
of Storm Water**

	Male	Female	Homeowners	Renters	Hispanic
Potomac River or Chesapeake Bay	60%	60%	61%	56%	50%
At a waste water treatment facility	33%	24%	31%	20%	33%
Don't know	15%	22%	15%	29%	22%
<i>N = number of respondents</i>	254	246	395	105	36

Advertising / Information About Reducing Water Pollution

- In 2020 a new video of an advertisement featuring “rubber duckies” was presented in the survey, and respondents were asked if they had seen it on TV. The same video was shown again in the 2021 survey. As shown below, 29% recalled the video in 2021. This can be compared to 22% in 2020 (not shown in chart). The difference between the 2021 and 2020 result was large enough to be significant.

Please watch the video below. Before this survey, had you seen this ad, or a similar one on TV, Facebook, or Twitter about reducing water pollution?



- The proportion recalling the ad by area ranged from 24% to 37%. As shown on the next page, those age 34 to 45, males, and homeowners were more likely than others to recall the ad.

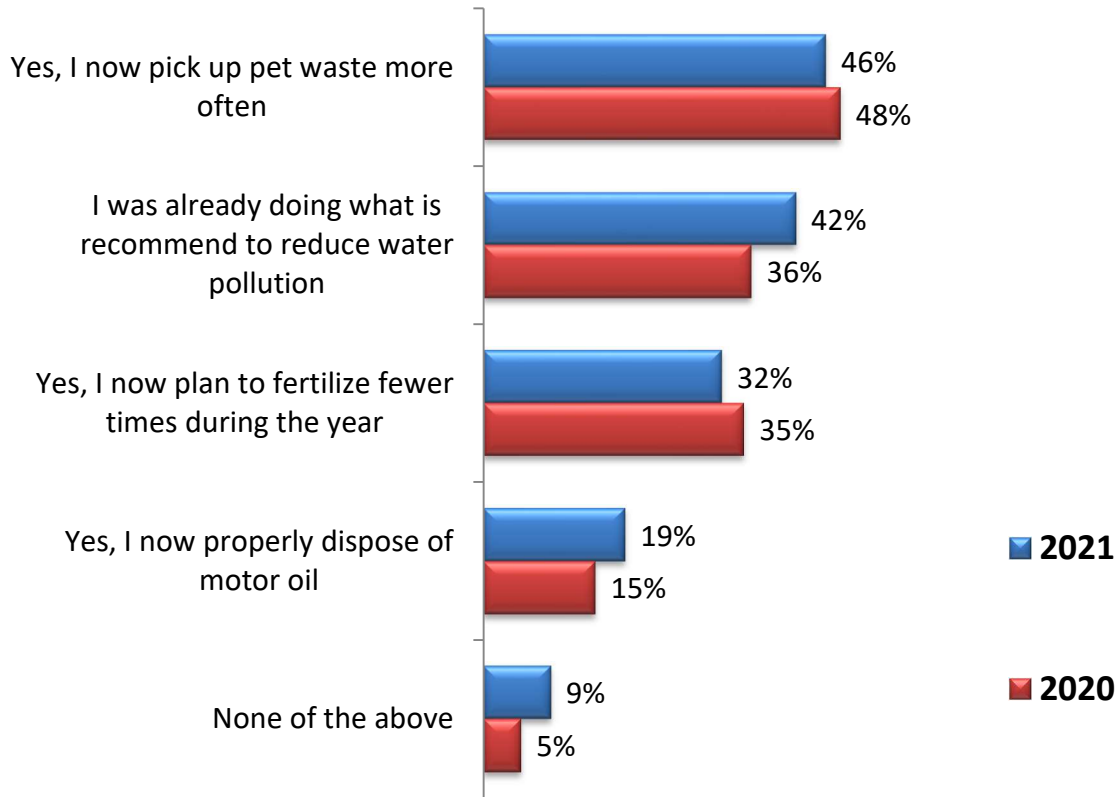
Saw TV Ads on Reducing Water Pollution	Alexandria	Arlington	Fairfax Inclusive	Leesburg / Loudoun	Prince William Inclusive
Yes	34%	29%	28%	37%	24%
No	53%	69%	65%	58%	74%
Not sure	13%	2%	7%	5%	2%
<i>N = number of respondents</i>	53	45	253	65	84

Saw TV Ads on Reducing Water Pollution	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Yes	27%	29%	34%	27%
No	67%	63%	62%	66%
Not sure	6%	8%	4%	7%
<i>N = number of respondents</i>	119	119	108	154

Saw TV Ads on Reducing Water Pollution	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Yes	31%	43%	29%	20%	20%
No	61%	52%	63%	76%	74%
Not sure	8%	5%	8%	4%	6%
<i>N = number of respondents</i>	100	108	94	95	103

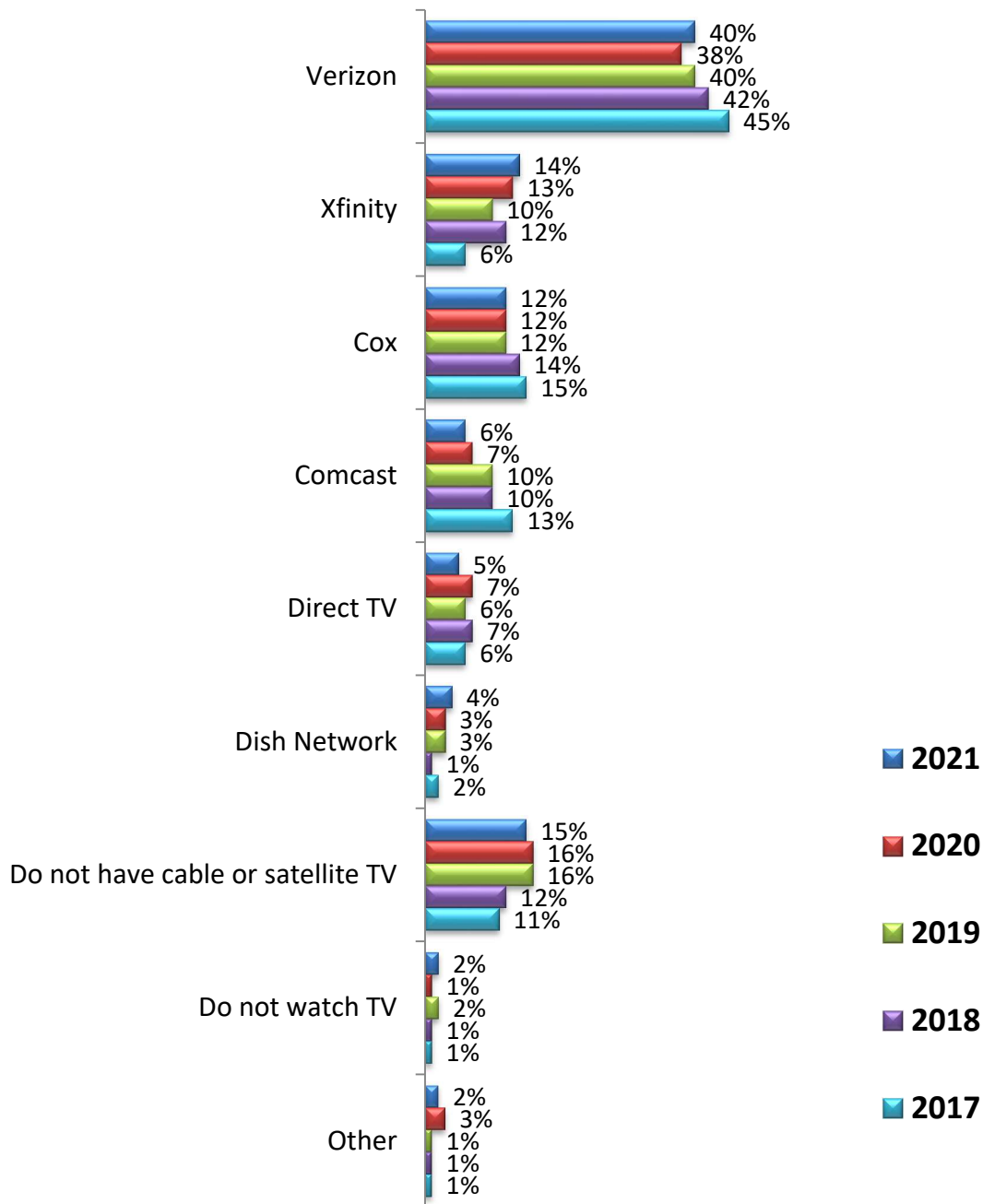
Saw TV Ads on Reducing Water Pollution	Male	Female	Homeowners	Renters	Hispanic Respondents
Yes	37%	21%	31%	20%	28%
No	56%	74%	62%	74%	55%
Not sure	7%	5%	7%	6%	17%
<i>N = number of respondents</i>	254	246	395	105	36

Did seeing the ad(s) about reducing water pollution make you change any of your behaviors related to fertilizing less often and/or reducing water pollution?



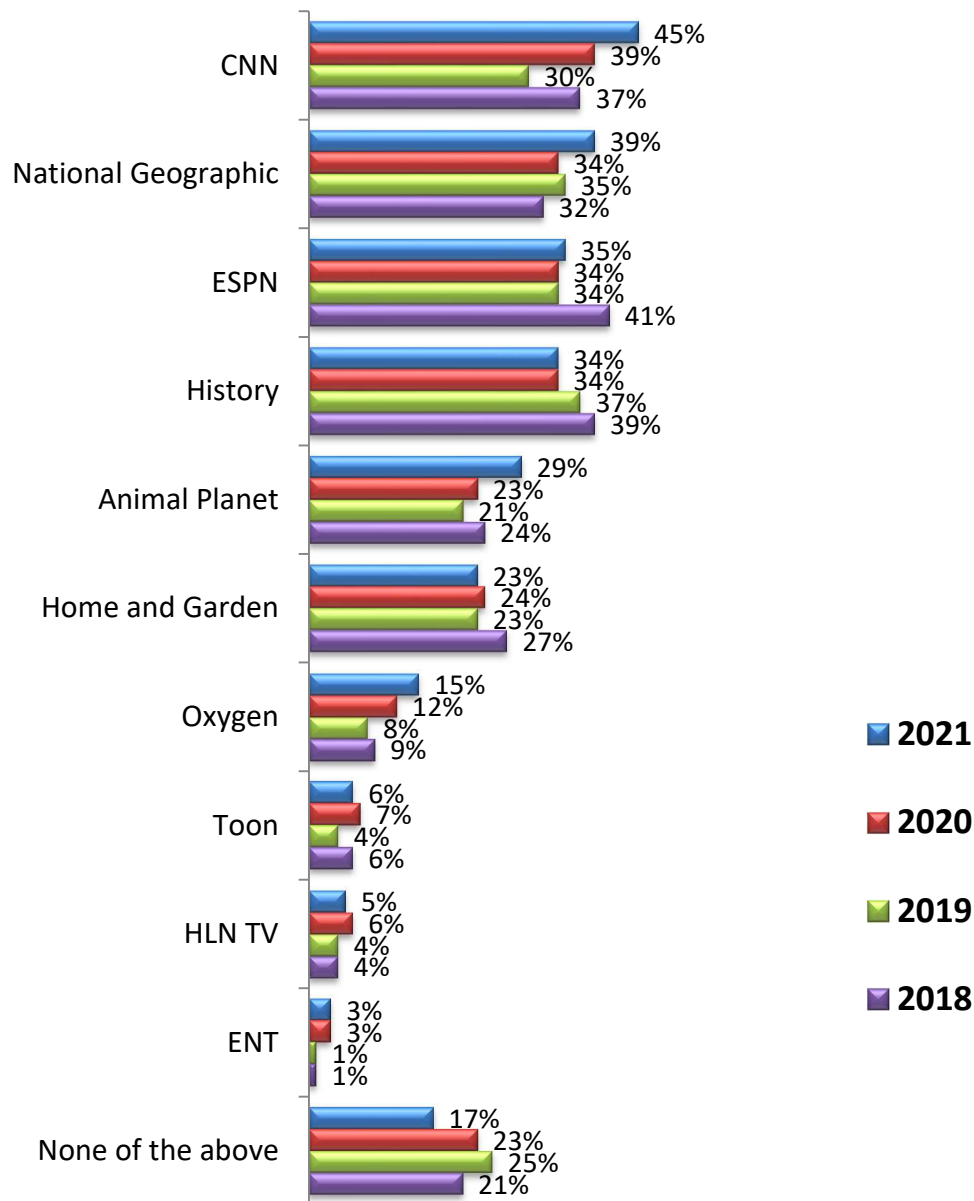
- Those who recalled the advertising where asked the question above, and noticeable proportions reported changing their behavior related to pet waste and fertilizing less often.

What TV service provider do you use?



- Verizon was selected most often (by 40% in 2021) as their TV service provider.
- One reason for asking the question above was to determine if recall of the advertising differed by TV provider. Based on a separate analysis (not shown in chart), when looking at the providers with at least 30 respondents using the provider, the proportion recalling the ad was 37% among Cox users, 34% among Xfinity users, 29% among Verizon users, and 29% among Comcast users.

Which of the following channels, if any, do you watch?

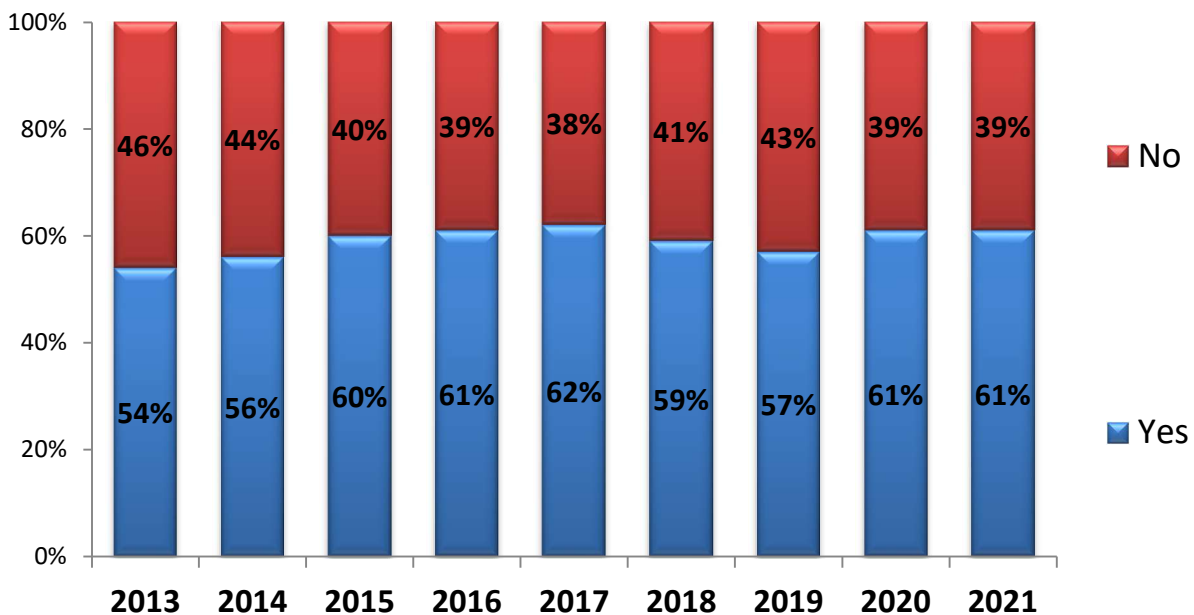


- Of the channels covered in the survey, CNN had the highest proportion reporting that they watch the channel in 2021 (45%), followed by National Geographic (39%).
- One reason for including the question above was to determine if recall of the advertising differed by channels watched. Based on a separate analysis (not shown in chart), viewers of the following channels (which had at least 30 respondents watching the channel) were significantly more likely than others to recall the advertising that was shown in the survey: Oxygen (47% of viewers recalled the ad), Home & Garden (41%), CNN (39%), and Animal Planet (39%). In contrast, among those who did not watch any of the channels above, only 8% recalled the ad.

- The logo below was shown to all respondents regardless of whether they had seen advertising or not, and more than half of the total sample recognized the logo each year since 2013. The 2021 result (61%) was slightly below the peak result in 2017 (62%), but the 2021 result was significantly higher than in 2013 (54%).



Have you seen the logo above anywhere?



- Awareness was significantly lower in the Prince William Inclusive area. At the same time, those age 35 to 44, males, and homeowners were more likely than others to recall the logo.

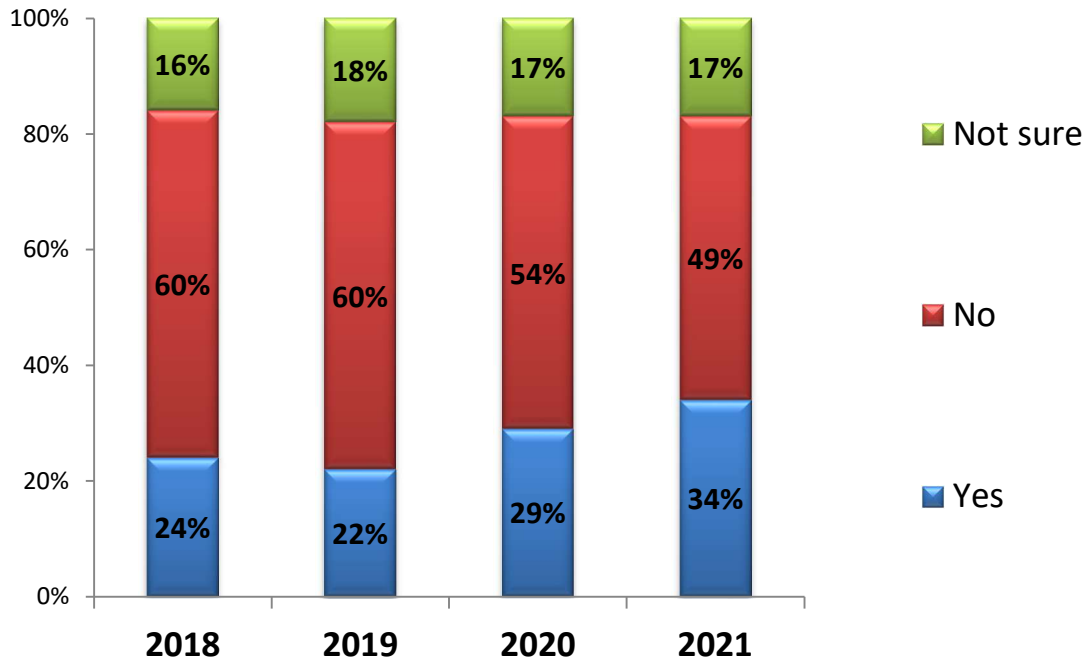
Have Seen Logo	Alexandria	Arlington	Fairfax Inclusive	Leesburg / Loudoun	Prince William Inclusive
Yes	53%	76%	68%	62%	39%
No	47%	24%	32%	38%	61%
<i>N = number of respondents</i>	53	45	253	65	84

Have Seen Logo	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Yes	61%	57%	69%	59%
No	39%	43%	31%	41%
<i>N = number of respondents</i>	119	119	108	154

Have Seen Logo	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Yes	63%	71%	65%	58%	50%
No	37%	29%	35%	42%	50%
<i>N = number of respondents</i>	100	108	94	95	103

Have Seen Logo	Male	Female	Homeowners	Renters	Hispanic Respondents
Yes	68%	55%	64%	51%	56%
No	32%	45%	36%	49%	44%
<i>N = number of respondents</i>	254	246	395	105	36

Regardless of whether you have seen that specific ad or logo, have you seen or received information about reducing water pollution from any source in the past 12 months?



- Slightly more than one-third (34%) in 2021 reported that they have seen or received information about reducing water pollution in the past 12 months. The 2021 result was significantly higher than in 2018 and 2019.
- The proportion who received this information was significantly lower in the Prince William Inclusive area.

Received Info. About Reducing Water Pollution	Alexandria	Arlington	Fairfax Inclusive	Leesburg / Loudoun	Prince William Inclusive
Yes	51%	42%	31%	45%	20%
No	36%	38%	52%	41%	60%
Not sure	13%	20%	17%	14%	20%
<i>N = number of respondents</i>	53	45	253	65	84

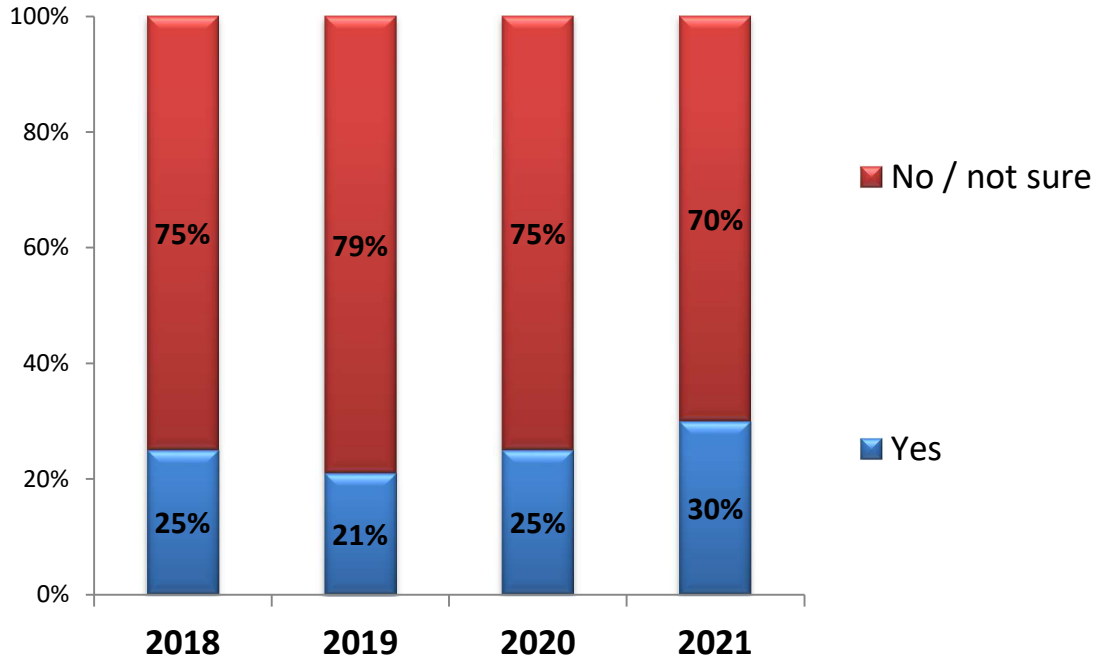
Received Info. About Reducing Water Pollution	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Yes	29%	42%	36%	30%
No	54%	46%	47%	49%
Not sure	17%	12%	17%	21%
<i>N = number of respondents</i>	119	119	108	154

Received Info. About Reducing Water Pollution	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Yes	39%	55%	35%	16%	23%
No	50%	39%	49%	58%	51%
Not sure	11%	6%	16%	26%	26%
<i>N = number of respondents</i>	100	108	94	95	103

Received Info. About Reducing Water Pollution	Male	Female	Homeowners	Renters	Hispanic Respondents
Yes	44%	24%	38%	20%	42%
No	41%	57%	44%	66%	42%
Not sure	15%	19%	18%	14%	16%
<i>N = number of respondents</i>	254	246	395	105	36

- Males, homeowners, and those age 35 to 44 were more likely than others to report receiving this information.

Thinking about the last 12 months, have you heard about any opportunities to participate in a water quality activity, such as a stream clean up, helping to install storm drain labels, etc.?



- More than one-fourth (30%) in 2021 reported hearing about opportunities to participate in a water quality activity in the past 12 months. This was significantly higher than in 2019, but the difference between 2021 vs. 2018 and 2020 was not large enough to be statistically significant.
- By subgroup, those living in Alexandria or Arlington, those who have lived in their residence 4 to 9 years, those under age 45, and males were more likely than others to hear about these opportunities.

Heard of Water Quality Activities Past 12 Months	Alexandria	Arlington	Fairfax Inclusive	Leesburg / Loudoun	Prince William Inclusive
Yes	43%	42%	26%	34%	25%
No / not sure	57%	58%	74%	66%	75%
<i>N = number of respondents</i>	53	45	253	65	84

Heard of Water Quality Activities Past 12 Months	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Yes	29%	39%	26%	28%
No / not sure	71%	61%	74%	72%
<i>N = number of respondents</i>	119	119	108	154

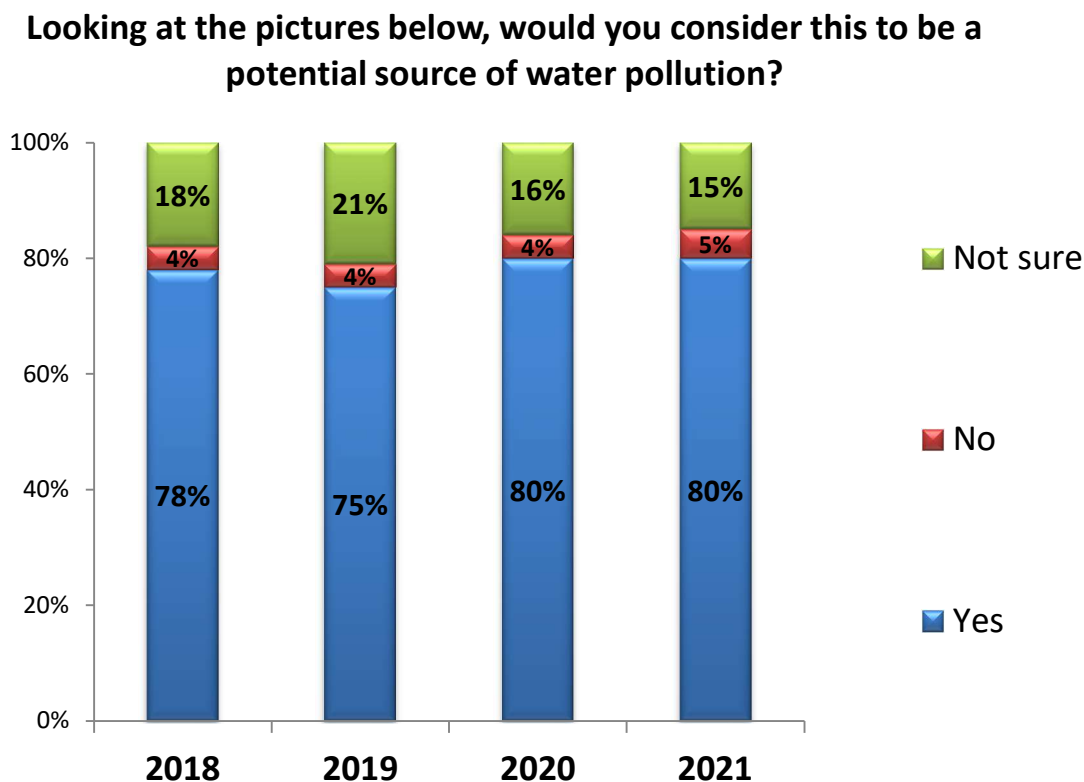
Heard of Water Quality Activities Past 12 Months	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Yes	40%	46%	33%	13%	18%
No / not sure	60%	54%	67%	87%	82%
<i>N = number of respondents</i>	100	108	94	95	103

Heard of Water Quality Activities Past 12 Months	Male	Female	Homeowners	Renters	Hispanic Respondents
Yes	37%	23%	32%	25%	44%
No / not sure	63%	77%	68%	75%	56%
<i>N = number of respondents</i>	254	246	395	105	36

- In a separate question asked only of those who answered “Yes” to the question on the previous page, 54% indicated that they *participated* in a water quality activity. Since this 54% applies to the 30% who answered “Yes” to the question on the previous page, it turns out that 16% (= 54% x 30%) of the total sample reported both hearing about *and* participating in a water quality activity in the past 12 months. The corresponding result was 15% in 2020.

Potential Water Pollution Source

- Two pictures were shown to the survey respondents starting in 2018, and they were asked the question below. (The images used can be found in the questionnaire in the Appendix.)



- Eight-in-ten (80%) in 2021 felt that the pictures showed a potential source of water pollution. As shown in the table below and the tables on the next page, the proportion feeling this way was high in all of the subgroups examined. However, homeowners were more likely than renters to answer “Yes” to this question.

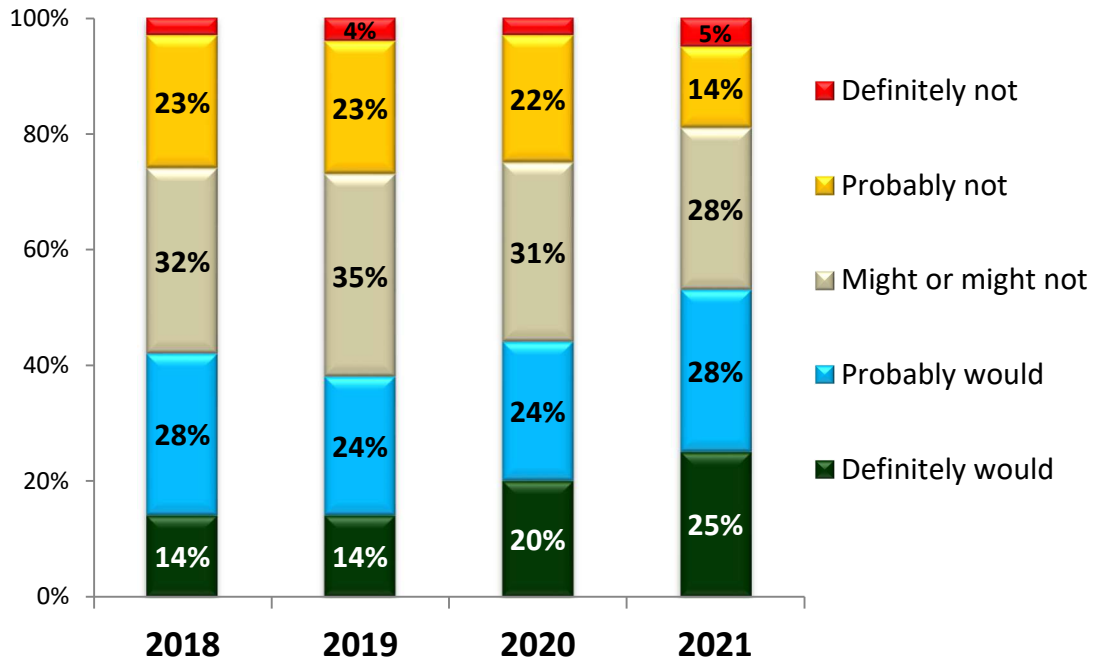
Consider it Potential Source of Water Pollution	Alexandria	Arlington	Fairfax Inclusive	Leesburg / Loudoun	Prince William Inclusive
Yes	85%	86%	79%	85%	76%
No	4%	7%	3%	6%	8%
Not sure	11%	7%	18%	9%	16%
<i>N = number of respondents</i>	53	45	253	65	84

Consider it Potential Source of Water Pollution	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Yes	78%	77%	85%	82%
No	7%	8%	2%	2%
Not sure	15%	15%	13%	16%
<i>N = number of respondents</i>	119	119	108	154

Consider it Potential Source of Water Pollution	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Yes	75%	81%	84%	85%	77%
No	9%	6%	3%	1%	4%
Not sure	16%	13%	13%	14%	19%
<i>N = number of respondents</i>	100	108	94	95	103

Consider it Potential Source of Water Pollution	Male	Female	Homeowners	Renters	Hispanic Respondents
Yes	82%	78%	83%	70%	72%
No	4%	6%	4%	8%	14%
Not sure	14%	16%	13%	22%	14%
<i>N = number of respondents</i>	254	246	395	105	36

What is the likelihood that you would call county or town officials to report potential pollution so they could investigate the cause?



- One-fourth (25%) felt that they “Definitely would” report potential pollution to county or town officials, and this was significantly higher than the results in 2019 and 2018.
- Those age 35 to 44 and males were more likely than others to rate “Definitely would.” Also, a significantly higher proportion from Alexandria, compared to Prince William Inclusive, rated “Definitely would.”

Likelihood Report Potential Pollution	Alexandria	Arlington	Fairfax Inclusive	Leesburg / Loudoun	Prince William Inclusive
Definitely would	40%	24%	23%	29%	20%
Probably would	23%	25%	26%	35%	34%
Might or might not	26%	27%	31%	25%	24%
Probably would	11%	20%	16%	5%	14%
Definitely not	0%	4%	4%	6%	8%
<i>N = number of respondents</i>	53	45	253	65	84

**Likelihood Report
Potential Pollution**

**Have Lived
in Current
Residence
< 4 Years**

4 to 9 Years

**10 to 19
Years**

**20 or More
Years**

Definitely would	18%	30%	28%	25%
Probably would	29%	32%	28%	25%
Might or might not	27%	23%	32%	30%
Probably would	21%	11%	10%	14%
Definitely not	5%	4%	2%	6%

N = number of respondents

119

119

108

154

**Likelihood Report
Potential Pollution**

**Age
21 to 34**

35 to 44

45 to 54

55 to 64

65 +

Definitely would	22%	39%	32%	18%	15%
Probably would	41%	28%	18%	24%	28%
Might or might not	18%	22%	29%	35%	37%
Probably would	13%	8%	15%	22%	14%
Definitely not	6%	3%	6%	1%	6%

N = number of respondents

100

108

94

95

103

**Likelihood Report
Potential Pollution**

Male

Female

Homeowners

Renters

**Hispanic
Respondents**

Definitely would	32%	19%	27%	21%	28%
Probably would	29%	27%	28%	29%	36%
Might or might not	23%	33%	29%	25%	28%
Probably would	12%	16%	13%	17%	0%
Definitely not	4%	5%	3%	8%	8%

N = number of respondents

254

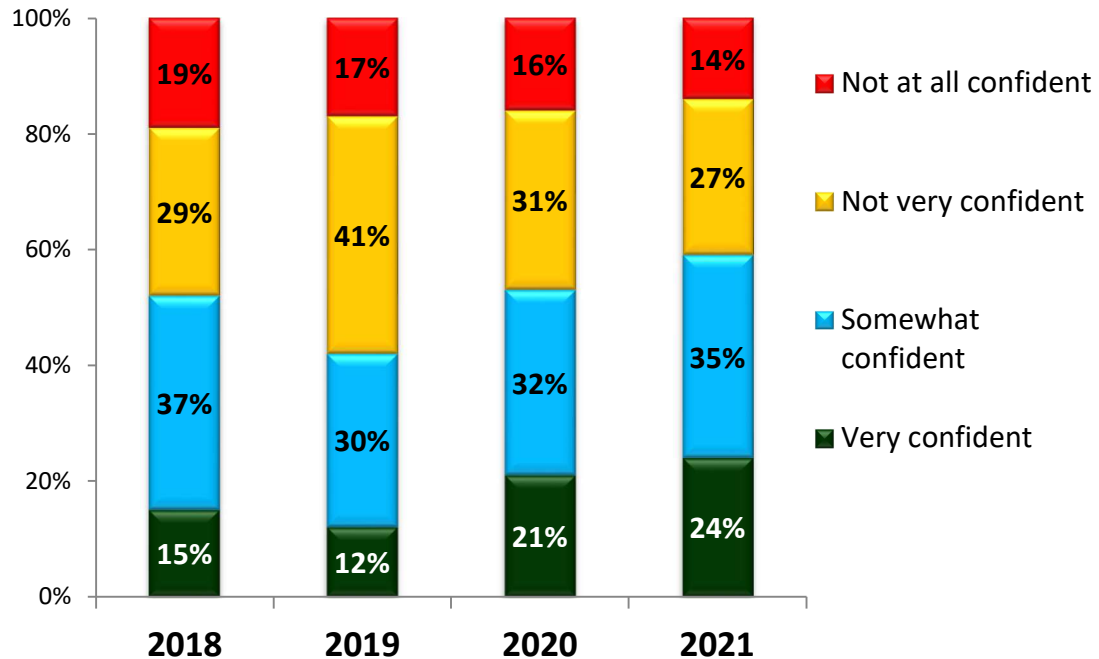
246

395

105

36

How confident are you that you would know where to report potential water pollution?



- Nearly one-fourth (24%) in 2021 were “Very confident” that they would know where to report potential water pollution. This 2021 result was significantly higher than in 2018 and 2019.
- Those age 35 to 44, males, and homeowners were more likely than others to rate “Very confident.” Also, a significantly higher proportion from Alexandria, compared to Prince William Inclusive, rated “Very confident.”

Confidence Know Where to Report	Alexandria	Arlington	Fairfax Inclusive	Leesburg / Loudoun	Prince William Inclusive
Very confident	40%	20%	23%	29%	18%
Somewhat confident	30%	42%	32%	42%	37%
Not very confident	21%	18%	30%	26%	26%
Not at all confident	9%	20%	15%	3%	19%
<i>N = number of respondents</i>	53	45	253	65	84

**Confidence Know
Where to Report**

**Have Lived
in Current
Residence
< 4 Years**

4 to 9 Years

**10 to 19
Years**

**20 or More
Years**

Very confident	20%	27%	29%	22%
Somewhat confident	35%	31%	36%	38%
Not very confident	25%	25%	28%	28%
Not at all confident	20%	17%	7%	12%

N = number of respondents

119

119

108

154

**Confidence Know
Where to Report**

**Age
21 to 34**

35 to 44

45 to 54

55 to 64

65 +

Very confident	29%	36%	25%	12%	16%
Somewhat confident	31%	36%	28%	39%	41%
Not very confident	22%	21%	29%	37%	27%
Not at all confident	18%	7%	18%	12%	16%

N = number of respondents

100

108

94

95

103

**Confidence Know
Where to Report**

Male

Female

Homeowners

Renters

**Hispanic
Respondents**

Very confident	32%	16%	26%	16%	28%
Somewhat confident	39%	31%	36%	32%	36%
Not very confident	20%	34%	27%	27%	22%
Not at all confident	9%	19%	11%	25%	14%

N = number of respondents

254

246

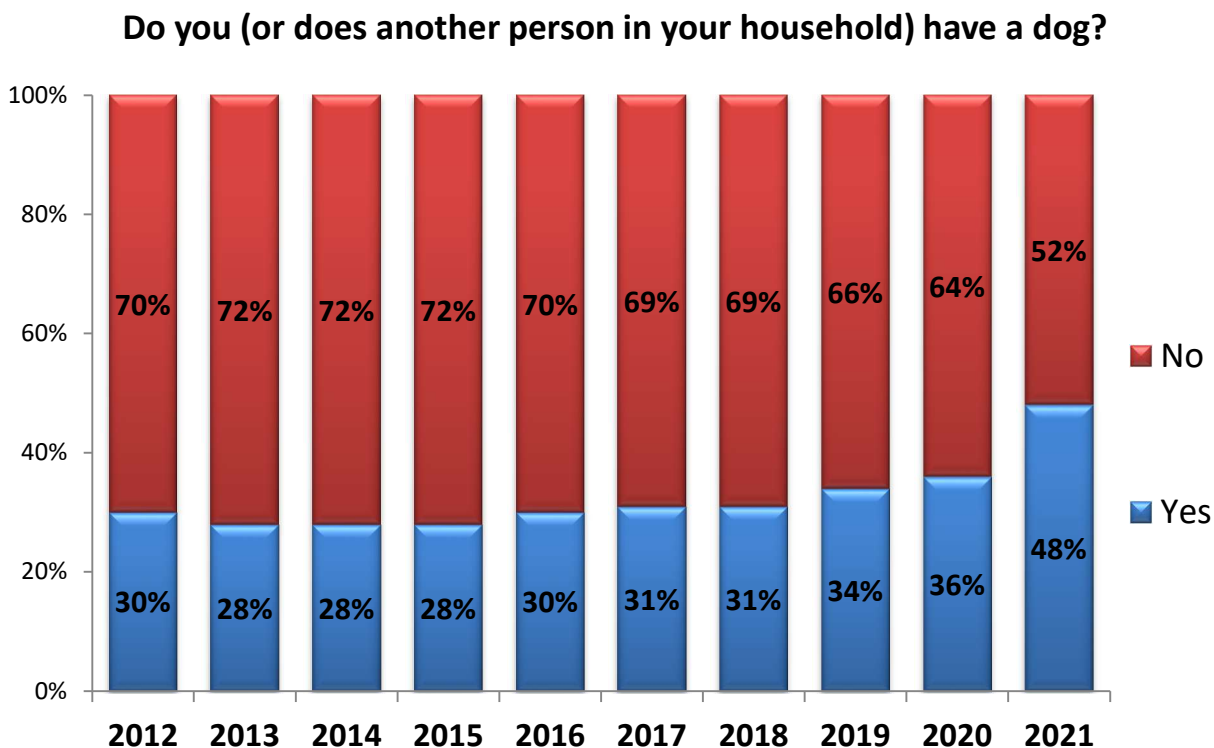
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105

36

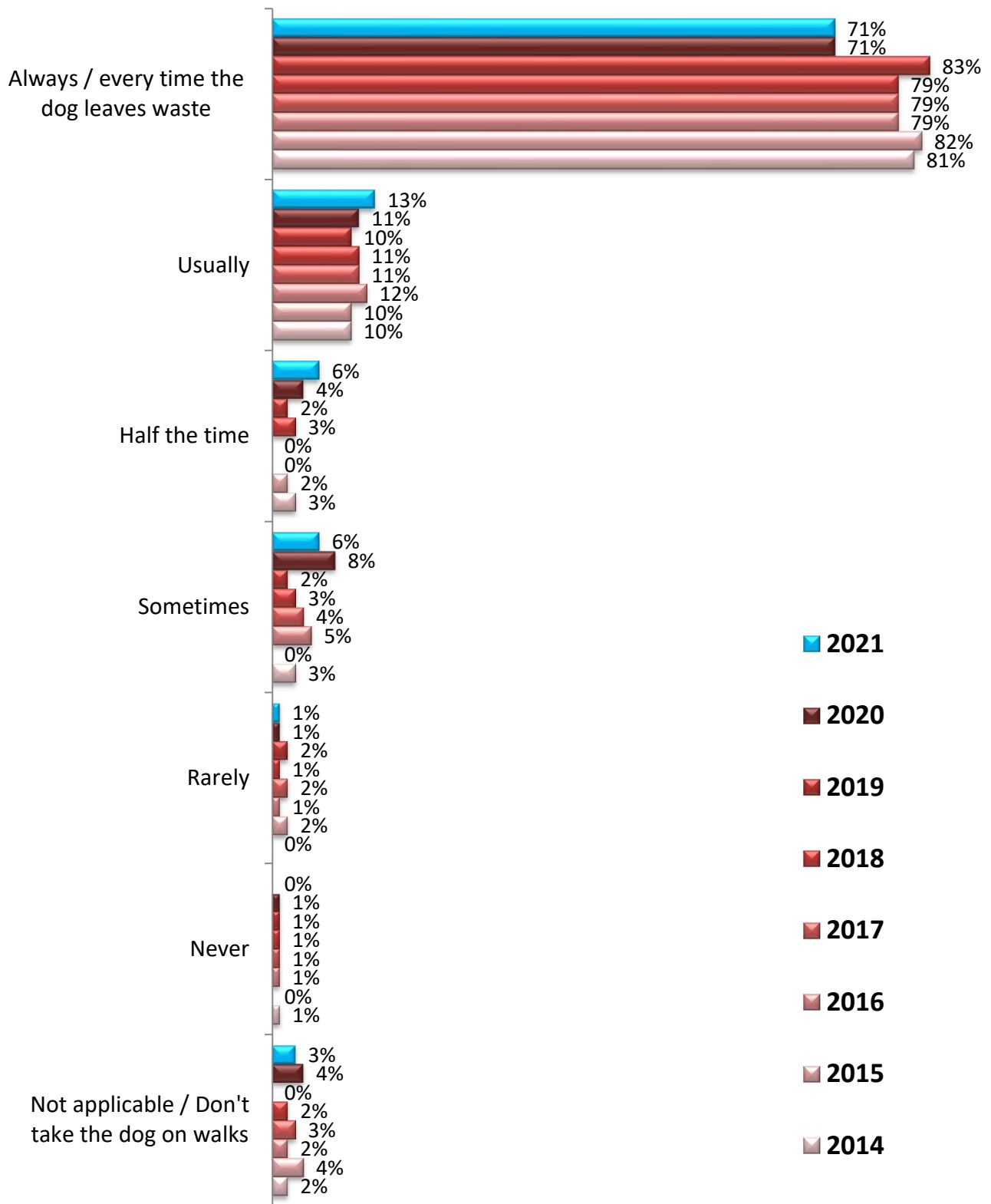
Behavior Among Dog Owners

- Nearly half (48%) in 2021 indicated that they have a dog (or someone else in their household has a dog), and this result was significantly higher than in previous years.

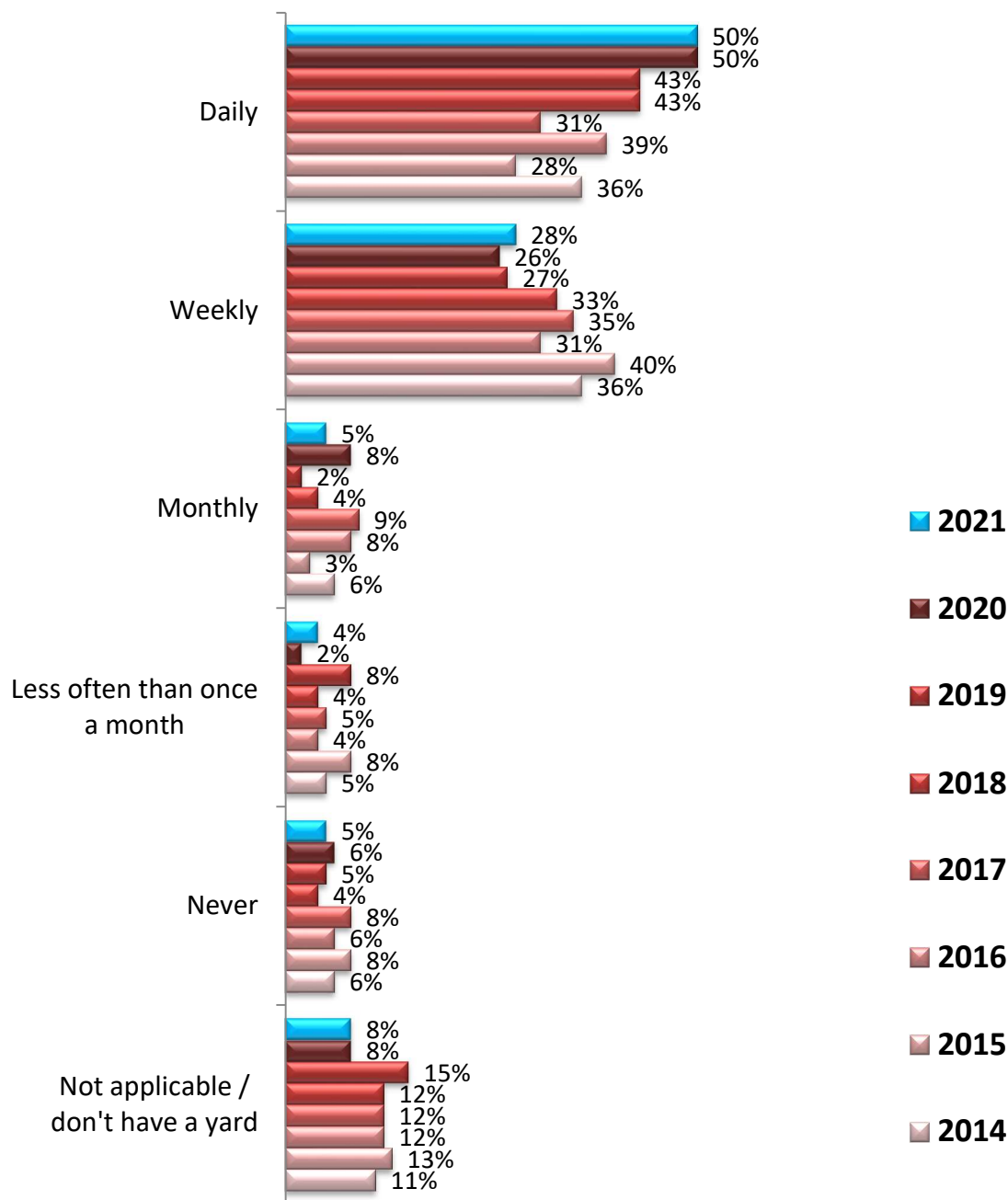


- On the following pages, results are shown for questions about how often dog owners pick up after their dogs and what motivates them to do so. For example, more than two-thirds (71%) in 2021 – similar to 2020, but not as high as in previous years – indicated that they *always* pick up after their dog(s) when taking the dog(s) for a walk.

When taking your dog(s) for a walk, how often do you pick up after your dog(s)?

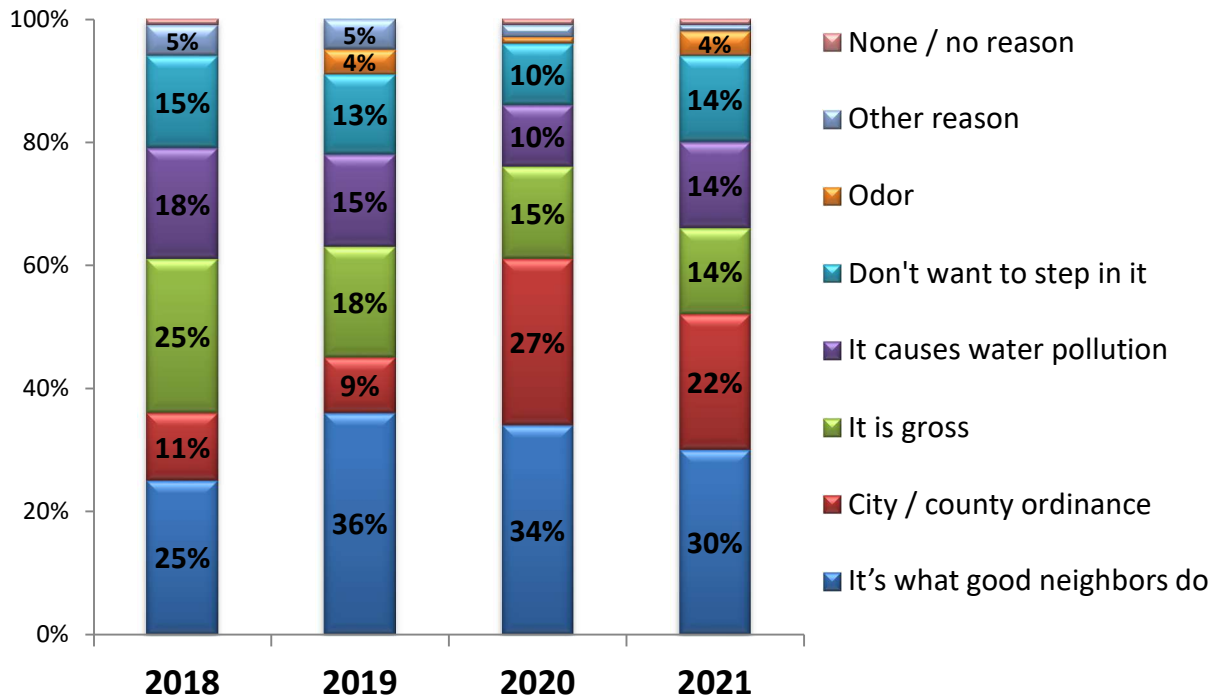


How often do you (or does someone else from your household) remove dog waste from your yard?



- In their own yard, the majority removed pet waste daily or weekly.
- There was some fluctuation from year to year in the proportions reporting daily and weekly removal of dog waste from their yard, but recall that this question was asked only of dog owners, and the sample size of dog owners is lower than the total sample size, while the margin of error is higher for a lower sample size.

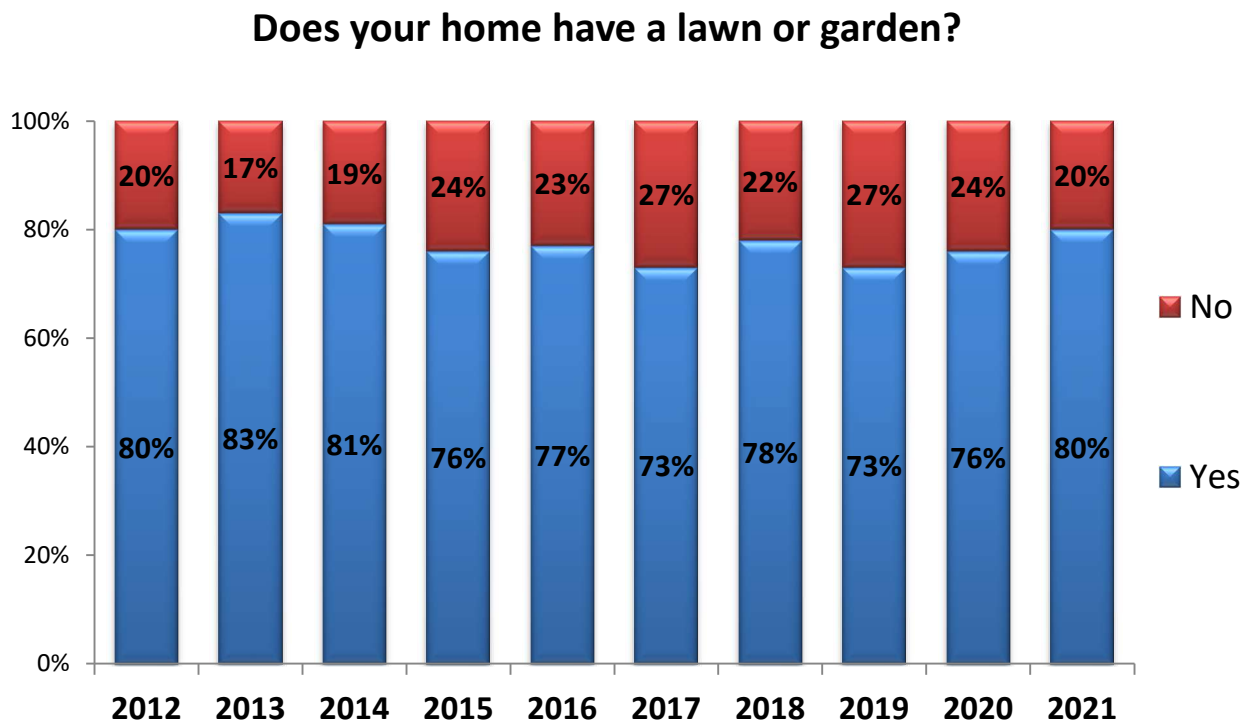
What is the most important reason to pick up after your dog(s)?



- When asked about the “Most important reason” for picking up after their dog(s), the highest proportion (30%) in 2021 selected “It's what good neighbors do.”
- Compared to 2018 and 2019, a significantly higher proportion in 2021 and 2020 selected city / county ordinance as their most important reason to pick up after their dog(s).

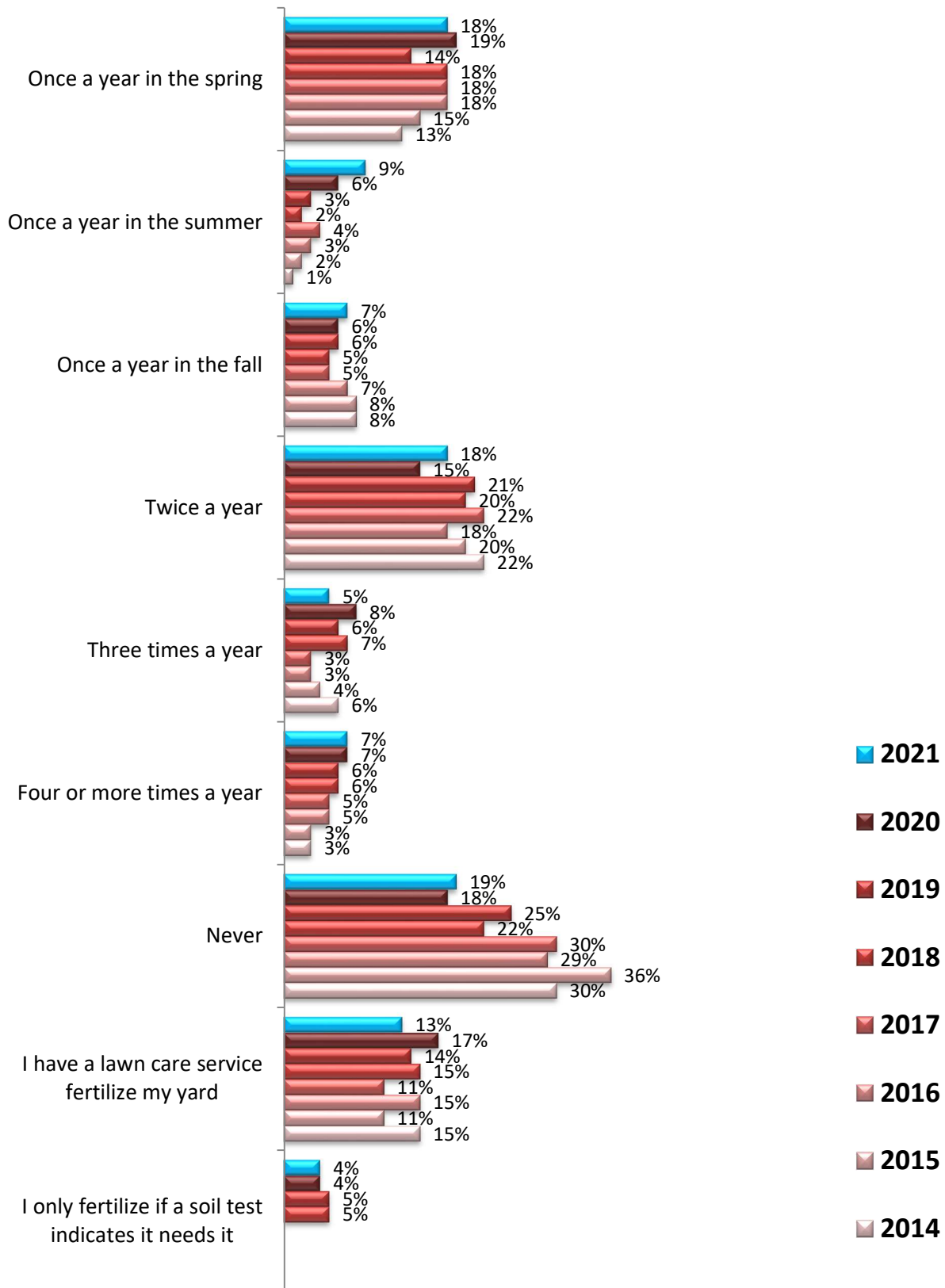
Behavior Related to Lawns & Gardens

- Eight-in-ten (80%) in 2021 indicated that their current home has a lawn or garden. This result was the not the highest and also not the lowest over the past ten years.

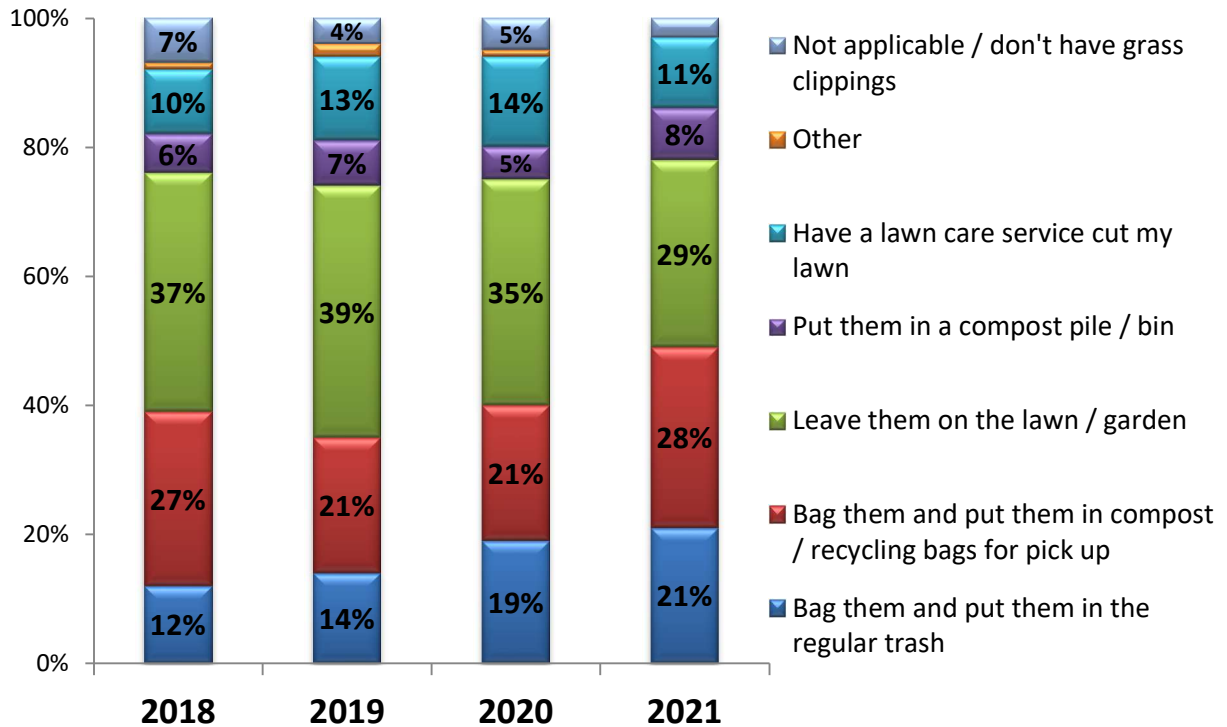


- In a separate question, of the respondents who have a lawn or garden, slightly more than eight-in-ten (83%) in 2021 identified themselves as the primary person taking care of the lawn or garden or as being familiar with the practices used for the garden or lawn. Several questions about lawns and gardens were then asked only of these respondents.
- As shown on the next page, the most common response when asked how frequently they fertilize was “Never” (19%), “Once a year in the spring” (18%), and “Twice a year.”
- The option “I only fertilize if a soil test indicates the grass needs fertilizer” was first introduced in the 2018 survey.

Which of the following best describes how often you fertilize your lawn?

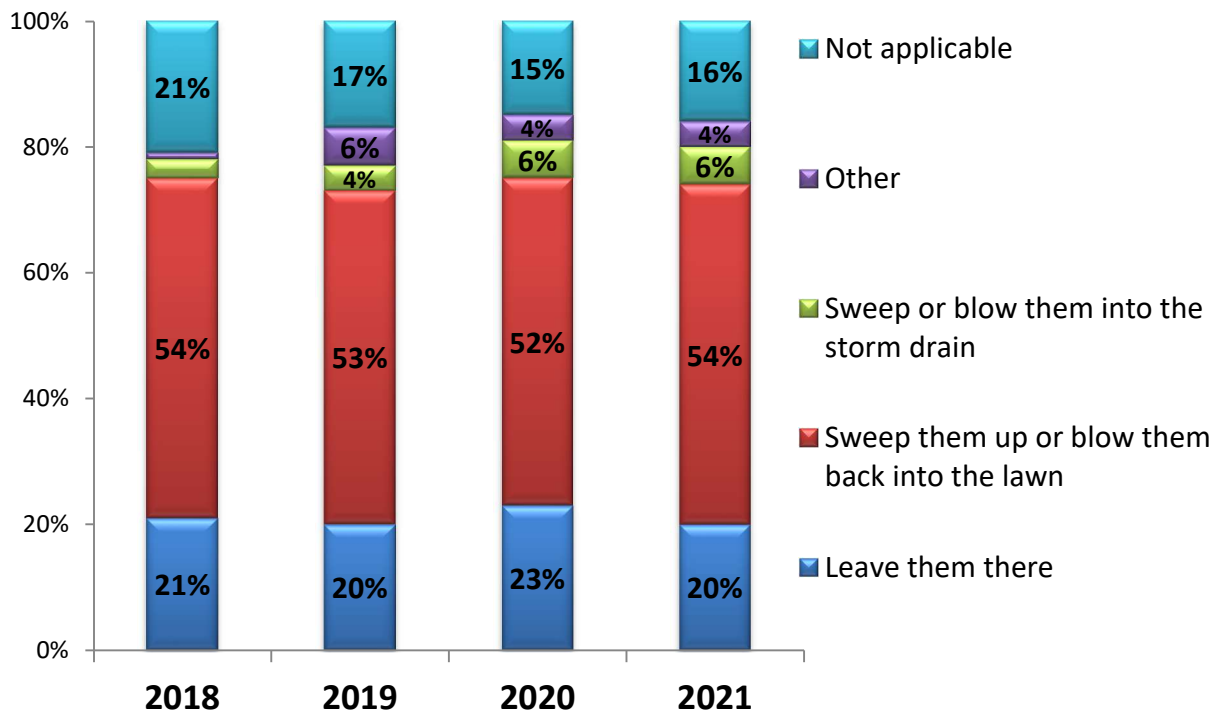


What do you do with grass clippings from your lawn or garden?



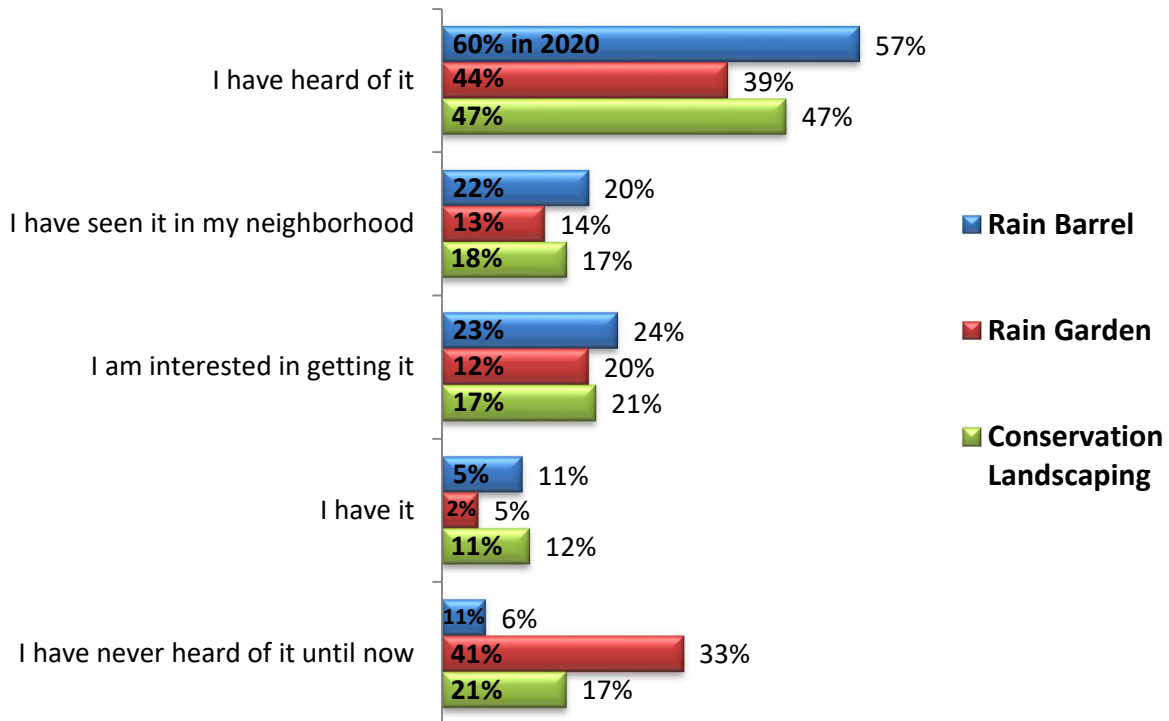
- Less than one-third (29%) in 2021 leave their grass clippings on their lawn / garden, while a similar proportion (28%) bag grass clippings from their lawn / garden and put them in compost / recycling bags for pick up.
- Approximately one-in-five (21%) bag their grass clippings and put them in the regular trash, and this result was significantly higher than in 2019 and 2018.

After you cut your grass, if grass clippings end up in the street, do you:



- More than half (54%) in 2021 sweep them up or blow them back into the lawn if they have grass clippings end up in the street, and this result was similar to the corresponding results in previous years.
- Some (16%) in 2021 felt this question was not applicable to them. This is higher than the proportion selecting “Not applicable” for the question on the previous page, but there is more than one reason that the question above may not be applicable. One reason is that they might not have grass clippings. Another reason is that they might not have grass clippings end up in the street.

Which of the following best describe your familiarity with...



- After reading a description of a rain barrel, rain garden, and conservation landscaping, respondents were asked which of the categories in the chart above applied to them. For example, 11% in 2021 reported having a rain barrel, while 5% reported having a rain garden, and 12% reported having conservation landscapes in their yard. Note that the numbers at the end of the bars show 2021 results, while 2020 results are shown to the left and inside the bar. This format was used to allow side-by-side comparisons between rain barrel, rain garden, and conservation landscaping, as well as allowing year-to-year comparisons.
- Those who indicated having the item typically did not also select “I have heard of it.” For a few cases in which a respondent selected both “I have heard of it” and “I have it,” the data was “cleaned” so that the respondent did not have “I have heard of it” selected. This means that these two response options do not overlap in the results shown above. In other words, the first response option in the chart above means that they do not have one but they have heard of it.
- As a technical note, in place of “it” that shows in the chart, the survey showed rain barrel, rain garden, or conservation landscaping (in three different questions). The reason for rewording the response options for the chart was to facilitate comparisons between the three items.

Behavior Related to Automobiles

- When asked about changing the oil in their car or truck, a strong majority each year reported that they use an oil change service, while 15% in 2021 reported taking old motor oil to a gas station or hazmat facility for recycling. A small number of respondents selected other response options. Because the number selecting some response options was very small, the results are shown in the tables below, with the frequency (number of respondents selecting each response) and the percentage.

2021: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	355	71.0%
Take the old motor oil to a gas station or hazmat facility for recycling	77	15.4%
Store it in my garage	19	3.8%
Put it in the trash	20	4.0%
Dump it in the gutter or down the storm sewer	6	1.2%
Dump it down the sink	2	.4%
I dump it on the ground	1	.2%
Other	2	.4%
Don't own a car or truck	18	3.6%
Total	500	100.0%

2020: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	367	73.4%
Take the old motor oil to a gas station or hazmat facility for recycling	55	11.0%
Store it in my garage	28	5.6%
Put it in the trash	15	3.0%
Dump it in the gutter or down the storm sewer	7	1.4%
Dump it down the sink	3	.6%
Other	3	.6%
Don't own a car or truck	22	4.4%
Total	500	100.0%

2019: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	415	83.0%
Take the old motor oil to a gas station or hazmat facility for recycling	42	8.4%
Store it in my garage	9	1.8%
Put it in the trash	5	1.0%
Dump it in the gutter or down the storm sewer	4	.8%
Dump it down the sink	2	.4%
Dump it on the ground	2	.4%
Other	1	.2%
Don't own a car or truck	20	4.0%
Total	500	100.0%

2018: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	412	82.4%
Take the old motor oil to a gas station or hazmat facility for recycling	47	9.4%
Store it in my garage	12	2.4%
Put it in the trash	4	.8%
Dump it in the gutter or down the storm sewer	2	.4%
Dump it down the sink	2	.4%
Other	2	.4%
Don't own a car or truck	19	3.8%
Total	500	100.0%

2017: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	410	82.0%
Take the old motor oil to a gas station or hazmat facility for recycling	57	11.4%
Store it in my garage	10	2.0%
Put it in the trash	6	1.2%
Dump it in the gutter or down the storm sewer	2	.4%
Other	5	1.0%
Don't own a car or truck	10	2.0%
Total	500	100.0%

2016: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	399	79.8%
Take the old motor oil to a gas station or hazmat facility for recycling	65	13.0%
Store it in my garage	9	1.8%
Put it in the trash	8	1.6%
Other	2	0.4%
Don't own a car or truck	17	3.4%
Total	500	100.0%

2015: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	426	85.2%
Take the old motor oil to a gas station or hazmat facility for recycling	54	10.8%
Store it in my garage	4	0.8%
Put it in the trash	3	0.6%
Don't own a car or truck	13	2.6%
Total	500	100.0%

2014: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	426	85.2%
Take the old motor oil to a gas station or hazmat facility for recycling	50	10.0%
Put it in the trash	5	1.0%
Store it in my garage	4	0.8%
Other	1	0.2%
Don't own a car or truck	14	2.8%
Total	500	100.0%

2013: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	427	85.4%
Take the old motor oil to a gas station or hazmat facility for recycling	57	11.4%
Put it in the trash	3	0.6%
Dump it in the gutter or down the storm sewer	2	0.4%
Store it in my garage	1	0.2%
Don't own a car or truck	10	2.0%
Total	500	100.0%

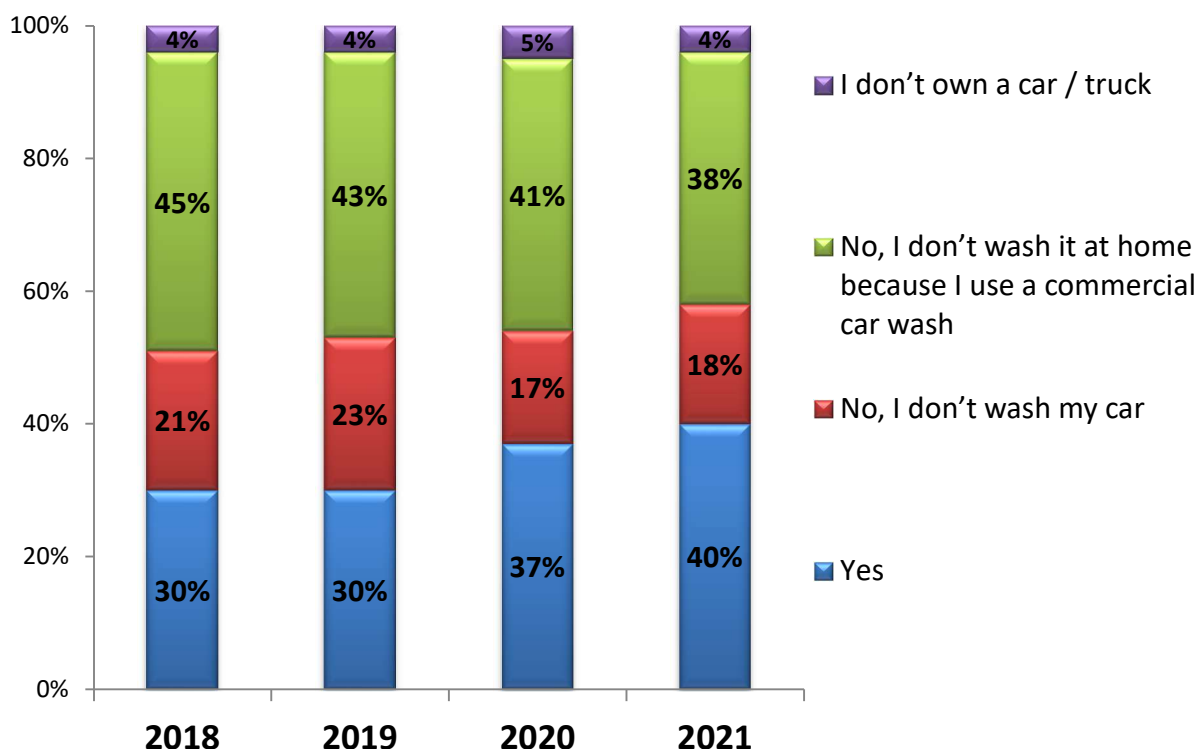
2012: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	426	85.2%
Take the old motor oil to a gas station or hazmat facility for recycling	49	9.8%
Store it in my garage	3	0.6%
Put it in the trash	2	0.4%
Other	2	0.4%
Don't own a car or truck	18	3.6%
Total	500	100.0%

2011: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	413	82.6%
Take the old motor oil to a gas station or hazmat facility for recycling	60	12.0%
Put it in the trash	2	0.4%
Other	2	0.4%
Don't own a car or truck	23	4.6%
Total	500	100.0%

Do you wash your car / truck at home?



- Four-in-ten (40%) in 2021 reported washing their car / truck *at home*. This was similar to 2020 but significantly higher than in 2019 and 2018.
- When examining the results by subgroups, males and homeowners were more likely than others to report washing their vehicle at home. Also, the proportion washing their vehicle at home declined with age, and the proportion was relatively low among Arlington residents.

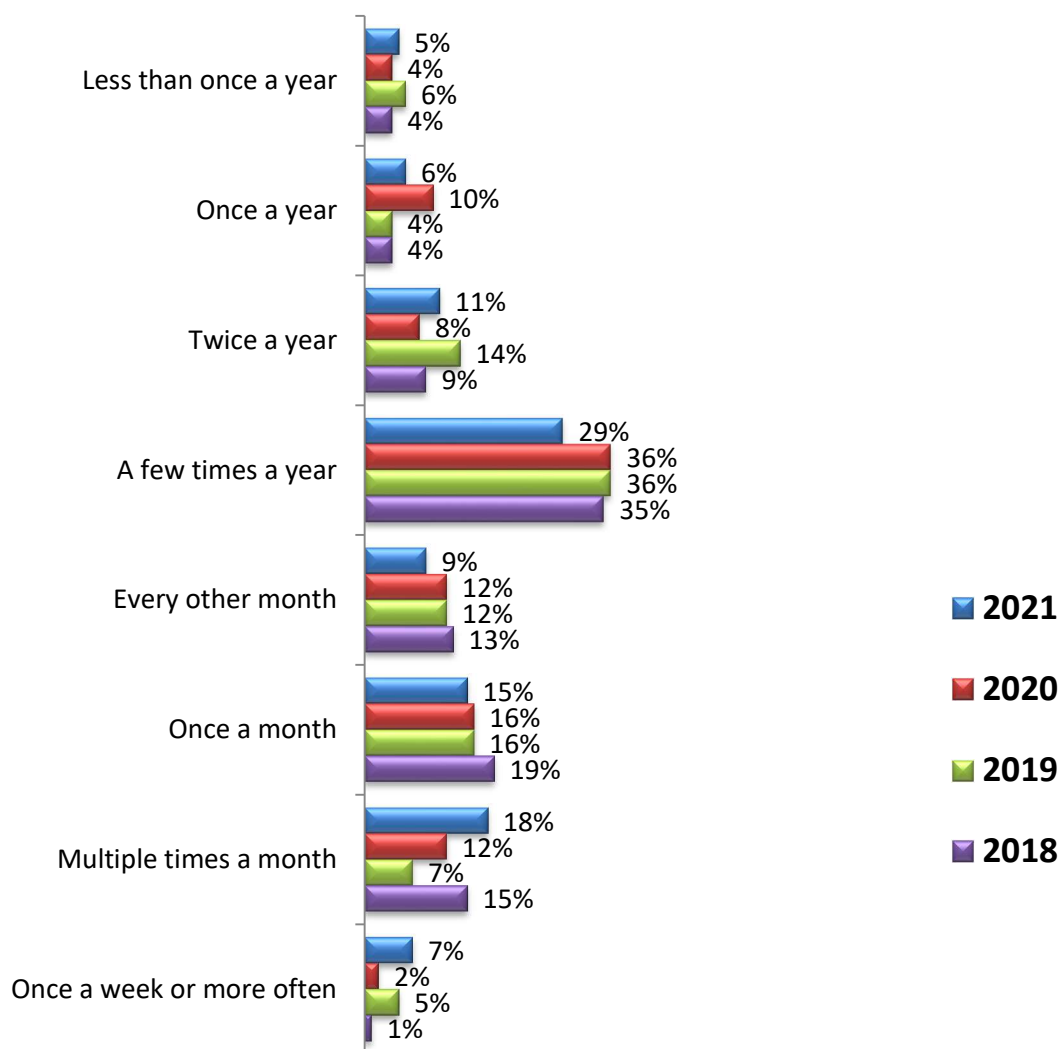
Wash Car / Truck At Home	Alexandria	Arlington	Fairfax Inclusive	Leesburg / Loudoun	Prince William Inclusive
Yes	49%	24%	37%	54%	42%
No, don't wash it	13%	18%	22%	11%	14%
No, use car wash	30%	51%	38%	34%	40%
Don't own a car / truck	8%	7%	3%	1%	4%
<i>N = number of respondents</i>	53	45	253	65	84

Wash Car / Truck At Home	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Yes	38%	38%	49%	37%
No, don't wash it	18%	22%	13%	18%
No, use car wash	41%	36%	34%	42%
Don't own a car / truck	3%	4%	4%	3%
<i>N = number of respondents</i>	119	119	108	154

Wash Car / Truck At Home	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Yes	61%	50%	41%	24%	23%
No, don't wash it	14%	17%	19%	24%	16%
No, use car wash	24%	29%	36%	48%	56%
Don't own a car / truck	1%	4%	4%	4%	5%
<i>N = number of respondents</i>	100	108	94	95	103

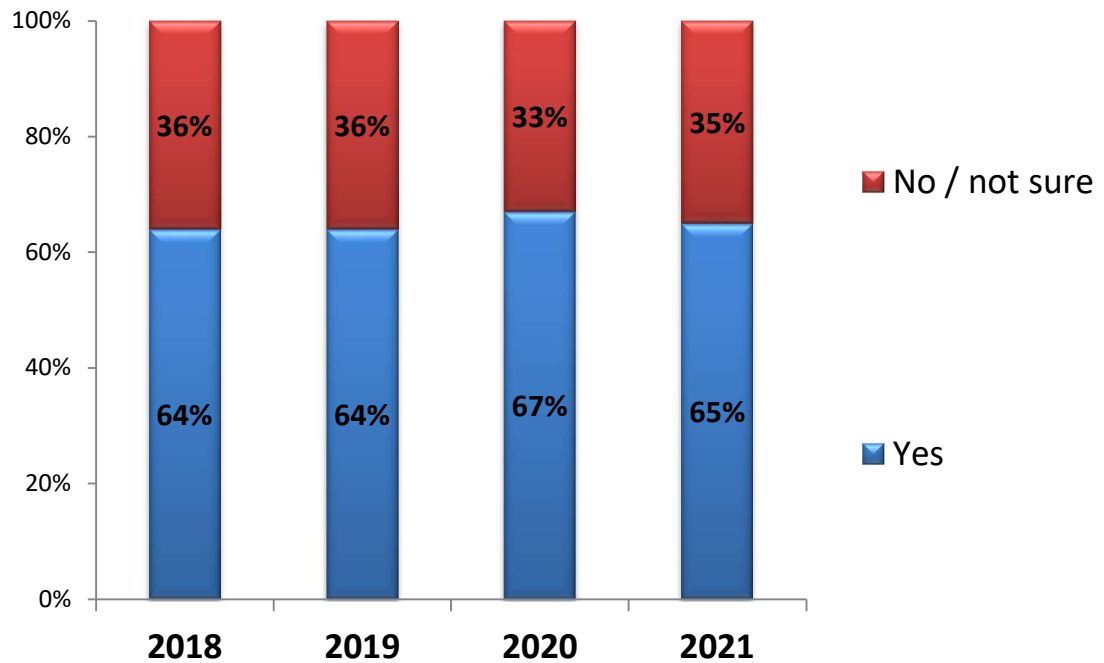
Wash Car / Truck At Home	Male	Female	Homeowners	Renters	Hispanic Respondents
Yes	48%	32%	44%	27%	42%
No, don't wash it	17%	19%	16%	23%	17%
No, use car wash	33%	44%	38%	41%	33%
Don't own a car / truck	2%	5%	2%	9%	8%
<i>N = number of respondents</i>	254	246	395	105	36

How often do you wash your car / truck at home?



- Among those who wash their car / truck at home, the most common frequency of doing so was a few times a year (29% in 2021).
- For a separate question about what applied when washing their car / truck at home, the results are shown below.
 - 48% in 2021 selected “I used environmentally friendly detergent.” (49% in 2020)
 - 41% selected “I try to wash on the grass or other surface that absorbs water.” (40% in 2020)
 - 8% selected “I don’t use any detergent – use water only.” (10% in 2020)
 - 20% selected none of the above. (17% in 2020)

Are you aware of whether your locality has a specific place for residents to drop off household hazardous waste (HHW)?



- Nearly two-thirds (65%) in 2021 indicated that they were aware of whether their locality has a specific place to drop off household hazardous waste.
- As shown in the table below, this was true for the majority in each area. However, awareness was significantly higher among those living in their current residence 20 or more years, and among those age 35 or older, males, and homeowners.

HHW Awareness	Alexandria	Arlington	Fairfax Inclusive	Leesburg / Loudoun	Prince William Inclusive
Yes	64%	69%	64%	63%	68%
No / not sure	36%	31%	36%	37%	32%
<i>N = number of respondents</i>	53	45	253	65	84

HHW Awareness	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Yes	55%	64%	62%	76%
No / not sure	45%	36%	38%	24%
<i>N = number of respondents</i>	119	119	108	154

HHW Awareness	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Yes	48%	64%	71%	68%	74%
No / not sure	52%	36%	29%	32%	26%
<i>N = number of respondents</i>	100	108	94	95	103

HHW Awareness	Male	Female	Homeowners	Renters	Hispanic Respondents
Yes	70%	60%	68%	52%	53%
No / not sure	30%	40%	32%	48%	47%
<i>N = number of respondents</i>	254	246	395	105	36

Appendix: Questionnaire

2021 Only Rain NVRC Survey

INTRODUCTION:

Welcome, and thank you for participating in this important research survey.

S1. Are you:

- ☐ Male
- ☐ Female

S2. Which of the following categories includes your age?

- ☐ Under 18 **[END SURVEY]**
- ☐ 18 to 20 **[END SURVEY]**
- ☐ 21 to 24
- ☐ 25 to 34
- ☐ 35 to 44
- ☐ 45 to 54
- ☐ 55 to 64
- ☐ 65 to 74
- ☐ 75 or older

S3. Which of the following best describes your residence?

- ☐ I own my home
- ☐ I rent my home
- ☐ Neither **[END SURVEY]**

S4. Do you live in the state of Virginia?

- ☐ Yes
- ☐ No **[END SURVEY]**

S5. Which of the following best describes where you live (county or city or town)?

- ☐ Alexandria
- ☐ Arlington
- ☐ Dumfries
- ☐ Fairfax (city of)
- ☐ Fairfax (county of)
- ☐ Falls Church
- ☐ Herndon
- ☐ Leesburg
- ☐ Loudoun County
- ☐ Stafford County
- ☐ Vienna
- ☐ None of the above **[END SURVEY]**

S6. Which of the following describes your ethnicity? (Please select all that apply)

- ☐ African American / Black
- ☐ American Indian / Alaska Native
- ☐ Asian
- ☐ Hispanic / Latino
- ☐ Native Hawaiian / Pacific Islander
- ☐ White / Caucasian
- ☐ Other: _____

Q1. For how many years have you lived in your current residence?

- ☐ Less than 1 year
- ☐ 1 to 3 years
- ☐ 4 to 9 years
- ☐ 10 to 19 years
- ☐ 20 or more years

Q2. Do you live within the Potomac River Watershed?

- ☐ Yes
- ☐ No
- ☐ Not Sure
- ☐ I do not know what a “watershed” is

Q3. "Storm water" is rain or other water that flows into the street, along the gutter and into the storm drain. To the best of your knowledge, where do you believe storm water eventually ends up?

- ☐ At a waste water treatment facility
- ☐ Potomac River or Chesapeake Bay
- ☐ Don't know
- ☐ Other: _____

Q4. Do you (or does another person in your household) have a dog?

- ☐ Yes **[CONTINUE WITH Q5]**
- ☐ No **[SKIP TO Q8]**

Q5. When taking your dog(s) for a walk, how often do you pick up after your dog(s)?

- ☐ Always / every time the dog leaves waste
- ☐ Usually
- ☐ Half the time
- ☐ Sometimes
- ☐ Rarely
- ☐ Never
- ☐ Not applicable / I don't take the dog(s) on walks

Q6. How often do you (or does someone else from your household) remove dog waste from your yard?

- ☐ Daily
- ☐ Weekly
- ☐ Monthly
- ☐ Less often than once a month
- ☐ Never
- ☐ Not applicable / don't have a yard

[SKIP OVER Q7 IF NEVER OR NOT APPLICABLE IN BOTH Q5 and Q6]

Q7. What is the most important reason to pick up after your dog(s)? (Please select only one)

- ☐ City / County ordinance
- ☐ Don't want to step in it
- ☐ It causes water pollution
- ☐ It is gross
- ☐ It's what good neighbors do
- ☐ Odor
- ☐ Other reason
- ☐ None / no reason to

Q8. Does your home have a lawn or garden?

- ☐ Yes **[CONTINUE WITH Q9]**
- ☐ No **[SKIP TO Q16]**

Q9. Are you the primary person who takes care of the lawn or garden, or are you familiar with the practices used for your garden or lawn?

- ☐ Yes **[CONTINUE WITH Q10]**
- ☐ No **[SKIP TO Q16]**

Q10. What do you do with grass clippings from your lawn or garden?

- ☐ Bag them and put them in the regular trash
- ☐ Bag them and put them in compost / recycling bags for pick up
- ☐ Leave them on the lawn / garden
- ☐ Put them in a compost pile / bin
- ☐ Have a lawn care service cut my lawn
- ☐ Other
- ☐ Not applicable / don't have grass clippings

Q11. After you cut your grass, if grass clippings end up in the street, do you:

- ☐ Leave them there
- ☐ Sweep them up or blow them back into the lawn
- ☐ Sweep or blow them into the storm drain
- ☐ Not applicable / don't have grass clippings
- ☐ Other: _____

Q12. Which of the following best describes how often you fertilize your lawn?

- ☐ Once a year in the spring
- ☐ Once a year in the summer
- ☐ Once a year in the fall
- ☐ Twice a year
- ☐ Three times a year
- ☐ Four or more times a year
- ☐ Never
- ☐ I have a lawn care service fertilize my yard
- ☐ I only fertilize if a soil test indicates the grass needs fertilizer

Q13. A rain barrel is a barrel you put under your downspout to collect rain water that you can use around your yard. Which of the following best describe your level of familiarity with rain barrels? [Allow multi-select]

- ☐ I have heard of rain barrels
- ☐ I have seen rain barrels in my neighborhood
- ☐ I am interested in getting a rain barrel
- ☐ I have a rain barrel
- ☐ I have never heard of a rain barrel until now.

Q14. A rain garden is a bowl shaped garden area where runoff can collect and soak into the ground. Which of the following best describe your level of familiarity with rain gardens? [Allow multi-select]

- ☐ I have heard of rain gardens
- ☐ I have seen rain gardens in my neighborhood
- ☐ I am interested in installing a rain garden in my yard
- ☐ I have a rain garden
- ☐ I have never heard of a rain garden until now.

Q15. Conservation landscaping is replacing an area of lawn or bare soil in your yard with native plants. Which of the following best describe your level of familiarity with conservation landscaping? [Allow multi-select]

- ☐ I have heard of conservation landscaping
- ☐ I have seen conservation landscaping in my neighborhood
- ☐ I am interested in installing conservation landscaping in my yard
- ☐ I have conservation landscapes in my yard
- ☐ I have never heard of conservation landscaping until now.

Q16. When you need to change the oil in your car or truck, what do you do with the old motor oil?

- ☐ I don't change the oil myself / I take it to a garage / oil change service
- ☐ Take the old motor oil to a gas station or hazmat facility for recycling
- ☐ Store it in my garage
- ☐ Put it in the trash
- ☐ Dump it in the gutter or down the storm sewer
- ☐ Dump it down the sink
- ☐ I dump it on the ground
- ☐ I don't own a car or truck
- ☐ Other: _____

Q17. Are you aware of whether your locality has a specific place for residents to drop off household hazardous waste (HHW)? HHW includes items like automobile fluids, pesticides and herbicides, oil-based paint and paint thinners, etc.

- ☐ Yes
- ☐ No / not sure

Q18. Do you wash your car / truck at home?

- ☐ Yes
- ☐ No, I don't wash my car
- ☐ No, I don't wash it at home because I use a commercial car wash
- ☐ I don't own a car

Q19. [If yes to Q18] How often do you wash your car / truck at home?

- ☐ Less than once a year
- ☐ Once a year
- ☐ Twice a year
- ☐ A few times a year
- ☐ Every other month
- ☐ Once a month
- ☐ Multiple times a month
- ☐ Once a week or more often

Q20. [If yes to Q18] When you wash your car / truck at home, which of the following apply?

- ☐ I try to wash on the grass or other surface that absorbs water
- ☐ I use environmentally friendly detergent
- ☐ I don't use any detergent – use water only
- ☐ None of the above

Q21. Looking at the pictures below, would you consider this to be a potential source of water pollution?

- ☐ Yes
- ☐ No
- ☐ Not sure



Q22. What is the likelihood that you would call county or town officials to report potential pollution so they could investigate the cause?

- ☐ Definitely would
- ☐ Probably would
- ☐ Might or might not
- ☐ Probably not
- ☐ Definitely not

Q23. How confident are you that you would know where to report potential water pollution?

- ☐ Very confident
- ☐ Somewhat confident
- ☐ Not very confident
- ☐ Not at all confident

Q24. What TV service provider do you use? [RANDOMIZE]

- ☐ Verizon
- ☐ Comcast
- ☐ Cox
- ☐ Direct TV
- ☐ Dish Network
- ☐ Xfinity
- ☐ Do not have cable TV
- ☐ Do not watch TV
- ☐ Other: _____

Q25. Which of the following channels, if any, do you watch? [RANDOMIZE]

- ☐ HLN TV
- ☐ Oxygen
- ☐ Toon
- ☐ ENT
- ☐ Animal Planet
- ☐ CNN
- ☐ ESPN
- ☐ History
- ☐ National Geographic
- ☐ Home and Garden
- ☐ None of the above

Q26. Thinking about the last 12 months, have you heard about any opportunities to participate in a water quality activity, such as a stream clean up, helping to install storm drain labels, etc.?

- ☐ Yes
- ☐ No / not sure

Q27. [IF YES IN Q26] Thinking about the last 12 months, have you participated in a water quality activity, such as a stream clean up, helping to install storm drain labels, etc.?

- ☐ Yes
- ☐ No

Q28. Please watch the video below. Before this survey, had you seen this ad, or a similar one on TV, Facebook, or Twitter about reducing water pollution?

- ☐ Yes **[CONTINUE WITH Q29]**
- ☐ No **[SKIP TO Q30]**
- ☐ Not sure **[SKIP TO Q30]**

Q29. Did seeing the ad(s) about reducing water pollution make you change any of your behaviors related to fertilizing less often and/or reducing water pollution?
(Select all that apply)

- ☐ Yes, I now pick up pet waste more often
- ☐ Yes, I now plan to fertilize fewer times during the year
- ☐ Yes, I now properly dispose of motor oil
- ☐ I was already doing what is recommend to reduce water pollution
- ☐ None of the above applies to me



Q30. Have you seen the logo above anywhere? (Show Only Rain logo)

- ☐ Yes
- ☐ No

Q31. Regardless of whether you have seen that specific ad or logo, have you seen or received information about reducing water pollution from any source in the past 12 months?

- ☐ Yes
- ☐ No
- ☐ Not sure



Photo: Burke Lake Park in Fairfax, VA
Source: Fairfax County Park Authority

Northern Virginia Clean Water Partners Annual Summary of Results July 1, 2020 – June 30, 2021

www.onlyrain.org

Polluted stormwater runoff is the number one cause of poor water quality in streams and rivers in Northern Virginia. When it rains and snows, the water runs off streets, driveways, yards and parking lots and mixes with pesticides, grass clippings, fertilizer, bacteria, road salt, and oil. All this pollution enters the storm drains on the street and is discharged directly to a stream. The runoff is not filtered or sent to a wastewater treatment facility.

To reduce the impacts of stormwater pollution, the Northern Virginia Clean Water Partners came together to change peoples' behavior through a public education campaign.

About the Partnership

The Northern Virginia Clean Water Partners is composed of a group of local governments, drinking water and sanitation authorities, and businesses that share the common goals to keep Northern Virginia residents

healthy and safe by reducing the amount of pollution from stormwater runoff that reaches local creeks and rivers, and empower individuals to take action to reduce pollution. To meet these goals, 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.

Membership is voluntary and each member makes an annual contribution to fund the program. By working together, the partners can leverage their funds to develop and place bilingual educational products with

common messages and themes, thereby extending the campaign's reach.

Only Rain Down the Storm Drain is the motto of the partnership.

The 2021 campaign helped to satisfy MS4 (Municipal Separate Storm Sewer System) Phase I and Phase II permit requirements for stormwater education and documenting changes in behavior.

For more information visit www.onlyrain.org



2021 Campaign Overview and Accomplishments

In 2021, the Northern Virginia Clean Water Partners selected the following high priority water quality issues to focus on for the Campaign:

- bacteria,
- nutrients,
- salt, and
- illicit discharge (i.e., motor oil, pesticides, and hhw).

The Partners identified the target audiences for these issues as pet owners, homeowners with a lawn or garden, home mechanics and do-it-yourselfers, and members of the public who apply winter salt.

The campaign used television, print, internet advertising, Facebook, Twitter, and the [Only Rain Down the Storm Drain](https://www.onlyrain.org)

website to distribute messages linked to specific stormwater issues, such as proper pet waste disposal, responsible fertilizer use on lawns and gardens, and proper disposal of detergents, paints, stains, and auto fluids.

In addition to the multi-media campaign, partners participated in local events to raise awareness and encourage positive behavior change in residents. The social media posts, television and internet ads featured the well-known national symbol of non-point source pollution, the rubber ducky.



771,115

Premium digital TV impressions* (cable network ads)

1,641,042

Total social media impressions (Facebook and Twitter)

48,095

Engagements with social media posts (Facebook and Twitter)

9,662

Visits to the www.onlyrain.org website

3,000

Storm drain labels distributed throughout the region

500

Survey Responses

**Impressions are the number of times an ad appeared on a single television or computer screen.*

Throughout the campaign year, the Partners made the following efforts to educate the public and promote awareness of impacts of stormwater pollution:

- From July 2020 through June 2021, aired four Public Service Announcements (2 in English and 2 in Spanish) on 44 English language cable TV networks, and four Spanish language networks a total of 761,756 times. The ads featured messages on the importance of picking up pet waste and general household stormwater pollution reduction measures.

As a new strategy in 2020, the Partners contracted with a digital communications firm to develop and implement a social media

campaign on Facebook and Twitter. The results so far have shown that these platforms are an effective way to engage with the target audiences.

- Since July 1, 2020, the Facebook page has gathered an additional 271 page likes and 275 fans.
- During this time there were 244 published posts, 46,875 post engagements, and 41,050 post clicks
- Facebook outreach campaigns reached 1,360,699 individuals and led to 23,820 clicks through to the website.





- Since July 1, 2020 the Clean Water Partners Twitter page has gained: 81,066 impressions, 1220 total engagements, 105 post link clicks, and 77 followers.
- We have tweeted 398 times leading to: 198 retweets and 199 likes.
- Continued to update and maintain the Northern Virginia Clean Water Partners website.



Stormwater Survey Results

The Partners conducted an online survey of 500 Northern Virginia residents to understand the general awareness of stormwater runoff, determine the effectiveness of the ads, aid in directing the future efforts of the campaign, and to reveal any changes in behavior.

General Awareness Findings:

Nearly half (47%) of respondents either don't know where storm water ends up or believes that it goes to a wastewater treatment plant. This indicates that there is a need to educate residents that stormwater drains are directly connected to local waterways.

Close to one third (29%) of respondents recalled seeing the ad on TV, Facebook, or Twitter after watching the video clip in the survey which is a statistically significant increase from 2020. This indicates that using social media to conduct outreach is an effective way to reach residents. Of those who recalled seeing the ads, 42 percent state they already take action to protect clean water, 46 percent state they now pick up their pet waste more often, 19 percent state that they now properly dispose of motor oil, and 32 percent state they plan to fertilize fewer times per year.

When shown the Only Rain Down the Storm Drain logo, 61 percent of the respondents recognized it compared to 54 percent in 2013. This increase indicates that **awareness of the logo has increased over time.**

Regardless of whether respondents have seen the ads or logo, 34 percent reported they had received information about reducing water pollution in the past 12 months. **The 2021 result was significantly higher than in 2018 (24%) and 2019 (22%).** Even though more than half of respondents feel at least somewhat confident that they would know where to report potential water pollution, only 53 percent would report water pollution if they saw it. Interestingly, 8 percent of respondents from Prince William County indicated they "definitely would not" report potential water pollution. This suggests **there is a need for education on what pollution may look like and encourage residents to report it if they see something.**

The majority (65%) of respondents indicated that they were aware their locality has a specific place to drop off household hazardous waste.

Understanding Behaviors

In addition to capturing responses to questions regarding the effectiveness of the campaign, the survey gathered information on the current behaviors and attitudes of Northern Virginia residents as they relate to pet waste management, lawn care, and motor oil disposal. Responses to these questions support the development of future messages and targeted promotion.

Interestingly, dog ownership increased significantly (14

percent) in the region since the COVID-19 pandemic began. **During this time, the percent of respondents reporting that they pick up dog waste on walks decreased by 12 percent.** This suggests that there is ample opportunity to do outreach to new pet owners about picking up waste.

The most important reason dog owners are motivated to pick up their pet's waste is because "It's what good neighbors do". The number of respondents choosing "It causes water pollution" as the main reason has fluctuated and was the fourth most common reason in 2021.

77% of lawn and garden owners fertilize their lawns at least once per year no matter what. **Among those who fertilize once a year, 19 percent fertilize in the spring and only six percent fertilize in the fall.** This suggests that there is room to educate residents of Northern Virginia that fertilizing in the fall is better for local waterways.

Among those who fertilize their lawn, only four percent of respondents indicated that they fertilize based on results of a soil test. Slightly less than one-third (29%) in 2021 leave their grass clippings on their lawn, while half (49%) bag their grass clippings for disposal indicating the need for education on "greener" lawn care practices.

After reading a description of a rain barrel, rain garden, and conservation landscaping,

respondents were asked if they had implemented these features at their home or had heard about them. **In a significant increase over 2020 (6%), eleven percent reported having a rain barrel, while five percent reported having a rain garden, and twelve percent reported having conservation landscapes in their yard.**

Additionally, the percentage of respondents that reported never hearing of all three practices has decreased and the percentage of respondents interested in getting them has increased since 2020. This implies that general awareness and interest of these practices is increasing. **There is a significant opportunity to continue to promote these practices to homeowners and build awareness of how they can reduce stormwater runoff.**

Consistent with past years, most respondents take their vehicle to a service station for oil changes (71%) or take used oil to a gas station or hazmat facility for recycling (15%). **However, approximately ten percent of Northern Virginians reported storing used motor oil in their garage, placing it in the trash or dumping it down the storm drain, sink or on the ground.**

Overall, the 2021 campaign demonstrated that using a multi-media approach that includes traditional cable TV, streaming TV, website, and social media platforms will reach a large portion of the population of Northern Virginia.

To keep moving the needle towards building a culture of water quality stewardship, there is a need to combine public outreach with community based social marketing tools.

The FY22 campaign will be utilizing additional tools such as: 1) an interactive on-line pledge to adopt a new clean water behavior, 2) new "made for social media" psa's for target audiences, 3) an e-newsletter, and 4) a Clean Water Facebook Group for people to interact with each other.

All the tools mentioned above will continue to shape a robust behavior change campaign that keeps pace with the ever-evolving ways that the people of Northern Virginia consume information.

NORTHERN VIRGINIA 2021 WATER QUALITY SURVEY

Although the entirety of the Northern Virginia region is in the Potomac River watershed, many Northern Virginians are underinformed about actions they can take to reduce pollution in stormwater runoff.



Where do you believe stormwater goes?

60%

of NoVA residents think it eventually ends up in the Potomac River or Chesapeake Bay
AND



Around 40% of NoVA residents either don't know where it goes or believe **it goes to a wastewater treatment plant.**



59%

of Northern Virginians feel at least somewhat confident that they would know where to **report potential water pollution.**

BUT ONLY

53%

are likely to report water pollution if they saw it.



About four in ten residents of Northern Virginia feel they are most **prevented from taking action** to protect clean water because they **DON'T KNOW WHAT TO DO.**



1/3

About **1/3** of NoVA residents have seen or received **information about reducing water pollution** in the past 12 months.

Although improperly disposed pet waste is a major source of bacteria in stormwater,

ONLY 14%

of dog owners in Northern Virginia believe **water pollution** is the most important reason to pick up after your pet.

77% of lawn owners in Northern Virginia **fertilize** their lawn at least once a year.

ONLY 6% fertilize once in the Fall, even though fertilizing **once a year in the fall** is better for local waterways.



71%

of car/truck owners take their vehicle to a mechanic for oil changes

15%

take used oil to a gas station or hazmat facility for disposal

10%



store used oil in their garage, put it in the trash or dump it down the storm drain, sink or on the ground.

About 1/3 of NoVA residents are **unaware** of whether their locality has a specific place to drop off



HOUSEHOLD HAZARDOUS WASTE

One in five Northern Virginians



ARE INTERESTED IN GETTING A RAIN BARREL.

Only Rain Down the Drain

www.onlyrain.org

For more information:

Corey Miles
Senior Environmental
Planner
703-642-4625
3040 Williams Drive, Suite
200
Fairfax, VA 22031
cmiles@novaregion.org

2021 Northern Virginia Clean Water Partners

Fairfax County | Arlington County | Loudoun County | Fairfax Water |
City of Alexandria | City of Fairfax | City of Falls Church | City of Manassas | Town of Leesburg |
Town of Dumfries | Prince William County | Northern Virginia Regional Commission | George Mason University |
Virginia Coastal Zone Management Program | Fairfax County Public Schools | Prince William County Public
Schools | Northern Virginia Soil and Water Conservation District



Summary prepared by NVRC on behalf of the Partners

August, 2021



Eco-City Academy

Stormwater Management

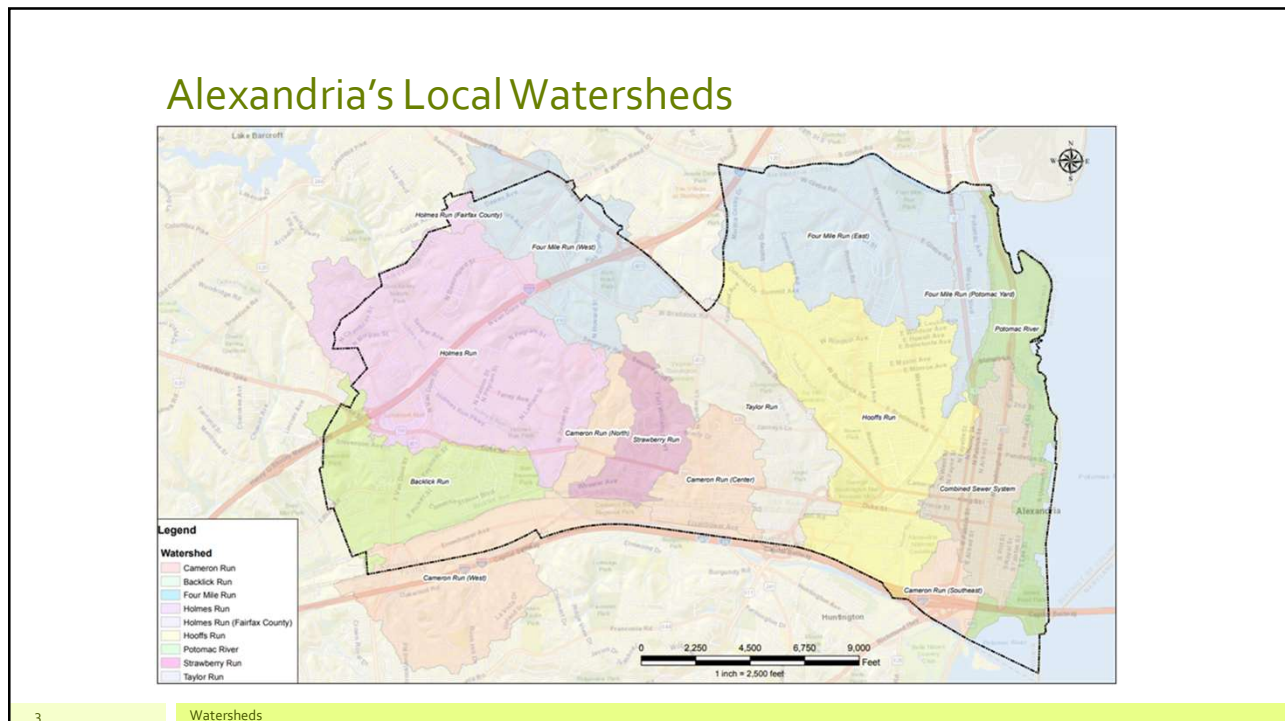
May 5, 2021







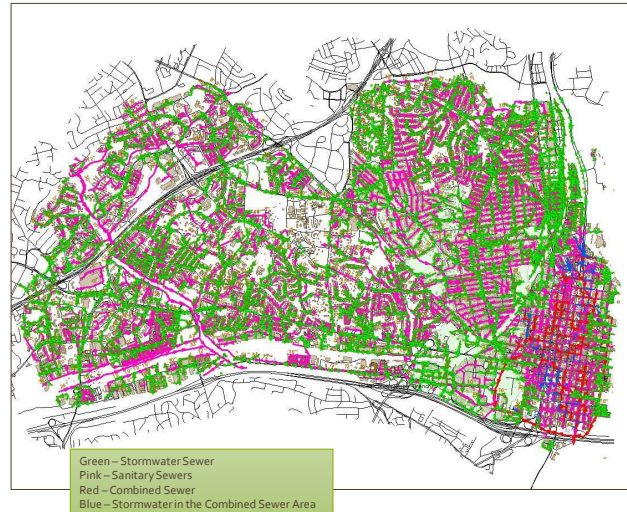
2



3

What is stormwater and why do we manage it?

- Rain falls on hard surfaces (impervious) and moves off into our water bodies
- Network of underground pipes (200+ miles), manholes, mancovers, inlets, catch basins
- Culvert system
- System of streams – exposed and piped
- Stormwater management “facilities” – green and grey infrastructure – help reduce pollution and meet our legal permit requirements

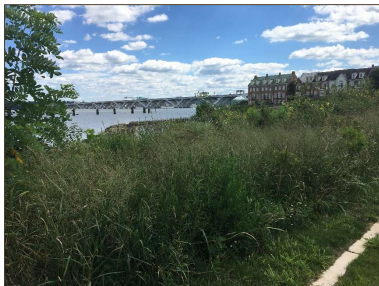


4

5/5/2021 Add a footer

4

Stormwater Management Facilities -- Examples



5

5/5/2021 Windmill Hill, Simpson Park, Ben Brenman Pond

5

Environmental Action Plan 2040

Goal	Target
Make Alexandria's waterbodies fishable and swimmable	Stormwater will be managed to enhance the quality of local waterways and their ecological, public health, social, and economic benefits, by meeting 70 percent of the City's Chesapeake Bay phosphorus pollution by 2023 ahead of the regulatory requirement
Ensure safe and adequate infrastructure for drinking water supply, stormwater management, and wastewater treatment	Meeting current and future, regulatory and infrastructure demands through planning, coordination, and implementation resulting in a safe and adequate drinking water supply, reduced risk of flooding, and improved water quality

6

5/5/2021

Chapter 6, Water Resources

6


Eco-CITY ALEXANDRIA

Only Rain Down the Storm Drain!



Runoff from hard surfaces like roofs, driveways, and streets picks up pollutants like:

- Pet waste
- Litter
- Fertilizer
- Motor oils
- Chemicals

Polluted stormwater runoff flows directly into our local streams, the Potomac River, and eventually the Chesapeake Bay.

- ✓ Pick up pet waste
- ✓ Be responsible with fertilizer use or don't use at all
- ✓ Report funky things in the water to Alex311 and don't litter!

7

5/5/2021

Rain down the drain

7

Radar, September 10, 2020



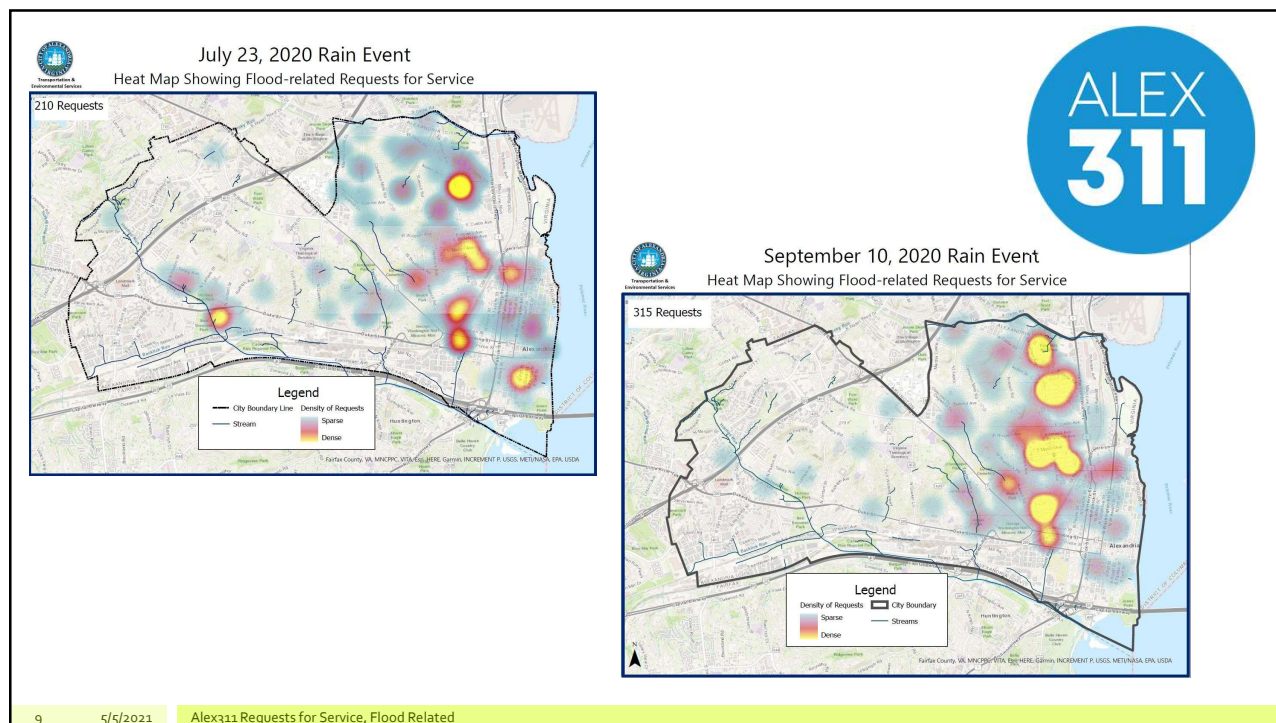
- ✓ 2.5-4" with rates up to 3"/hr in 10 mins
- ✓ Daily rainfall record at National Airport

For Alexandria, VA:
September is the month with the least rainfall. Rain falls for 11.9 days and accumulates 1.93" of precipitation

<https://www.weather-us.com>

8 5/5/2021 9/10/2021 Radar

8

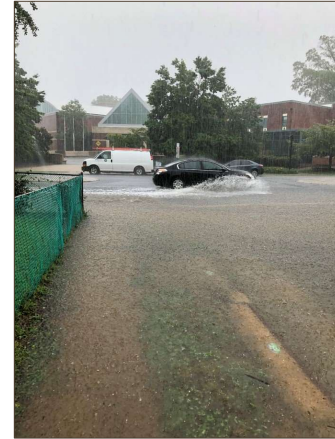


9 5/5/2021 Alex311 Requests for Service, Flood Related

9

Recent History of Flooding in Alexandria

- **2018:** Virginia's wettest year on record, 20"+ over normal
- **July 8, 2019:** Regional Flood
- **July 23, 2020:** Local Flash Flood
 - 60-80% of monthly avg in 30 minutes



10

5/5/2021 City of Alexandria Stormwater Management

10

Stormwater Management – 5 Main Responsibilities



Storm Sewer Capacity
Projects



Spot Improvements
Projects



Stream and Channel /
Infrastructure Maintenance



Infrastructure
Maintenance



Water Quality Projects
(Bay Mandates)

11

5/5/2021 Flooding & Drainage: <https://www.alexandriava.gov/93346>

11

Interdepartmental Flooding Management Task Force



➤ Assembled to **urgently address** recent flash flooding from climate-change-induced severe rain events

➤ Six-week work period

➤ Developed recommendations for:

1. Budget
2. Programs & Legislation
3. Early Warning & Communications

➤ **Extensive neighborhood-level engagement** ongoing to hear residents' concerns and identify additional needs

12 5/5/2021 Interdepartmental Flooding Management Task Force

12

Public-Private Partnership to Address Flooding

City Leadership

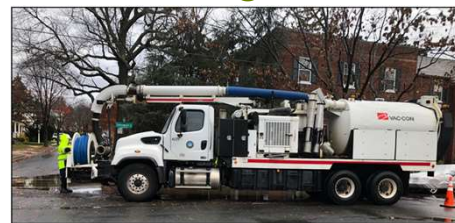
- ✓ Guidance
- ✓ Funding
- ✓ Prioritizing

City Staff

- ✓ Maintenance and Operation of the Stormwater and Sanitary Systems
- ✓ Public Works – Boots on the Ground
- ✓ Dept. of Project Implementation – Capital Improvement Program

Residents

- ✓ Help staff to understand the issues; report to Alex311
- ✓ Work on floodproofing their property
- ✓ Become involved

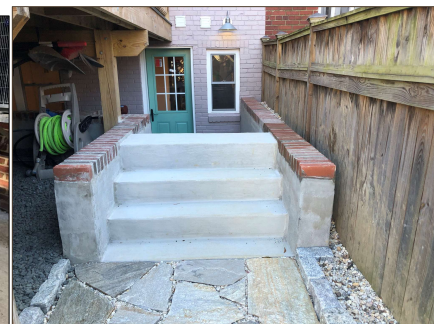
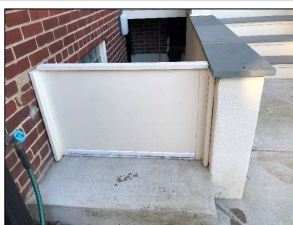
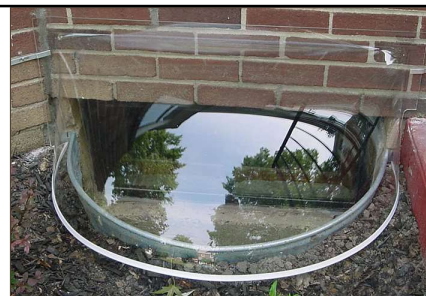


Created by The Icon Z
from Noun Project

13 5/5/2021 Partnership

13

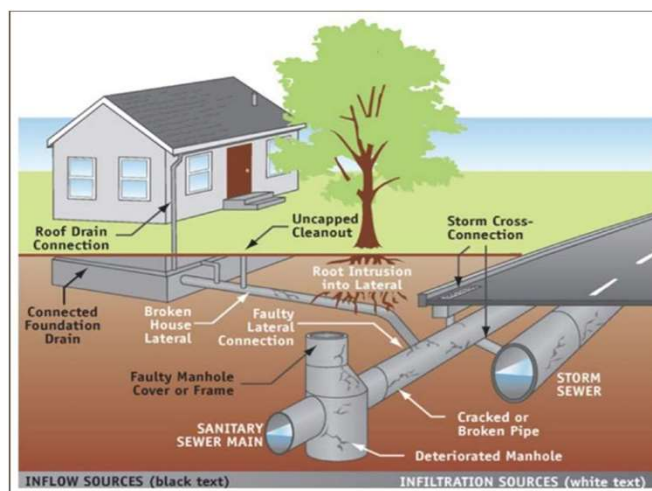
Stormwater Management
Floodproofing Grant Pilot Program
Currently Under Development



14

14

How does water enter the Sanitary System? Infiltration & Inflow (I&I)



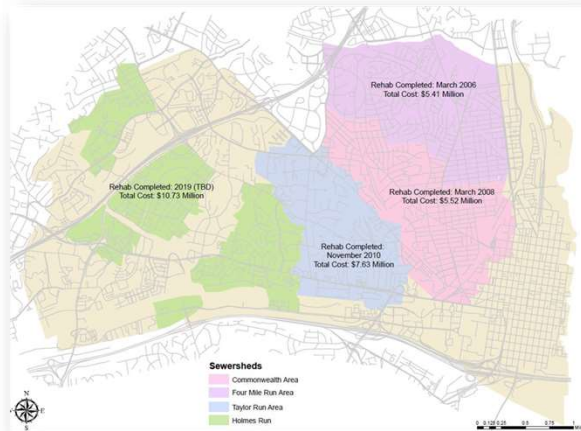
15

5/5/2021

I&I

15

Sanitary Infrastructure – Update on Sanitary Sewer Rehabilitation Program

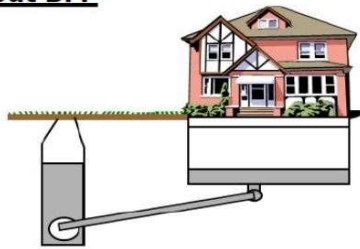


- \$33 million programmed over 10 years
- Inspections to started 2021
- Rehabilitation starting in late 2021/early 2022

16

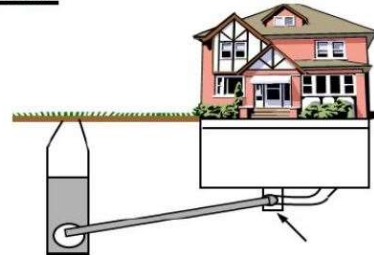
Sanitary Infrastructure Backflow Preventer Assistance Program

Without BFP



Rainfall overloads sewers – backs-up into basement

With BFP



BFP stops flow from sewer from entering basement

www.alexandriava.gov/105378

17

Stormwater Utility Fee Credits



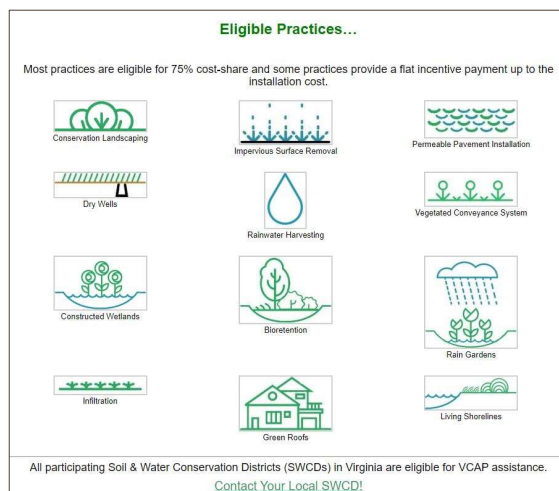
- Fee reductions for private stormwater management
- Eligibility limitations
- Documentation
- Annual application window Dec 1 – Feb 15

Credit Policy Info at alexandriava.gov/Stormwater

Design & Installation Info at alexandriava.gov/103897

18

Virginia Conservation Assistance Program – VCAP



SWCD = Soil & Water Conservation District

19

19



Contact Information

Jessica Lassetter

Senior Environmental Specialist

City of Alexandria Stormwater
Management

jessica.Lassetter@alexandriava.gov

STORMWATER RESOURCES

Stormwater & Sanitary
Sewer Management

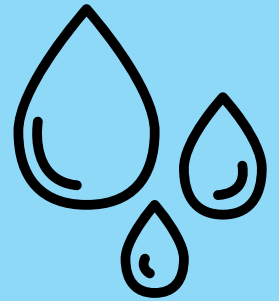
FLOODACTION

ALEXANDRIA



WHAT IS STORMWATER?

Stormwater runoff occurs when rain or snowmelt flows over hard surfaces — also called impervious surfaces — like roofs, driveways, parking lots, and streets and doesn't soak into the ground. If not managed properly, stormwater runoff can create stormwater pollution and/or flooding issues.



WHAT IS STORMWATER MANAGEMENT?

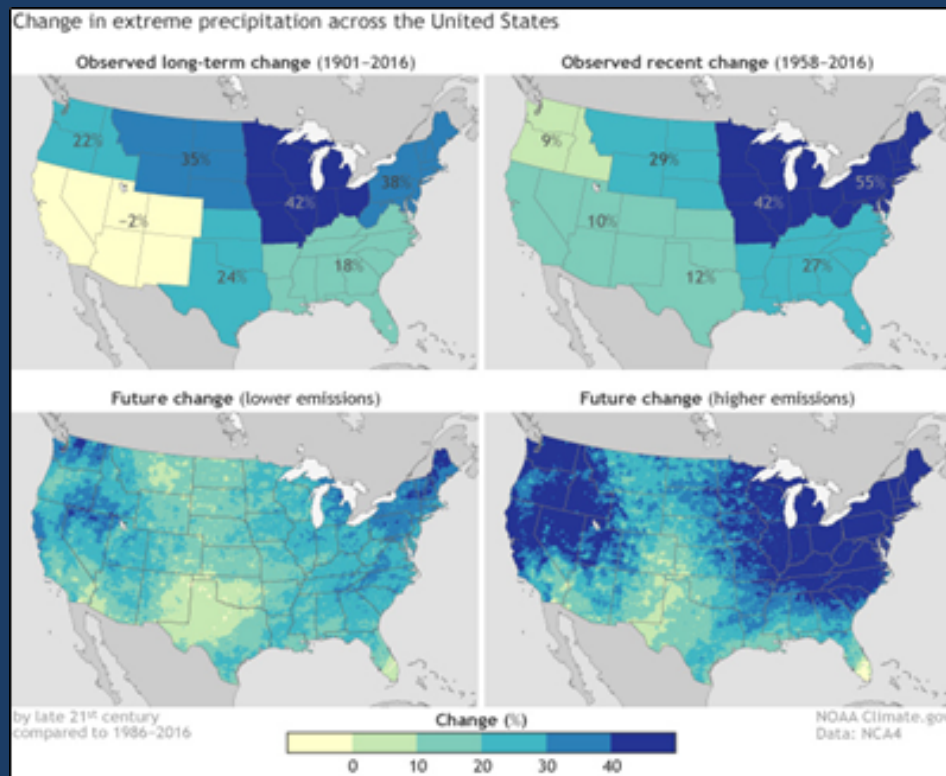
- Operate and maintain storm drain infrastructure and water quality requirements
- Maintain and enhance streams, channels, and community flood management program
- Comply with costly unfunded state and federal Bay cleanup mandates

BY THE NUMBERS

- 42% of Alexandria is impervious
- 25 miles of streams, Potomac River and Chesapeake Bay
- 210 miles of streets
- 185 miles of storm pipes
- 13,520 stormwater structures (catch basins and inlets)
- 425 Outfalls
- About 800 stormwater management systems (mix of private and public)

RESOURCES

- [Cleaning Stormwater the Green Way, A Virtual Field Trip Through Alexandria, VA](#)
- [What You Can Do to Protect Water Quality](#)
- [Stormwater Utility Fee](#)
 - Annual application window Dec 1 – Feb 15
- [Virginia Conservation Assistance Program](#)
 - Technical and financial assistance program for stormwater management such as rain gardens



Percentage of the land area of the contiguous 48 states where a much greater than normal portion of total annual precipitation has come from extreme single-day precipitation events – Source: www.epa.gov

- [Flood Action Alexandria](#)
 - Main landing page for the Flood Action initiative launched in 2020 after the City experienced 3-severe storms in 14-months causing flood damage
- [Flooding & Drainage](#)
 - Operations and maintenance
 - Spot-improvement projects & capital improvement projects
- [Flood Map](#)
 - Floodplain maps as produced by the Federal Emergency Management Agency
 - Flood insurance information & Flood Smart
- [Sanitary Infrastructure](#)
 - Implements the City's Sanitary Sewer Master Plan and is responsible for planning level engineering related to sanitary sewer capital projects throughout the City
 - Responsible for 240 miles of sanitary and combined sewer within the City.
- [Sanitary Sewer System Backflow Preventer Assistance Program](#)
 - 50% reimbursement, up to \$2,000
- [Sewer Viewer](#)
 - Take a look under the streets – this should be used for information only. Please consult with the City for up-to-date information.

**General VPDES Permit for
Small Municipal Separate Storm Sewer Systems
Permit No. VAR040057**

Year 3 Annual Report
July 1, 2020 – June 30, 2021
City of Alexandria, Virginia

Appendix B – Minimum Control Measure #2, Public Involvement and Participation

1. City's Webpage for Alex311
2. City's Webpage with MS4 Program Plan and Annual Report
3. City's Earth Day Event Planning Information
4. Chesapeake Awareness Week and Watershed Cleanup eNews
5. City's Webpage for the One Water Partnership and Water Discovery Days 2020
EventBrite and Overview



COVID-19 Information & Updates

Updated 5:04 p.m. Fri, July 2

Alex311 — Connecting You to City Services

Connect with professional and knowledgeable staff for City service and information requests from every City department.

Page updated on Feb 17, 2021 at 7:52 PM



ON THIS PAGE

- [Connecting You to City Services](#)
- [Frequent Service Requests](#)
- [Hotlines](#)
- [Alex311 Features](#)
- [Customer Service Commitment](#)



Connecting You to City Services

Alex311 is the City of Alexandria's customer service initiative to connect our customers to more than 175 City services in a variety of convenient ways. Connect with Alex311 online, through the mobile app, on Facebook and Twitter, by phone, or in person.

For immediate police, fire or emergency medical assistance, call or text 911.

For non-emergency requests requiring police response (such as animal control, motor vehicle crashes without injuries, parking and noise complaints, lost or found property, or crimes that occurred in the past), call [703.746.4444](tel:703.746.4444). Additional crisis hotlines are listed below.

- [Disclaimer](#)

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Alex311 Website

Use the Alex311 website to submit and track requests. For information about an open online service request ticket, call 311 or 703.746.4311.



Alex311 Mobile App

Install the Alex311 mobile app to submit and track requests on the go.



Twitter

Submit requests by tweeting or direct messaging us at [@AlexandriaVA311](#).



Facebook

Submit requests by commenting or sending a Facebook message at [@AlexandriaVA311](#).

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Call 311 or [703.746.4311](#)

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Voicemail available after hours



In Person

Submit requests in person at any City government location.

Alex311 — Connecting You to City Services



Frequent Service Requests



[Missed Collection](#)

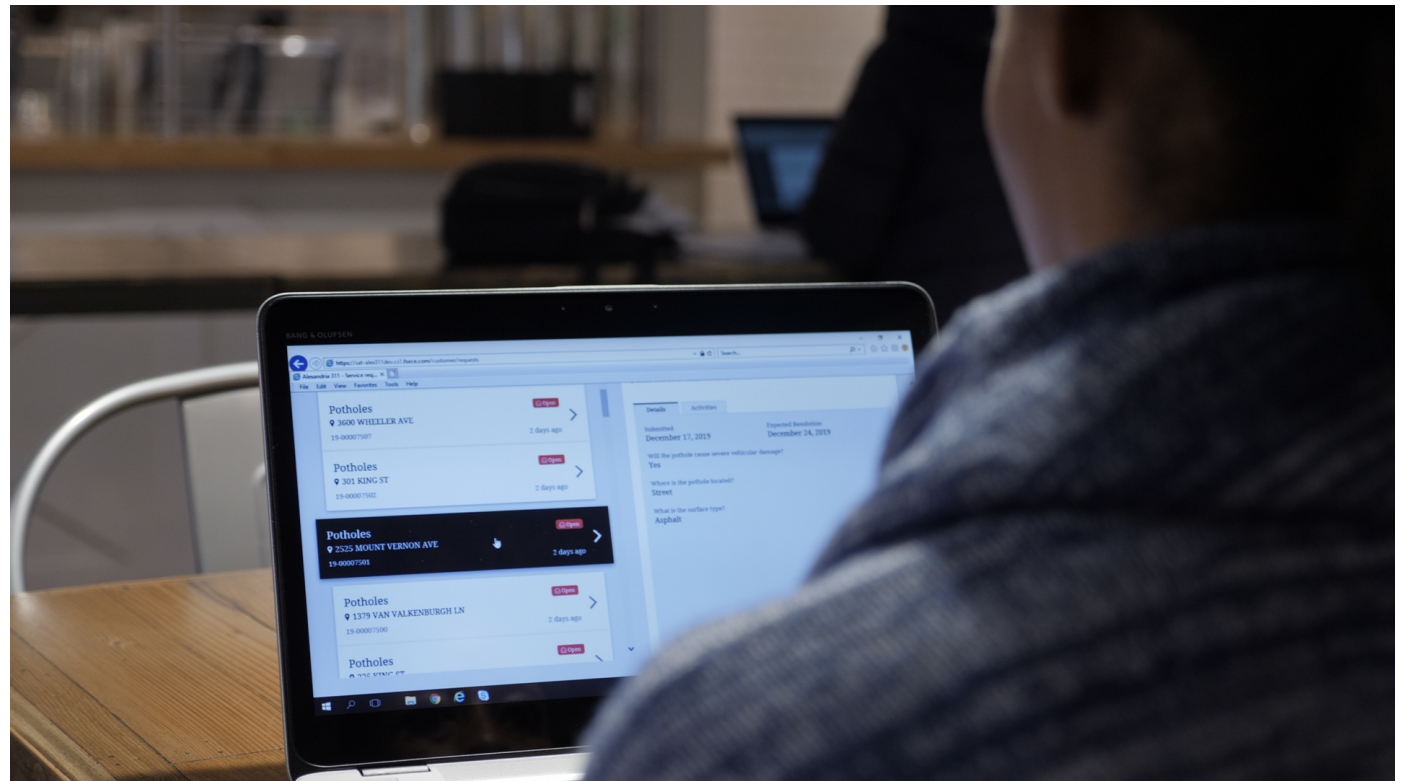
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Hotlines

In Crisis? Call us now. 24 hours a day:

- Emergency Mental Health Services
[703.746.3401](tel:703.746.3401)
- Substance Abuse Residential Treatment / Substance Abuse Services
[703.746.3636](tel:703.746.3636)
- Sexual Assault
[703.683.7273](tel:703.683.7273)

- Domestic Violence
[703.746.4911](tel:703.746.4911)
 - Child Protective Services
[703.746.5800](tel:703.746.5800) or State: [1.800.552.7096](tel:1.800.552.7096)
 - Adult Protective Services
[703.746.5778](tel:703.746.5778)
-
-



Alex311 Features

- Access to more than 175 City services and information.
 - Professional and knowledgeable staff who provide efficient and accurate resolutions to all requests.
 - Convenient options to connect: website, mobile app, Facebook, Twitter, phone, in-person.
 - Ability to attach photos and specify the location of a service request online and through the mobile app.
 - Emailed updates about your request including a summary of the details, an expected response date and a number to track progress on the mobile app or website.
 - An opportunity to provide feedback about your experience with Alex311.
-



Customer Service Commitment

With each interaction, we commit to being professional, accountable, responsive and courteous.

- **Professional:** delivering competent and high-quality service even under pressure
- **Accountable:** providing accurate and reliable information, keeping customers informed and honoring our service commitments
- **Responsive:** prioritizing work appropriately and working efficiently to get it right the first time
- **Courteous:** communicating in a respectful and productive manner

Disclaimer

Information provided to the City may be subject to public release under the Virginia Freedom of Information Act or other laws. Alex311 should not be used to submit sensitive information, such as social security numbers, financial account identifiers, or health information. To request copies of public records, use the [online records request form](#). To report government waste, fraud or abuse, please visit alexandriava.gov/InternalAudit. Please review our [Privacy and Legal Notices](#).

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Updated 5:04 p.m. Fri, July 2

Municipal Separate Storm Sewer System (MS4) Permit

Alexandria's Municipal Separate Storm Sewer System (MS4) permit requires the City to prevent the discharge of pollutants into our streams and waterbodies.

Page updated on Oct 30, 2020 at 10:29 AM



ON THIS PAGE

- [About Stormwater Management](#)
- [Controlling Stormwater Pollution](#)
- [Municipal Separate Storm Sewer System](#)

About Stormwater Management

The City has long been proactive in its efforts to control stormwater pollution. During the development of Alexandria's Stormwater Management Plan, the City engaged in an extensive assessment of existing stormwater management options, ordinances, and programming and evaluated them against National Pollutant



[\(MS4\) Program](#)


RELATED CONTENT

- [Stormwater Management](#)
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- [Stream Restoration](#)
- [Total Maximum Daily Loads \(TMDLs\)](#)
- [Urban Streams: Enjoying Our Stream Safely](#)

Discharge Elimination System (NPDES) compliance requirements. The City has incorporated these elements into its current stormwater management program.

Controlling Stormwater Pollution

Alexandria has been pro-active in controlling pollution in stormwater runoff for many years. The City's Soil Erosion and Sediment Control Ordinance actually predates Virginia law and regulations.

[Article XIII of the City Zoning Ordinance](#)  contains the provisions of both the Virginia Chesapeake Bay Preservation Act and the Virginia Stormwater Management Act, making the City's developer best management practices (BMP)* program one of the most rigorous ones in the state. Over 1,000 acres of the City have been placed under developer-constructed BMP control since the ordinance was passed in 1992.

Alexandria has also taken the lead in Northern Virginia in the development and employment of BMPs, which meet the needs of the "Ultra-Urban Environment" (a term that was coined by our staff in 1991). For several years, the City's Alexandria Supplement to the Northern Virginia BMP Handbook was the only reference available on treating stormwater pollution in heavily built-up areas, and the City has sold hundreds of copies to jurisdictions all over the U.S. and as far distant as Australia and New Zealand. Of the over 535 BMPs installed within the City, most are either intermittent sand filters or bioretention filters. New state regulations for development require design to meet state criteria.

Working with information provided by the U.S. Environmental Protection Agency, City staff has also published a Best Management Practices Manual for Automotive Related Industries. Compliance with the manual is required of all such businesses that require a Special Use Permit (SUP) by placing appropriate conditions on their SUPs.

** A term used to describe measures to prevent or remove pollution from stormwater runoff. Facilities to remove pollution from runoff, such as wet ponds, detention facilities, infiltration*

- [Virginia Stormwater Management Program \(VSMP\)](#)

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facilities, sand filters, and "bioretention facilities" are known as "structural BMPs."

Municipal Separate Storm Sewer System (MS4) Program

The federal Clean Water Act of 1970 outlines the NPDES stormwater requirements which are implemented by the Commonwealth of Virginia through the Virginia Pollution Discharge Elimination System (VPDES). The City of Alexandria operates under a VPDES permit associated with the underground stormwater conveyance system which is known as our Municipal Separate Storm Sewer System (MS4) permit.

City's Stormwater Program Recognized by Water Environment Federation

The City of Alexandria's Phase II MS4 Program is recognized by the Water Environment Federation's (WEF) National Municipal Stormwater and Green Infrastructure Awards Program. The City's MS4 Program is featured in the September 2020 [Stormwater Report](#) and the Spring 2019 edition of [Stormwater Management](#) magazine. Visit [WEF's MS4 Awards](#) for more information on the awards program.

2020 Recognitions

Phase II Program Management Winner

Silver recognition for Innovation

Gold recognition for Program Management

2019 Recognitions

Phase II Overall Winner

Silver recognition for Innovation

Gold recognition for Program Management

2018 Recognitions

Phase II Winner in Innovation and Overall Highest Score

Silver recognition for Innovation

Gold recognition for Program Management

2017 Recognitions

Phase II Winner in Program Management

Gold recognition for Innovation

Gold recognition for Program Management


2015 Recognitions

Phase II Winner for Innovation

Gold recognition for Program Management




Gold recognition for Innovation

MS4 General Permit and Stormwater Program Plan



Per the [Municipal Separate Storm Sewer System \(MS4\) General Permit and Coverage Letter](#)  effective November 2018 - October 2023 issued under the Virginia Pollution Discharge Elimination System (VPDES) regulations, the City is required to control stormwater pollution to the maximum extent practicable and to develop a MS4 Program Plan. Under previous permit cycles, the City's initial plan was developed in 2003 and was revised in 2008, 2013, 2019, and 2020. The permit contains Six Minimum Control Measures (MCMs):

- MCM 1: Public Education and Outreach
- MCM 2: Public Involvement and Participation
- MCM 3: Illicit Discharge Detection and Elimination
- MCM 4: Construction Site Stormwater Runoff Control

- MCM 5: Post-Construction Stormwater Management for New Development and Development on Prior Developed Lands
- MCM 6: Pollution Prevention and Good Housekeeping for Facilities Owned or Operated by the Permittee within the MS4

The City has developed appropriate and effective Best Management Practices (BMPs) to control stormwater pollution to the maximum extent practicable. The 2018-2023 [MS4 Program Plan \(main body\)](#)  [Appendices A to C](#)  [Appendices D to H](#)  details how the City is addressing the special condition related to the [Chesapeake Bay requirements](#) and the MCMs, with an overview provided below. If you would like to provide input on the MS4 Program Plan or have questions related to the plan, please email MS4ProgramPlan@alexandriava.gov.










Local TMDL Action Plans

As required under the MS4 permit, the City updated the local TMDL action plans for [bacteria](#)  and [PCBs](#)  in 2020. These updates are incorporated into the 2018-2023 MS4 Program Plan, above. Please see the [City's TMDL webpage](#) for more information on TMDLs.

MS4 Annual Reports

Under the MS4 permit regulations, the City is required to submit an annual report to the Virginia Department of Environmental Quality (DEQ). The report provides details of the pollution control measures the City performs as part of the MS4 Program to meet or exceed the control measures (MCMs) of the MS4 permit. The City is required to keep all annual reports online for the current permit.

The following annual report covers the July 1, 2019 to June 30, 2020 reporting period.

[Alexandria MS4 Annual Report 2019-2020](#)  and [Appendix A Part I](#) , [Appendix A Part II](#) , [Appendix B](#) , [Appendix C](#) , [Appendix D](#) , [Appendix E](#) , [Appendix F](#) , [Appendix G](#) 

The following annual report covers the July 1, 2018 to June 30, 2019 reporting period.

[Alexandria MS4 Annual Report 2018-2019](#) 

The following annual report covers the July 1, 2017 to June 30, 2018 reporting period.

[Alexandria MS4 PY5 Annual Report 2017-2018](#) 

The following annual report covers the July 1, 2016 to June 30, 2017 reporting period.

[Alexandria MS4 PY4 Annual Report 2016-2017](#) 

The following annual report covers the July 1, 2015 to June 30, 2016 reporting period.

[Alexandria MS4 PY3 Annual Report 2015-2016](#) 

The following annual report covers the July 1, 2014 to June 30, 2015 reporting period.

[Alexandria MS4 PY2 Annual Report 2014-2015](#) 

The following annual report covers the July 1, 2013 to June 30, 2014 reporting period .

[Alexandria MS4 PY1 Annual Report Main Body](#) 

[Alexandria MS4 PY1 Annual Report AppendixA](#) 

[Alexandria MS4 PY1 Annual Report AppendixB](#) 

[Alexandria MS4 PY1 Annual Report AppendixC](#) 

[Alexandria MS4 PY1 Annual Report AppendixD](#) 

[Alexandria MS4 PY1 Annual Report AppendixE](#) 

[Alexandria MS4 PY1 Annual Report AppendixF](#) 

Public Education and Outreach

The City strives to educate and inform the public on the importance of our local waterways, watersheds, and stormwater related issues.

Signs have been placed throughout the City along roadways at major stream crossings to inform the public on the names of local streams and their associated watershed. A bilingual “no dumping” message is included on [Storm Drain Markers](#) placed on inlets and storm drains throughout the City to prevent the dumping of trash, oil, dog waste, etc. into the drain.



City staff is available for presentations and other educational outreach opportunities for community groups, school age children, and adults. If you are interested in stormwater education and outreach opportunities call the Stormwater Management Division at 703.746.6499.

Public Involvement and Participation

You can make a difference in the health of local streams and waterways by reducing pollution, getting involved in local events, and reporting pollution problems or concerns. Stormwater flows into our streams with little or no treatment to remove pollutants. Therefore, pollution prevention is critical to the health of our streams. There are [simple steps you can take](#) around your home or business that will have a positive impact on the health of the waterways in Alexandria.

Your involvement is the key to a successful stormwater management program. There are many ways citizens can get involved:

- Dispose of waste properly at the [Household Hazardous Waste & Electronics Collection Center](#)
- Participate in (or organize your own!) stream cleanups (sign up for [Environmental News](#) for the latest events)
- Participate in [Earth Day](#)

- Attend [Environmental Policy Commission Meetings](#)
- Participate in the [Yard Waste Recycling Program](#)
 - Curbside Lead Collection
 - Composting
 - Grasscycling
 - Christmas Tree Collection
 - Spring Leaf & Wood Mulch Program
- Visit the [Eco-City Alexandria webpage](#) for upcoming events

If you have questions or comments, please contact the Stormwater Management Division at 703-746-6499.

Illicit Discharge Detection and Elimination

Because the storm sewer system is not treated, only stormwater is allowed in the storm sewer system. An illicit (also called illegal) discharge is any discharge to the storm sewer system that is not entirely stormwater. There are some exceptions, like groundwater, that are allowed under the MS4 permit.



Non-stormwater discharges to the storm sewer system are usually due to illegal dumping or illegal connections to the storm sewer system. Please visit the [illegal discharges](#) page to learn more about our streams and what you can do to help.

If you have any concerns about illicit or illegal discharges originating from improper disposal of items, spills, land disturbing activities, or other potential stormwater pollution concerns, or if you suspect a problem or notice something suspicious (water that is an unusual color, is cloudy,



and/or has a strong smell) please contact the Stormwater Management Division at 703-746-6499 or use [Contact Us](#) to submit your concern.

Construction Site Stormwater Runoff Control

Controlling sediment and debris at construction sites is crucial to protecting the environment, mitigating flooding by keeping this material out of our streams and the storm drain system, and ensuring safer travel by keeping mud out of the streets.



The City's efforts to control stormwater runoff from construction sites are derived from the State's Erosion & Sediment Control Program and Chesapeake Bay Preservation Act. The City requires any construction project that disturbs 2,500 square feet or more to have an Erosion and Sediment Control Plan. Additionally, the Virginia Department of Environmental Quality (DEQ) and the City Stormwater Management Program (VSMP) requires the project to have a Stormwater Pollution Prevention Plan (SWPPP) related to the General Permit for Discharges from Construction Activities. Once the SWPPP is prepared, a registration statement for coverage under the VSMP Construction General Permit must be submitted to the City. The links below can help get you started:

- [City of Alexandria Permit Center](#)
- [City of Alexandria Transportation & Environmental Services Department Permits](#)
- [DEQ Construction General Permit](#)
- [Chesapeake Bay Preservation Act](#)
- [City of Alexandria Environmental Management Ordinance](#) 
- [City of Alexandria Erosion and Sediment Control Ordinance](#) 
- [Virginia Stormwater Management Program \(VSMP\)](#)

- Have you seen erosion or other pollutants discharging from a construction site? Report it [online](#)

For more information on Erosion and Sediment Control at construction sites, contact the [Construction and Inspection Division](#) at 703-746-4035.




Post-Construction Stormwater Management Regulations




Post-construction runoff control is required in areas that are part of the development or redevelopment process. The City has long required that development and redevelopment projects implement stormwater facility Best Management Practices (BMPs) to minimize the pollutants and runoff to the City's streams.



Ongoing maintenance of BMPs is required to ensure that they continue to function as designed. Failure to properly maintain BMPs can result in fines of up to \$32,500 per day per violation. After a development is complete, the responsibility for maintenance is passed on to the owners of the development, such as a homeowners association, through the BMP Maintenance agreement. It is very important that property owners understand their obligations for the maintenance and inspection of BMPs.

The City can help BMP owners / operators understand their maintenance obligations and can provide technical guidance for inspecting and maintaining BMPs. The links below can help get you started:

- Alexandria Supplement to Northern VA BMP Handbook
 - [Chapter 1](#) 
 - [Chapter 2](#) 
 - [Chapter 3](#) 

- [Chapter 4](#) 
- [Glossary](#) 
- [Virginia Stormwater BMP Clearinghouse](#)
- [Northern Virginia BMP Handbook](#)
- [Stormwater Management / BMP Facilities Operation and Maintenance Agreement](#)
- [Stormwater Management / BMP Maintenance Schedule and Guidelines](#)
- [BMP Contractor Vendor List](#) 

For more information, contact the Stormwater Management Division at 703-746-6499.

Pollution Prevention for Municipal Activities

The City also evaluates its own operations to minimize stormwater pollution and protect water quality. This includes performing assessments of City facilities and providing pollution prevention and good housekeeping training for relevant City employees to ensure good practices are used on City construction and maintenance projects. In addition, the City requires contractors working for the City to implement pollution prevention and good housekeeping measures on City projects. The City has developed Stormwater Pollution Prevention Plans (SWPPP) for its Transportation and Environmental Services operations facilities.

For more information, contact the Stormwater Management Division at 703-746-6499.



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Updated 5:04 p.m. Fri, July 2

Alexandria Earth Day

The theme for Alexandria Earth Day 2021 is Restore Our Earth!

Page updated on Apr 22, 2021 at 11:44 AM



RELATED CONTENT

- [Recreation, Parks & Cultural Activities](#)
- [Alexandria Earth Day](#)
- [Restore Our Air Quality](#)
- [Restore Our Water](#)

Alexandria Earth Day 2021: Restore Our Earth

The theme for Alexandria Earth Day 2021 is Restore Our Earth. As part of this year's Earth Day celebration, the City of Alexandria and AlexRenew created a special collection of resources and information designed to educate, inform, and bring attention to actions all Alexandrians may adopt to have a more environmentally



- [Restore Our Land](#)
- [Ellen Pickering Environmental Excellence Award](#)
- [Restore Our Climate](#)
- [Earth Day Photo Gallery](#)
- [Things To Do Later](#)

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friendly lifestyle. Learn more about how you can help restore our water, land, climate, and air quality.



Restore Our Water

Alexandria is located on the Potomac River within the Chesapeake Bay watershed. The Chesapeake Bay is an estuary, a body of water formed where freshwater from rivers and streams flows into the ocean, mixing with sea water. When we speak of restoring our water or “Saving the Bay” we mean restoring the 50 major rivers and streams that pour into the bay each day, including the creeks; Cameron, Backlick, Four Mile and Holmes Run that pass through Alexandria feeding those rivers and streams. Each one of us can contribute by better understanding our role within our watershed.



Restore Our Land

Restoring our land includes both cleaning up and rehabilitating a site that has sustained degradation. The degradation may have taken place through simple human impacts such as littering or more long term degradation caused by unmanaged waste disposal. As citizens we can help to restore land to its natural state through preventative and active measures. Preventative measures include

managing the wastes we generate and dispose. Active measures include restoring neglected land areas to become suitable for planting trees, native ornamental, and vegetable plant gardens.



Restore Our Climate

Did you know that climate can affect nearly every aspect of our lives? Where we live, what we eat, what we wear, what wildlife and native plant species live within our City and how we travel; just to name a few.



Restore Our Air Quality

Over the past year during COVID-19 restrictions in the Metropolitan Washington DC area, reduced vehicle traffic, increased teleworking, and a decrease in energy consumption overall were key to reducing certain air quality pollutant emissions. These emission reductions led to improved air quality. Local metro DC departments of transportation reported 50 percent reductions in traffic. With office and business closures, the regional electricity demand dropped too. With the region lifting many activity restrictions, let's examine some of our recent behavior that contribute to restoring our air quality.



Earth Day Student Artwork

In celebration of the 51st Earth Day, the City of Alexandria and AlexRenew partnered with Alexandria City Public Schools (ACPS) to showcase student artwork. Thank you to the ACPS students, teachers, and parents who made this art exhibit possible!



Things To Do Later

After Earth Day explore the many environmental opportunities and resources available within the City of Alexandria.



Earth Day Photo Gallery

Photos from past Alexandria Earth Day events and activities.



Ellen Pickering Environmental Excellence Award

The Ellen Pickering Environmental Excellence Award honors and recognizes Alexandrians who demonstrate a commitment to protecting the natural environment and keeping the City green.

Earth Day Contact Information

For general inquiries on Alexandria Earth Day, please contact Lisa Goldberg, Committee Chair at lisa.goldberg@alexandriava.gov.



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From: Alexandria eNews <noreply@everbridge.net>
Sent: Thursday, May 27, 2021 11:27 AM
To: Jessica Lassetter
Subject: Join Us In Observing Chesapeake Bay Awareness Week and Clean the Bay Day

Categories: MS4 Work

Join Us In Observing Chesapeake Bay Awareness Week and Clean the Bay Day

You Can Help Protect the Bay!

On **Saturday, June 5**, the Department of Transportation and Environmental Services invites the community to participate in the Chesapeake Bay Foundation's 33rd annual Clean the Bay Day, which will serve as the City's Chesapeake Bay Awareness Week kickoff event. The cleanup will be held rain-or-shine from **9:00 a.m. - 11:00 a.m. at Oronoco Bay Park located at 100 Madison St.** To sign up for the event on June 5th, visit the [Chesapeake Bay Foundation webpage](#) and click the button that says "Join Gavin's Team" (registration is encouraged, but not required). For this type of event, it is recommended that you bring your own gloves and water/snacks as well as sun protection and monitor the latest COVID-19 guidance provided by the City.

During the City Council Legislative meeting on May 25, 2021, Councilwoman Jackson read the proclamation recognizing **June 5 - 13, 2021, as Chesapeake Bay Awareness week**. Participating in Chesapeake Bay watershed cleanup events is just one of the many things you can do to increase awareness of the importance of the Bay this week and throughout the year.

Here are some additional actions you can take to help protect the Chesapeake Bay:

- [Test your soil](#) using a soil kit from Virginia Cooperative Extension. Know how much fertilizer to use and don't over fertilize. Or better yet, don't fertilize at all if it isn't necessary! Never fertilize or use pesticides if it is going to rain within 24 hours. Fertilizers and pesticides can end up in streams and harm aquatic life.
- Do not discharge pool water into storm drains. Chlorinated water can harm aquatic life and wildlife resources. It is important to follow property swimming pool water discharge guidelines and understand where your discharge water is going. If you suspect contamination in our City's waterways, please contact [Alex311](#).
- Plant a tree. Trees use nutrients and can prevent those nutrients from entering our streams. Their roots also hold the soil in place, which helps prevent erosion. Please consider planting a tree this fall due to the [emergence of the Brood X Cicadas](#).
- Landscape your yard using plants that are native to Alexandria. These plants are adapted to local conditions and, if planted in the right place, need less water and other care. Native plants also support butterflies, birds, bees, and other pollinators. Need ideas of what native plants are right for your yard? Visit www.plantnovanatives.org to learn more.
- Use a rain barrel to capture roof runoff during storms and use that water to water the plants in your yard. Please visit the City's [rain barrel page](#) to learn more about rain barrels.
- Build a rain garden to help capture runoff and help filter out pollutants, like sediment and nutrients. Using native plants in your rain garden helps provide food and shelter for butterflies, bees, and birds.
- Pick up after your dog. Pet waste left on the ground gets washed into storm drains or streams by rain. Remember to place the bagged waste in a trash can.

- Keep our City litter free. Any litter you drop in the street, on the sidewalk, or in a park will likely end up in a local stream and eventually the Chesapeake Bay. Besides looking bad, it harms the environment and wildlife.
- Educate your family, friends, and neighbors about the importance of protecting our local water resources, the Potomac River, and the Chesapeake Bay.

Please visit www.alexandriava.gov/CleanWaterways to find out more about what the City is doing to help protect the Chesapeake Bay.

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! COVID-19 Information & Updates

Updated 5:04 p.m. Fri, July 2

One Water Partnership

One Water Alexandria is a partnership between the three water entities that serve the City of Alexandria: Virginia American Water, the City of Alexandria, and AlexRenew.

Page updated on Sep 8, 2021 at 9:23 AM



RELATED CONTENT

- [Stormwater Management](#)
- [Chesapeake Bay](#)
- [Sanitary Infrastructure](#)
- [Stormwater Utility Fee Information](#)

Watch the One Water Video [here!](#)

Initiated in 2018, One Water Alexandria is a partnership between the three water entities that serve the City of Alexandria: [Virginia American Water](#), who provides drinking water; the City of Alexandria, who owns the sanitary and storm sewer infrastructure; and [Alexandria Renew Enterprises](#) (AlexRenew), who owns the water resource recovery facility, interceptors, pump stations, and combined sewer outfalls. [RiverRenew](#) is the program owned and implemented by



- [Rain Barrels and Water Harvesting](#)
- [Resource Protection Areas \(RPAs\)](#)
- [Stream Restoration](#)
- [Total Maximum Daily Loads \(TMDLs\)](#)
- [Urban Streams: Enjoying Our Stream Safely](#)
- [Virginia Stormwater Managment Program \(VSMP\)](#)

AlexRenew, with support from the City of Alexandria, to reduce combined sewer system overflows in Old Town, Alexandria.

Water Discovery Days 2021

Alexandria's three water system partners – the City of Alexandria, AlexRenew and Virginia American Water – will host the fifth annual Water Discovery Days from September 26 through October 2. This free event will commence with a [Kayak Clean-Up in partnership with Four Mile Run Conservatory Foundation](#) on September 26, include virtual educational sessions and activities posted [online](#), a [Blood Drive](#) on October 1, and a self-guided bike tour of Alexandria's unique water features on October 2. This is a great opportunity for residents and families to learn how the Alexandria water system works and how to support clean water and waterways in our community.


Water Discovery Days 2020

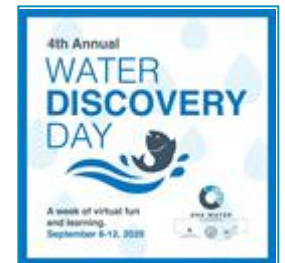
In September 2020, the One Water partnership celebrated Water Discovery Day by hosting a week-long virtual event which included several educational videos related to water resources in the City of Alexandria. Links to YouTube videos and descriptions are provided below.

[Water Discovery Days: Virtual Bike Ride \(Run time 6:57\)](#)

Check out local water features and waterways!

[Water Discovery Days: City of Alexandria Stormwater Management Division - The Scientific Method and Water Absorption \(Run time 6:17\)](#)

Use household materials to test how absorbent each is. Click [here](#)  to download the list of materials and instructions.



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[Water Discovery Days: Urban Alliance - Pump Station Demonstration \(Run time 3:57\)](#)

Use household materials to create a model of how water moves in a pressure system works, like a pump station.

[Water Discovery Days: Virginia American Water - The Amazing Journey of Water \(Run time 1:57\)](#)

Make a fun water cycle bracelet with beads and a pipe cleaner.

[Water Discovery Days: Four Mile Run Conservatory Foundation - Tracing Hume Spring \(Run time 8:50\)](#)

Explore Alexandria by foot and trace Hume Spring until it meets Four Mile Run.

[Water Discovery Days: Master Gardeners of Northern Virginia - Small Trees Make Big Canopies \(Run time 4:12\)](#)

Master Gardeners describe their efforts to plant native saplings all around our community so we can restore our region's tree canopy. Click [here](#) to sign up for a free tree!



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This event has ended.

Sales Ended



Date and time

Sun, Sep 6, 2020, 9:00 AM –
Sat, Sep 12, 2020, 12:00 PM EDT

[Add to calendar](#)



Location

Online event



Join One Water Alexandria to improve your water knowledge, through a week of activities and fun virtual learning!

About this event

Join Alexandria Renew Enterprises, the City of Alexandria, and Virginia American Water, for a week of exciting community events! Sign-up to get to

know your H2O and meet Alexandria's One Water Team. Learn how we work together to deliver essential services to Alexandria while you explore, learn and create!



Weekly Activity Schedule Includes:

- **Sunday, September 6:** Begin your water journey and learn about our local waterways with our self-guided bike tour!
- **Monday, September 7:** The City of Alexandria will be showcasing their Nature's Water Filter activity, learn how nature naturally drains water on different surfaces!
- **Tuesday, September 8:** AlexRenew will be showcasing how to create your own pump station at home and how gravity aids in helping wastewater get treated!
- **Wednesday, September 9:** Virginia American Water will be teaching you about the Water Cycle, how it works and how to make a bracelet that represents the water cycle!
- **Thursday, September 10:** Meet some of our partners and learn about the importance of keeping our local waterways clean and safe.
- **Friday, September 11:** Meet Sto Len, Alexandria's Artist in Residence! Join Sto in a virtual art experience to help you connect with water while indulging your creative side. Please note that that this is an add-on item.

If you are interested in participating add this on when you place your ticket order.

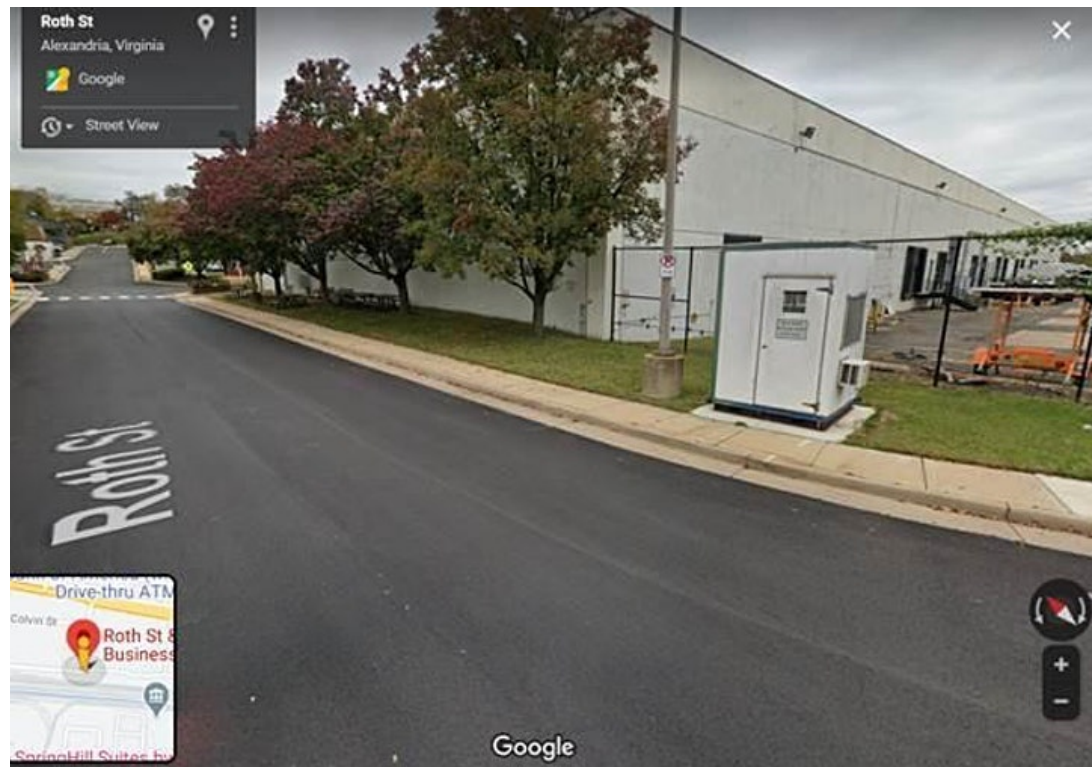
- **Saturday, September 12:** Today is a day of action! Support the health of the Potomac and our local waterways by participating in the Potomac Riverkeeper's watershed clean-up at National Harbor! Sign-in starts at 8:30. [Click here for more information and to register.](#)

The contactless bag pick-up will take place on Thursday, September 3 from noon until 7 p.m. at the Business Center Drive Self-Serve Kiosk Shed. The kiosk shed is located at Business Center Drive and Roth Street, please use 2900 Business Center Drive for GPS for direction. This pick-up is for attendees who DID NOT register for Sto Len's art workshop on Friday, September 11, this is General Admission ONLY.

If you added his workshop please check your email for further pick-up instructions.

If you have any questions regarding bag pick-up on Thursday, September 3, please reach out to Jessica Lassetter at jessica.lassetter@alexandriava.gov.

Photo of kiosk shed is below for reference





Tags

Online Events

Online Classes

Online Science & Tech Classes

#science

#educational

#stem

#learning

#workforce

#water

#drinking_water

#wastewater

#waterways

#utility

Date and time

Sun, Sep 6, 2020, 9:00 AM -

Sat, Sep 12, 2020, 12:00 PM EDT

[Add to calendar](#)

Location

Online event

[Alexandria Renew Enterprises](#)

Organizer of Water Discovery Days 2020

Alexandria Renew Enterprises (AlexRenew) is an advanced water resource recovery facility serving more than 300,000 customers in Alexandria and Fairfax, Virginia. Established by the Alexandria City Council in 1952, AlexRenew is a public utility that transforms 13 billion gallons of wastewater into clean water every year to protect public health and the environment. By transforming water and improving local waterways, AlexRenew helps support a higher quality of life and thriving local economy. For more information, please visit www.alexrenew.com.

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Water Discovery Days 2020 Statistic Summary

Eventbrite Page for Tickets and Event Details

- 661 total views
- 49 General Admission Tickets
- 19 Sto Len Art Workshop Tickets

Weekly Social Media Stats

Sunday, September 6: Virtual Bike Ride

- 1,928 Reached
- 109 Engagements
- 2 Shares
- 7 Likes

Monday, September 7: Rain Filter Activity (City)

- 473 Reached
- 19 Engagements
- 2 Shares
- 2 Likes
- 2 Retweets

Tuesday, September 8: Pump Station Activity (AlexRenew)

- 234 Reached
- 9 Engagements
- 1 Share
- 2 Likes
- 2 Retweets

Wednesday, September 9: Water Cycle Bracelet (VAW)

- 624 Reached
- 79 Engagements
- 3 Shares
- 8 Likes
- 3 Retweets

Thursday, September 10: Partner Video (4MR)

- 932 Reached
- 72 Engagements
- 5 Shares
- 1 Like
- 1 Retweet

Thursday, September 10: Partner Video with Seed Giveway (VA Cooperative)

- 213 Reached
- 4 Engaged
- 0 Shares
- 1 Like
- 1 Retweet

Friday, September 11: Sto Len's Art Event Live Zoom Meeting

- 19 Signed-up, 12 Attended (this was a private Zoom so only attendees had link and limited amount of spaces)

Saturday, September 12: Potomac Riverkeepers River Clean-up

- 59 Reached
- 0 Engaged
- 0 Shares
- 0 Likes

Emails received from registrants:

Just wanted to let you know that our family loved the Sto Len workshop. It was a great break for all of us from Disney+ movies – our normal Friday night thing. – Rich Voigt

Thank you so VERY MUCH for accommodating my pick-up time, it has been a very well organized and planned event! – Patricia Caucie

**General VPDES Permit for
Small Municipal Separate Storm Sewer Systems
Permit No. VAR040057**

Year 3 Annual Report
July 1, 2020 – June 30, 2021
City of Alexandria, Virginia

Appendix C – Minimum Control Measure #3, Illegal Discharge Detection and Elimination

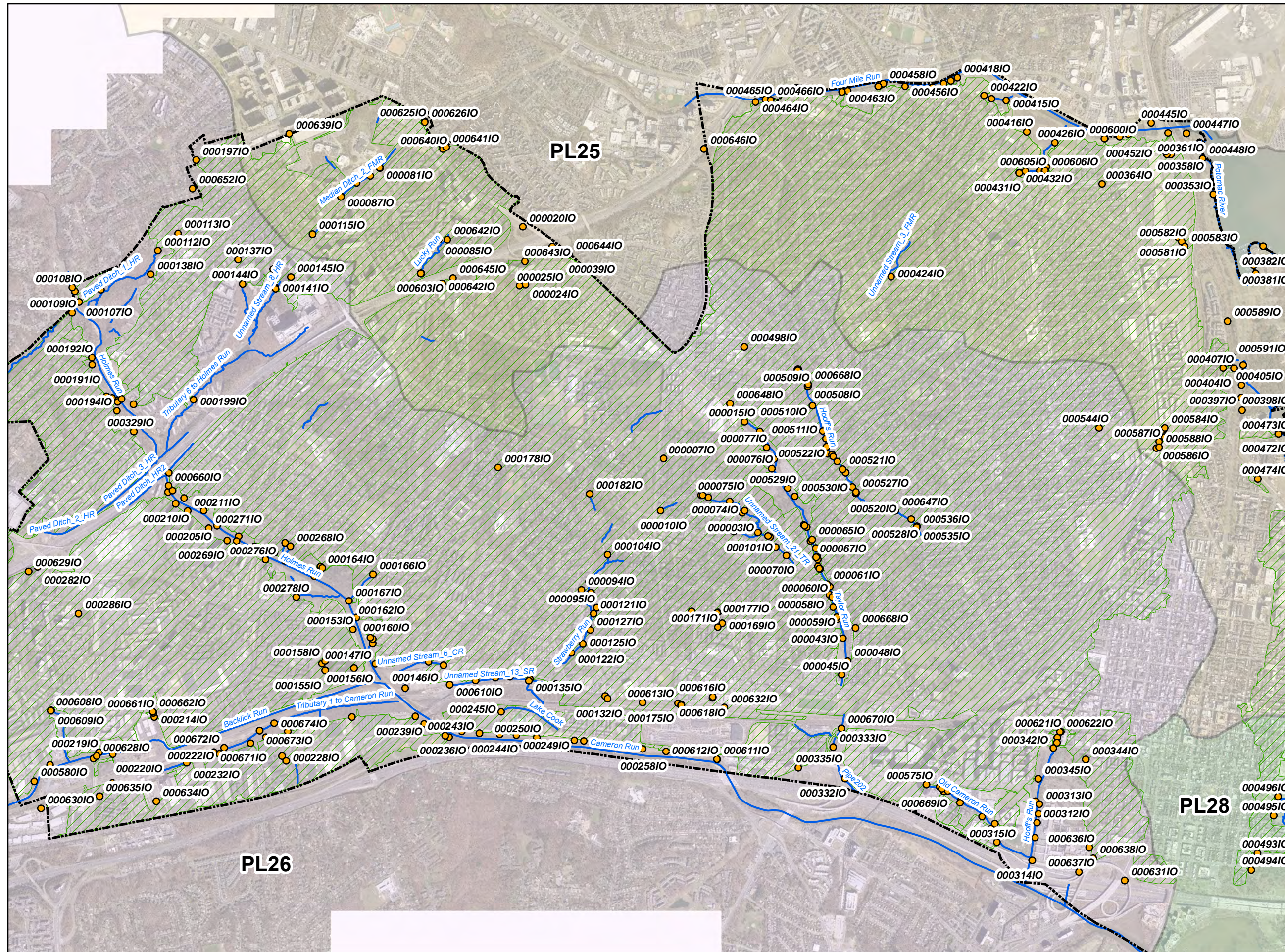
1. MS4 Outfalls Map, September 2019
2. MS4 Outfalls Table
3. Notice of Potential Interconnections, 2021
4. Illicit Discharges to the MS4
5. Illicit Discharge Complaints
6. Outfall Inspections
7. EnerGov Code Case Search
8. Alex311 Web-based Form
9. CityWorks
10. City's Household Hazardous Waste webpage
11. State Permitted Discharges Map
12. State Permitted Discharges Table
13. Conditions regarding cooking residue



City of Alexandria Storm Sewer System Outfall Map

Legend

- Outfall_Points
 - City Boundary Line
 - MS4_Area
- VA_HUC12**
- HUC**
- PL25
 - PL26
 - PL28



September 2019



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	7.90	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11886440.46	6984163.82
000002IO	14.09	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	6.85	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	266.25	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11886772.62	6985948.308
000016IO	11.07	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887114.73	6985732.021
000017IO	6.37	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887237.89	6985607.025
000041IO	31.82	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	3.33	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888978.05	6981101.434
000044IO	22.58	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11889063.01	6981533.091
000045IO	6.38	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	13.73	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888159.24	6983592.744
000051IO	6.29	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888369.04	6983123.82
000052IO	2.40	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888399.7	6982932.266
000053IO	0.81	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888415.94	6982864.731
000054IO	0.99	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888419.47	6982706.854
000055IO	21.06	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888460.54	6982655.803
000056IO	17.95	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888447.75	6982658.441
000057IO	2.42	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888681.1	6982256.677
000058IO	2.67	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888674.7	6982076.896
000059IO	4.63	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888760.68	6981795.462
000060IO	4.82	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888738.67	6982030.953
000061IO	1.12	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888613.22	6982314.863
000062IO	3.23	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888098.71	6983638.702
000063IO	0.22	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888118.97	6983622.493
000064IO	4.07	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888245.47	6983276.601
000065IO	1.34	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888285.14	6983309.497
000067IO	1.87	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888375.89	6982913.114
000068IO	3.29	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	4.20	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887379.89	6984905.205
000077IO	4.44	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	3.80	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11871772.65	6988871.466
000106IO	2.40	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872351.47	6988913.388
000107IO	0.87	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11871868.81	6988632.407

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
000108IO	0.77	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11871717.05	6988957.849
000109IO	159.57	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11871709.92	6988392.875
000111IO	8.37	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872121.4	6987563.654
000112IO	16.55	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	55.09	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	37.40	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876260.94	6988957.362
000141IO	9.10	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876271.96	6988924.012
000144IO	39.84	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875529	6989042.071
000145IO	23.84	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11876612.34	6989189.499
000148IO	2.94	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11878443.82	6980994.703
000149IO	174.71	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11878439.43	6981085.436
000150IO	1.58	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11878394.06	6981111.526
000160IO	11.11	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11878082.06	6981564.146
000167IO	19.58	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	57.70	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872480.58	6986519.899
000188IO	0.17	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872719.14	6986432.001
000189IO	69.20	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872727.84	6986390.825
000190IO	0.33	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872609.86	6986480.859
000191IO	19.25	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872162.41	6987222.227
000192IO	5.80	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872157.94	6987385.018
000193IO	13.47	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872820.91	6986465.417
000194IO	5.57	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872716.75	6986195.981
000196IO	28.38	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873082.39	6986343.762
000199IO	24.17	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11874431.35	6986442.873
000205IO	3.16	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11874958.15	6983625.44
000206IO	18.32	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11874658.4	6983959.895
000207IO	40.42	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873856.13	6984375.101
000208IO	1.68	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873960.35	6984405.523
000209IO	15.57	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11874220.58	6984243.16
000210IO	3.01	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11874028.17	6984111.987
000211IO	56.33	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11874299.01	6983950.406
000261IO	26.31	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875441.23	6983386.159
000262IO	139.89	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875796.74	6983158.759
000263IO	10.13	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876249.98	6983015.281
000264IO	119.42	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	43.84	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875185.9	6983294.572
000270IO	8.91	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875394.33	6983279.187
000271IO	7.97	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11874773.85	6983567.035

City of Alexandria
Outfall and Point of Discharge Table

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000274IO	1.36	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875664.7	6983084.295
000275IO	1.14	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875749.91	6983031.874
000276IO	6.01	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876040.87	6982862.205
000277IO	17.27	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876358.23	6982198.8
000278IO	3.31	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876731.02	6982030.494
000299IO	1.62	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11892314.2	6976838.147
000300IO	3.36	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11892091.22	6977100.812
000301IO	2.82	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11892488.42	6976728.197
000302IO	10.66	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11892373.97	6976944.812
000303IO	0.24	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11891237.48	6977672.186
000305IO	0.36	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11891328.29	6977688.155
000306IO	26.82	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11891627.92	6977488.735
000307IO	3.54	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11891596.3	6977417.922
000308IO	2.87	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893291.47	6977448.84
000309IO	2.99	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893279.27	6976636.308
000311IO	1.62	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893358.07	6977170.991
000312IO	0.84	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893321.63	6976970.877
000313IO	9.38	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893377.67	6977385.415
000314IO	3.14	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893216.82	6976125.102
000315IO	1.01	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11892427.5	6976535.047
000329IO	14.08	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873089.95	6985731.367
000330IO	55.21	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873471.42	6985145.152
000332IO	4.09	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11889021.66	6977964.611
000333IO	2.90	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11888756.38	6978667.449
000339IO	37.88	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893835.8	6979007.152
000340IO	1.41	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893771.36	6978878.931
000341IO	10.25	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893770.71	6978765.68
000342IO	25.08	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893687.46	6978645.541
000343IO	1.26	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11891144.8	6977778.141
000345IO	4.74	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893347.93	6977952.632
000477IO	23.84	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899425.95	6980856.343
000499IO	119.75	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
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

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
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	4.09	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11887734.92	6984458.919
000530IO	6.09	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	65.70	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11890841.65	6977825.425
000153IO	0.33	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11878002.88	6981297.641
000154IO	2.46	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11878024.15	6980434.469
000155IO	2.50	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11877378.05	6980380.58
000156IO	83.46	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11877308.78	6980532.431
000158IO	45.60	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11877375.12	6980585.74
000162IO	49.51	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11877978.71	6981527.501
000213IO	13.67	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873099.89	6978734.989
000214IO	1.19	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873553.67	6979339.892
000216IO	36.85	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11871219.53	6978269.913
000218IO	0.65	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872192.49	6978410.296
000219IO	0.42	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872310.74	6978543.623
000220IO	1.82	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	216.50	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11871233.5	6979481.27
000580IO	5.41	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11870862.82	6977900.473
000146IO	143.67	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11880028.61	6980493.867
000147IO	11.38	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11878503.95	6980523.88
000159IO	24.73	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	2.58	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	119.14	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875007.37	6978513.511
000223IO	5.29	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11875712.95	6978751.43
000225IO	28.59	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876049.89	6978885.445
000230IO	221.93	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11876542.26	6979011.289
000232IO	21.18	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11874274.07	6978307.225
000233IO	15.75	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11877981.82	6979339.378
000234IO	0.42	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11880444.26	6979011.491
000235IO	11.25	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11880161.03	6978883.289
000236IO	3.12	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11880066.59	6978921.541
000237IO	7.83	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11879597.06	6979186.565

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
000239IO	22.06	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11879399.17	6979351.053
000242IO	78.63	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11877266.2	6979195.948
000243IO	0.65	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11880835.6	6978979.844
000244IO	0.57	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11881283.49	6978950.336
000245IO	14.93	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall - Pond	PL26	11881322.96	6979451.111
000247IO	1.62	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11883173.19	6978796.949
000248IO	3.92	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11882964.55	6978815.446
000249IO	1.19	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11881661.07	6978924.296
000250IO	1.70	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11882117.72	6978880.28
000251IO	6.19	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11883525.38	6978752.362
000257IO	2.59	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11885199.34	6978557.125
000258IO	22.16	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11885013.64	6978565.314
000259IO	4.07	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11884485.44	6978625.494
000260IO	0.84	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11885358.9	6978545.929
000611IO and 000612IO	206.89	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	39.13	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11879517.26	6989272.799
000295IO and 000603IO	171.04	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11879527.29	6989274.32
000414IO	0.63	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11892303.12	6993182.401
000415IO	7.10	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	130.16	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11891391.27	6993589.596
000418IO	1.76	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11891536.69	6993657.921
000419IO	1.03	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11891232.3	6993525.851
000420IO	1.69	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11890977.69	6993440.809
000422IO	44.28	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11892133.87	6993252.545
000423IO	1.32	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	14.24	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11893722.17	6992206.379
000427IO	1.94	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11893389.3	6991573.821
000428IO	4.81	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11893386.94	6991574.315
000429IO, 000605IO, 000606IO	283.12	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11893493.05	6991573.139
000430IO	0.78	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11893527.94	6991655.21
000431IO and 000432IO	175.23	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11892922.94	6991532.446
000450IO	9.19	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11895169.35	6992340.963
000451IO	6.05	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11895361.1	6992393.396

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000452IO and 000600IO	19.11	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11894838.04	6992290.594
000454IO	127.67	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11887681.57	6993316.229
000456IO	55.74	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11890367.89	6993456.194
000457IO	0.13	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11889812.16	6993494.613
000458IO	0.62	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11889878.84	6993519.764
000459IO	1.91	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11889767.66	6993458.942
000460IO	6.74	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11889087.66	6993356.607
000461IO	1.74	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11888131.58	6993375.136
000462IO	1.06	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11888229.8	6993334.763
000463IO	19.80	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11888959.42	6993335.478
000464IO	1.25	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11887016.52	6993114.02
000465IO	58.18	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11887236.44	6993171.464
000466IO	0.74	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	10.80	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall	PL25	11878084.23	6991300.581
000084IO	39.42	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	6.05	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897269.55	6991045.02
000361IO	214.12	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11896259.78	6992413.289
000379IO	1.88	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11898226.43	6989274.819
000381IO	2.88	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11898173.26	6989458.104
000382IO	1.76	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11898387.87	6989880.871
000396IO	1.16	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897918.7	6986205.557
000397IO	2.50	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897899.31	6986492.831
000398IO	1.44	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897905	6986765.268
000402IO	0.36	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897936.5	6987212.757
000403IO	0.51	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897929.62	6987038.286
000404IO	6.95	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897735.5	6987146.48
000405IO	50.89	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897635.48	6987281.737
000406IO	7.82	Potomac River	Potomac River	Yes	PCBs	Outfall - Pond	PL28	11897538.98	6987335.751
000407IO	49.56	Potomac River	Potomac River	Yes	PCBs	Outfall - Pond	PL28	11897493.34	6987153.774
000447IO	0.95	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11896671.66	6992411.516
000448IO	0.11	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897034.41	6991838.966
000469IO	7.78	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899598.7	6982537.477
000470IO	8.51	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899274.57	6982030.579
000471IO	16.87	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899346.02	6983582.765
000472IO	4.54	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
000475IO	0.53	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899632.92	6982943.543
000476IO	1.29	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899447.45	6982756.021
000478IO	1.21	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899164.11	6981353.557
000479IO	9.59	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899211.91	6980033.524
000480IO	4.59	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899106.9	6981429.171
000481IO	3.76	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899090.24	6981596.498

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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
000482IO	1.18	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899118.54	6977767.156
000483IO	6.03	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899107	6977958.021
000484IO	6.55	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899161.83	6978365.66
000485IO	0.21	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899176.78	6978428.621
000486IO	5.43	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899253.3	6978787.148
000487IO	19.40	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899201.25	6979183.219
000489IO	8.91	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899232.88	6979594.487
000491IO	7.57	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899003.88	6976613.722
000493IO	1.49	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11898260.33	6976296.936
000494IO	2.18	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11898120.95	6975913.388
000495IO	18.56	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11898622.46	6977129.506
000495IO and 000496IO	6.00	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	9.67	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11880744.71	6980158.563
000134IO	23.41	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11881196.01	6980229.609
000135IO	8.73	Strawberry Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11881936.87	6980148.008
000610IO	5.28	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	51.55	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897592.62	6988200.249
000591IO	19.51	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11897701.93	6987397.715
000592IO	5.97	Potomac River	Potomac River	Yes	PCBs	Outfall	PL28	11899348.09	6980443.038
000121IO	13.49	Strawberry Run				Outfall	PL26	11883394.31	6981652.8
000621IO and 000622IO	1291.70	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11893852.18	6979004.593
000624IO	11.33	Cameron Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11883917.66	6978699.662
000628IO	94.19	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11872259.35	6978466.72
000642IO	61.75	Four Mile Run	Four Mile Run Tidal	Yes	E. Coli	Outfall - Pond	PL25	11880117.33	6990035.114
000647IO	80.76	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873876.92	6984802.006
000647IO	80.76	Hooffs Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11890149.55	6983954.071
000660IO	2.20	Holmes Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873868.37	6984516.587
000661IO	52.89	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873534	6979431.994
000662IO	7.93	Backlick Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11873518.87	6979455.317
000668IO	5.46	Taylor Run	Hunting Creek/Cameron Run/Holmes Run	Yes	E. Coli	Outfall	PL26	11889255.88	6981334.995



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,

A handwritten signature in black ink, appearing to read "Jesse E. Maines", is written over a faint, large circular watermark of the City of Alexandria seal.

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

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,

A handwritten signature in black ink, appearing to read "Jesse E. Maines".

Jesse E. Maines
Water Quality Compliance Specialist
703-746-4071
Jesse.maines@alexandriava.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,

A handwritten signature in black ink, appearing to read "Jesse E. Maines".

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

Cc: Hannah Dean via email – Hannah_Dean@nps.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

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,

A handwritten signature in black ink, appearing to read "Jesse E. Maines", is written over a faint, large circular watermark of the City of Alexandria seal.

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

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

Reports of Illicit Discharges FY21

Tracking ID	Method of Discovery	Date Initiated	Date Closed	Problem Address	Incident	Narrative & Result	Reach MS4?
07202020	Reported by public	07/20/2020	07/20/2020	3210 King St	Possible Illicit Discharge	Dechlorinated pool discharge. Staff directed contractors to move hose into vegetated area and closed case.	No
311-20-00019298	Reported by public	07/28/2020	07/28/2020	6101 Edsall Rd	Possible illicit discharge	Contractor for condominium dumped gallon of latex based paint into inlet. Staff provided warning to contractor and closed the case.	Yes
311- 20-00022943	Reported by public	08/25/2020	8/25/2020	3000 Potomac Ave	Possible Illicit Discharge	Discolored discharge from pond infall. Staff notified resident of this location being a known iron-concentrated groundwater discharge and closed case.	No
FIR-	Reported by public	09/04/2020	09/04/2020	N Pickett & Rutland Pl	Possible Illicit Discharge	Floor wax discovered in outfall channel from ACPS custodial staff activities-amount determined to be ~ 2 gallons. ACPS staff recovered remnant material. SWM division conducted 3 separate “good housekeeping” educational events with custodial staff.	Yes
Fir-	Reported by public	09/07/2020	09/07/2020	5300 Holmes Run Pkwy	Possible Illicit Discharge	Hydraulic spill from trash truck. Spill was entirely contained and recovered by driver. FM issued Notice of Violation to ensure spill was recovered.	No
311-20-00024526	Reported by public	09/08/2020	09/08/2020	3210 King St	Possible Illicit Discharge	Resident report concerning proper pool drainage disposal at Rec Facility. Staff found no evidence of chlorine within pool discharge and had the hose moved further from the inlet to increase infiltration.	No

Reports of Illicit Discharges FY21

Tracking ID	Method of Discovery	Date Initiated	Date Closed	Problem Address	Incident	Narrative & Result	Reach MS4?
311-20-00029889	Reported by public	10/13/2020	10/16/2020	407 S Fayette St	Possible illegal dumping	Contractor improperly disposing of wash water. Staff met contractor on site, educated the contractor about proper disposal, and provided a warning.	N/A
10142020	Reported by public	10/14/2020	10/14/2020	100 King St	Grease spill	Restaurant employee allowed spilled grease to enter sanitary sewer. Staff directed restaurant to recover grease and FM provided Notice of Violation for improper disposal.	No
10142020	Reported by public	10/14/2020	10/14/2020	5412 Duke St	Gasoline spill	Vehicle collision with gas station pump caused the loss of approximately 1 gallon of gasoline to MS4 system. Staff and FM directed the gas station to employ clean up company to recover material.	Yes
10202020	Reported by public	10/20/2020	10/20/2020	3210 King St	Possible illicit discharge	Discolored water within Taylor Run stream channel. Sourced to emergency watermain repair. Staff had contractors move sediment bag to vegetated area.	No
10212020	Reported by public	10/21/2020	10/21/2020	411 S Fayette St	Possible illegal dumping	Complaint of power washer effluent entering storm inlet. Staff visited resident and directed to have recovery plans for future practices.	N/A
10222020	Reported by public	10/22/2020	10/22/2020	W Timber Branch	Possible illegal dumping	Complaint of landscaping company leaving vegetated waste behind. Staff met with workers on site and followed up with company administrative staff.	No

Reports of Illicit Discharges FY21

Tracking ID	Method of Discovery	Date Initiated	Date Closed	Problem Address	Incident	Narrative & Result	Reach MS4?
311-20-00032420	Reported by public	11/04/2020	11/04/2021	Cameron Mills Rd & Grand View Dr	Possible illicit discharge	Contractors allowing water from dewatering activities from single family residence to enter street/ROW. Staff warned contractors and directed that all dewatering activities be kept on site.	No
311-20-00032588	Reported by public	11/05/2021	11/11/2021	Timber Branch Dr & W Braddock Rd	Possible illicit discharge	Contractors working on gas lines accidentally hit a waterline allowing the flow of water to pick up road work dust and enter Timber Branch. Contractors installed inlet protection to limit quantity of discolored water to Timber Branch.	No
11112020	Reported internally	11/11/2021	11/11/2021	N Fairfax St	Possible illicit discharge	Contractors applied sealant 24 hours prior to a significant rain event. Sealant was not allowed necessary time to dry before precipitation started. Approximately 10-55 Gallons released from roof and entered storm drain to the Potomac River. FM cited the contractors with illicit discharge violation.	Yes
21-00001558	Reported by public	1/24/2021	1/24/2021	2823 KING ST	Possible illicit discharge	Staff visited location in question and determined the source to be naturally occurring iron oxidizing bacteria related to iron concentrated groundwater seep.	No

Reports of Illicit Discharges FY21

Tracking ID	Method of Discovery	Date Initiated	Date Closed	Problem Address	Incident	Narrative & Result	Reach MS4?
21-00002653	Reported internally	2/9/2021 Revisits: 2/10/2021 2/11/2021 2/16/2021	2/16/2021	4004 Featherstone Pl	Possible illicit discharge	Gasoline sheen discovered in outfall channel. Tracked to upstream inlet. Estimated 1-3 gallons lost. Staff revisited location 3 times, but no offender found.	Yes
21-00003225	Reported by public	2/16/2021	2/16/2021	914 W TIMBER BRANCH PWY	Possible illicit discharge	Sediment from construction project in stream channel. Staff directed new inlet protection be deployed.	Yes
21-00004876	Reported by public	3/9/2021 Revisits: 3/11/2021 3/15/2021 3/25/2021	3/25/2021	706 W TIMBER BRANCH PWY	Possible illicit discharge	Staff investigated Timber Branch area of concern. Source determined likely to be sediment from construction project related complaint.	N/A
311-03112021	Reported internally	3/11/2021 Revisits: 3/15/2021 3/25/2021 4/05/2021	4/05/2021	1401 Ruffner Rd	Possible illicit discharge	Internal report of 5 dead fish in Timber Branch near Ruffner Rd. Source could not be located.	N/A

Reports of Illicit Discharges FY21

Tracking ID	Method of Discovery	Date Initiated	Date Closed	Problem Address	Incident	Narrative & Result	Reach MS4?
311-03172021	Reported internally	03/17/2021 Revisits: 04/05/2021 04/16/2021 04/19/2021	04/19/2021	203 Park Rd	Possible Illegal Dumping	Internal report of paint in inlet. No offender found. 1 gallon of latex paint lost to MS4	Yes
21-00005849	Reported by public	3/21/2021	3/21/2021	327 N PICKETT ST	Possible illicit discharge	Staff investigated and found no evidence of described event.	No
21-00006408	Reported by public	3/25/2021	3/26/2021	W BRADDOCK RD & W TIMBER BRANCH PKWY	Sediment in stream	Dewatering activities at construction site sent sediment laden water to Timber Branch. Staff directed site to deploy additional E & S measures and conducted SWPPP	Yes
04202021	Reported internally	04/20/2021	04/22/2021	4001 Eisenhower Avenue	Possible illicit discharge	Contractor dewatering pool. Staff directed contractor to dewater to sanitary or vegetated area.	No
21-00009046	Reported by public	04/21/2021 Revisits: 04/23/2021 05/05/2021 05/21/2021	05/21/2021	100 GIBBON ST	Possible illicit discharge	Non-hazardous fluorescent dye in outfall channel. AFD confirmed non-hazardous substance. No source could be determined.	Yes

Reports of Illicit Discharges FY21

Tracking ID	Method of Discovery	Date Initiated	Date Closed	Problem Address	Incident	Narrative & Result	Reach MS4?
21-00008554	Reported by public	04/27/2021 Revisits: 05/05/2021 05/10/2021 05/25/2021	05/25/2021	511 FOUR MILE RD	Possible illicit discharge	Discolored water coming from outfall to Four Mile Run. No source could be determined.	Yes
21-00009758	Reported by public	04/29/2021	04/29/2021	5300 HOLMES RUN PWY	Watermain break	Reported to VA American Water for repairs.	Yes
05122021	Reported by public	05/12/2021	05/13/2021	4001 Eisenhower Ave	Possible illicit discharge	Accidental chlorinated NVRPA pool release to Lake Cook resulting in fishkill. NVRPA staff had connection sealed off.	No
21-00012059 21-00011632	Reported by public	5/21/2021 Revisits: 5/26/2021 6/08/2021	6/08/2021	4550 STRUTFIELD LN	Possible illicit discharge	Paint like substance in Lucky Run Pond. Staff discovered source on follow up to be nearby apartment complex painting activities. Management was warned and directed to have a recovery plan for all painting activities.	No
05252021	Reported by public	05/25/2021	05/25/2021	N Payne & King St	Non-permitted discharge	Construction site discharging groundwater prior to VPDES permit. Staff directed operators to turn off dewatering activities until obtaining VPDES permit	No
06082021	Reported by public	06/08/2021	06/08/2021	2404 Sanford St	Possible illicit discharge	Painting activities from residence construction allowed to enter street. Staff provided warning and forwarded to C & I division.	No

Reports of Illicit Discharges FY21

Tracking ID	Method of Discovery	Date Initiated	Date Closed	Problem Address	Incident	Narrative & Result	Reach MS4?
06302021	Reported by public	06/30/2021	07/01/2021	1400 N Royal St	Oil spill	Oil spill at Pepco Potomac River Substation. Environmental contractor recovered lost oil. No oil made it to a storm drain.	No


FY2021 Illicit Discharges to MS4


Report	Source of Illicit Discharge	Date Observed or Reported	Method of Discovery	Resolution	Follow-up Activities	Closure Date
311-20-00019298	Latex paint spill	07/28/2020	Reported by public	Staff provided warning to contractor and closed the case.	N/A	07/28/2020
311-09072020	Floor wax spill	09/07/2020	Reported by public	AFD, SWM, & ACPS staff investigated and located source. ACPS staff recovered remnant material.	SWM division conducted 3 separate "IDDE & good housekeeping" online educational events with custodial staff.	9/07/2020
311-10142020	Gasoline spill	10/14/2020	Reported by public	Remnant gasoline recovered by environmental company.	N/A	10/14/2020
311-10202020	Watermain break	10/20/2020	Reported by public	Repairs made by VA American Water	N/A	10/21/2020
311-20-00032588	Watermain break	11/05/2020	Reported by public	Contractors deployed E & S controls to limit sediment transport. Repairs made by VA American Water	N/A	11/11/2020
311-11112020	Roof sealant spill	11/11/2020	Reported internally	Contractors cited for illicit discharge violation and directed to recover remnant material.	N/A	11/11/2020


FY2021 Illicit Discharges to MS4


Report	Source of Illicit Discharge	Date Observed or Reported	Method of Discovery	Resolution	Follow-up Activities	Closure Date
311-21-00002653	Gasoline in outfall channel	2/9/2021	Reported internally	Tracked to upstream inlet. Estimated 1-3 gallons lost. Staff revisited location 3 times, but no offender found.	Revisited 2/10/2021, 2/11/2021, 2/16/2021	2/16/2021
311-21-00003225	Sediment from construction site	2/16/2021	Reported by public	Staff directed new inlet protection be deployed.	N/A	2/16/2021
311-03172021	1 gallon of paint dumped in inlet	3/17/2021	Reported internally	Followed up 3 times, no offender found.	Revisited 04/05/2021 04/16/2021 04/19/2021	04/19/2021
311-21-00006408	Sediment in stream	03/25/2021	Reported by public	Staff directed site to deploy additional E & S measures	Conducted SWPPP	03/26/2021
311-21-00009046	Fluorescent dye	04/21/2021	Reported by public	AFD confirmed non-hazardous dye dumped in inlet. No offender found.	Revisited 04/23/2021 05/05/2021 05/21/2021	05/21/2021
311-21-00008554	Sediment in stream	04/27/2021	Reported by public	Staff investigated 3 times; no offender could be found.	Revisited 05/05/2021 05/10/2021 05/25/2021	5/25/2021
311-21-00009758	Watermain break	04/29/2021	Reported by public	VA American Water made repairs	N/A	04/29/2021


Outfall ID	Outfall Location	HUC	DATE	FLOW DESCRIPTION	WERE FIELD PARAMETERS MEASURED	PHYSICAL INDICATORS	Illicit Discharge Characterization	Follow Up	Observations & Comments
000004IO	1100 Francis Hammond Pkwy	PL26	11/20/2020	NONE	No	None	None	No	
000005IO	703 Kingston PL	PL26	11/20/2020	TRICKLE	Yes	None	None	No	Determined to be groundwater based on WQ parameters
000008IO	1214 Key Dr	PL26	11/20/2020	NONE	No	None	None	No	
000015IO	3210 King St Chinquapin Rec Center	PL26	10/20/2020	TRICKLE	Yes	Yes	Obvious	Yes	Illicit discharge related to watermain break. VA American repaired broken line.
000017IO	3117 King St	PL26	11/18/2020	NONE	No	None	None	No	
000023IO	4036 Ellicott St	PL25	11/23/2020	NONE	No	None	None	No	
000024IO	4036 Ellicott St	PL25	11/23/2020	NONE	No	None	None	No	
000026IO	4301 Braddock Rd	PL25	11/23/2020	NONE	No	None	None	No	
000027IO	4301 Braddock Rd	PL25	11/23/2020	NONE	No	None	None	No	
000029IO	4301 W. Braddock Rd	PL25	11/23/2020	NONE	No	None	None	No	
000030IO	4301 W. Braddock Rd	PL25	11/23/2020	NONE	No	None	None	No	
000031IO	4301 W. Braddock Rd	PL25	11/23/2020	NONE	No	None	None	No	
000051IO	924 East Taylor Run Pkwy	PL26	11/24/2020	TRICKLE	Yes	None	None	No	Determined to be groundwater based on WQ parameters
000052IO	2719 Bryan PL	PL26	11/24/2020	NONE	No	None	None	No	
000053IO	2726 Bryan PL	PL26	11/24/2020	NONE	No	None	None	No	
000063IO	1040 W Taylor Run Pkwy	PL26	11/24/2020	TRICKLE	Yes	None	None	No	Determined to be groundwater based on WQ parameters
000068IO	1799 Maple Hill Pl	PL26	11/24/2020	NONE	No	None	None	No	
000070IO	1647 Francis Hammond Dr	PL26	11/24/2020	NONE	No	None	None	No	
000074IO	1302 Key Dr	PL26	11/20/2020	NONE	No	None	None	No	
000077IO	3210 King St	PL26	11/18/2020	NONE	No	None	None	No	
000100IO	1607 Walleston Ct	PL26	11/24/2020	NONE	No	None	None	No	
000101IO	Maple Hill PL	PL26	11/24/2020	NONE	No	None	None	No	
000144IO	Winkler Botanical Gardens	PL26	4/20/2020	TRICKLE	No	None	None	No	
000150IO	Holmes Run PKWY/4600 Duke St	PL26	11/6/2020	NONE	No	None	None	No	
000166IO	N Howard	PL26	11/20/2020	TRICKLE	Yes	None	None	No	Determined to be groundwater based on WQ parameters
000188IO	N Beauregard St & N Morgan	PL26	11/18/2020	NONE	No	None	None	No	
000189IO	N Beauregard St & N Morgan	PL26	11/18/2020	TRICKLE	Yes	None	None	No	Determined to be groundwater based on WQ parameters
000190IO	N Beauregard St & N Morgan	PL26	11/18/2020	NONE	No	None	None	No	
000198IO	Roanoke Avenue	PL26	11/18/2020	None	No	None	None	No	
000199IO	5413 Sheffield Ct	PL26	11/18/2020	NONE	No	None	None	No	
000200IO	5420 Bradford Ct	PL26	11/18/2020	None	No	None	None	No	
000417IO	511 Four Mile Run Rd	PL25	4/27/2021	TRICKLE	Yes	Yes	Obvious	Yes	Follow Ups: 05/05/2021, 5/10/2021, & 5/25/2021. Source of illicit discharge was not found.
000423IO	19 Edison St	PL25	11/23/2020	NONE	No	None	None	No	
000427IO	Cora Kelley	PL25	11/23/2020	NONE	No	None	None	No	
000428IO	101 Dale St	PL25	11/23/2020	TRICKLE	Yes	None	none	No	Determined to be groundwater based on WQ parameters
000429IO	3600 Commonwealth Ave	PL25	11/23/2020	NONE	No	None	None	No	
000431IO	19 Edison St	PL25	11/23/2020	MODERATE	Yes	None	None	No	Determined to be groundwater based on WQ parameters
000432IO	19 Edison St	PL25	11/23/2020	TRICKLE	Yes	None	None	No	Determined to be groundwater based on WQ parameters
000508IO	W Braddock RD	PL26	10/20/2020	NONE	No	None	None	No	
000509IO	W Braddock RD	PL26	11/5/2020	NONE	No	None	None	No	
000512IO	710 PARKWAY TR	PL26	11/19/2020	NONE	No	None	None	No	
000514IO	711 E Timber Branch Pkwy	PL26	11/20/2020	TRICKLE	Yes	None	None	No	Determined to be groundwater based on WQ parameters
000515IO	E Timber Branch	PL26	11/20/2020	NONE	No	None	None	No	
000518IO	6229 OAKLEY PL	PL26	11/20/2020	NONE	No	None	None	No	
000521IO	690 W TIMBER BRANCH PKWY	PL26	11/20/2021	NONE	No	None	None	No	
000522IO	801 E TIMBER BRANCH	PL26	11/20/2020	NONE	No	None	None	No	
000529IO	2932 King St	PL26	11/19/2020	NONE	No	None	None	No	
000605IO	3600 Commonwealth Ave	PL25	11/23/2020	MODERATE	Yes	None	None	No	Determined to be groundwater based on WQ parameters "Hume Springs"
000606IO	3600 Commonwealth Ave	PL25	11/23/2020	NONE	No	None	None	No	
000621IO	Buddy Ford Nature Center	PL26	11/10/2020	NONE	No	None	None	No	


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 Calendar


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 Code Case Search

Code Case Search

Search

Export

Action

Code Case Search

Name

Shared

Note: name is only required if criteria needs to be saved.

Mail Merge Result

Map Results

Drag a column header and drop it here to group by that column

Save Layout

Clear Layout

<div><div></div><div></div></div>	<div><div></div><div></div></div>	Case Number	Main Address	Case Type	Assigned To	Case Status	Open Date
>	<div><div></div><div></div></div>	FIR2019-00172	612 S PICKETT ST C	Fire Marshal Complaints		Closed - Resolved	7/2/2019
	<div><div></div><div></div></div>	FIR2019-00173	5405 DUKE ST	Fire Marshal Complaints		Closed - Resolved	7/2/2019
	<div><div></div><div></div></div>	FIR2019-00174	602 NOTABENE DR	Fire Marshal Complaints		Closed - Resolved	7/2/2019
	<div><div></div><div></div></div>	FIR2019-00175	6101 EDSALL RD 303	Fire Marshal Complaints		Closed - Resolved	7/5/2019
	<div><div></div><div></div></div>	FIR2019-00176	5219 HOLMES RUN PKWY	Fire Marshal Complaints		Closed - Resolved	7/5/2019
	<div><div></div><div></div></div>	FIR2019-00177	5951 STEVENSON AVE E	Fire Marshal Complaints		Closed - Resolved	7/5/2019
	<div><div></div><div></div></div>	FIR2019-00178	5453 SHEFFIELD CT	Fire Marshal Complaints		Closed - Resolved	7/5/2019
	<div><div></div><div></div></div>	FIR2019-00179	5733 LEVERETT CT	Fire Marshal Complaints		Closed - Resolved	7/5/2019
	<div><div></div><div></div></div>	FIR2019-00180	5797 RAYBURN AVE	Fire Marshal Complaints		Closed - Resolved	7/5/2019
	<div><div></div><div></div></div>	FIR2019-00181	5802 SANGER AVE	Fire Marshal Complaints		Closed - Resolved	7/5/2019
	<div><div></div><div></div></div>	FIR2019-00182	5611 DERBY CT	Fire Marshal Complaints		Closed - Resolved	7/5/2019

Version: 2018.1.4.39

Service
Sewer Infrastructure
Issues

Location

Details

Contact

Submit

Where is the service location? * Required

Search for addresses

Set service location

City of Alexandria, GIS

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Search

	Sr	Date Initiated	Description	Priority	Category	Submit To	Dispatch To	Address
<input type="checkbox"/>	206645	2020-09-24 11:19 AM	TRAFFIC SIGNS	3	TES_SIGNS	TRFSIGNS TOP TES,		4550 N PEGRAM ST
<input type="checkbox"/>	206645	2020-09-24 11:17 AM	TRAFFIC SIGNS	3	TES_SIGNS	TRFSIGNS TOP TES,		1235 N PICKETT ST
<input type="checkbox"/>	206642	2020-09-24 10:09 AM	SEWERS	2	TES_SEWERS	SEWERS PWS TES,		2 B FORREST ST
<input type="checkbox"/>	206640	2020-09-24 9:29 AM	LOW HANGING WIRE	1	TES_ROW	TES, GROUP LOW WIRE		326 E MASON AVE
<input type="checkbox"/>	206639	2020-09-24 9:17 AM	STREET CLEANING	3	TES_STCLEAN	STRTMAINT PWS TES		1600 IVANHOE CT
<input type="checkbox"/>	206638	2020-09-24 8:49 AM	PARKING METERS	2	TES_METERS	METERS TOP TES,		301 KING ST
<input type="checkbox"/>	206637	2020-09-24 8:35 AM	TREE REQUEST / PROBLEM	3	RPCA_TREES	RPCA, TREES		929 N LINDSAY PL
<input type="checkbox"/>	206636	2020-09-23 10:31 PM	TREE REQUEST / PROBLEM	3	RPCA_TREES	RPCA, TREES		922 SLATERS LN
<input type="checkbox"/>	206635	2020-09-23 8:53 PM	TREE REQUEST / PROBLEM	3	RPCA_TREES	RPCA, TREES		109 W MASONIC VIEW
<input type="checkbox"/>	206634	2020-09-23 6:27 PM	STREETS POTHOLES	2	TES_POTHOLES	STRPOTHOLE PWS TES,		220 CENTURY PL
<input type="checkbox"/>	206633	2020-09-23 5:33 PM	SEWERS	2	TES_SEWERS	SEWERS PWS TES,	Pelitteri, Gavin	707 E TIMBER BRANC
<input type="checkbox"/>	206629	2020-09-23 4:59 PM	STREET MAINTENANCE	2	TES_STMAINT	STRTMAINT PWS TES		809 CAMERON ST
<input type="checkbox"/>	206628	2020-09-23 4:33 PM	STREET CLEANING	3	TES_STCLEAN	STRTMAINT PWS TES		1218 W ABINGDON DR
<input type="checkbox"/>	206627	2020-09-23 4:17 PM	SEWERS	2	TES_SEWERS	SEWERS PWS TES,		24 E LINDEN ST
<input type="checkbox"/>	206625	2020-09-23 3:17 PM	TREE REQUEST / PROBLEM	3	RPCA_TREES	RPCA, TREES		901 SECOND ST
<input type="checkbox"/>	206624	2020-09-23 2:57 PM	TREE REQUEST / PROBLEM	3	RPCA_TREES	RPCA, TREES		611 S COLUMBUS ST
<input type="checkbox"/>	206623	2020-09-23 2:53 PM	TREE REQUEST / PROBLEM	3	RPCA_TREES	RPCA, TREES		611 S COLUMBUS ST

! [City Government Phone Numbers and Hotlines Unavailable 3-6 p.m. on Wednesday](#)

Updated 5:23 p.m. Tue, Sep 14

! [COVID-19 Information & Updates](#)

Updated 5:04 p.m. Fri, July 2

Household Hazardous Waste & Electronics Collection

Many of the products we use every day contain chemicals that are potentially hazardous to our health and the environment. Improper disposal of the products listed below can pollute our environment and cause injury to collection workers. It is our responsibility therefore to properly use, store, and dispose of hazardous waste. All household hazardous waste will be environmentally disposed of by a licensed hazardous waste disposal firm.

Page updated on Mar 4, 2021 at 9:46 AM



ON THIS PAGE

- [What's New](#)
- [Household Hazardous Waste & Electronics Collection Center Location & Hours](#)

- [Operating Procedures for the Household Hazardous Waste & Electronics Drop-off Center](#)
- [Acceptable and Unacceptable Hazardous Waste & Electronic Items](#)
- [Fluorescent Lightbulbs \(CFL's\) and Mercury – Use, Breakage Cleanup & Disposal](#)
- [Material Preparation](#)
- [Eligible Participants](#)
- [Hazardous Waste and Electronic Disposal / Recycling Information for Businesses](#)
- [Less Toxic & Reuse Opportunities](#)



What's New

The Household Hazardous Waste & Electronics Collection Center is operating under its regular schedule (Mondays and Saturdays, 7:30 a.m. to 3:30 p.m.). The center will also continue to adhere to the special [operating procedures](#) put in place for the safety of staff and residents.

For more information on reopening phases for resource recovery services offered by the Department of Transportation and Environmental Services (T&ES), visit alexandriava.gov/TES.

Why Properly Dispose of Household Hazardous Waste and Electronics?

RELATED CONTENT

- [Transportation & Environmental Services](#)
- [Resource Recovery](#)
- [Food Waste Composting Stations](#)
- [Glass Recycling in Alexandria](#)
- [Recycling](#)
- [Reduce, Reuse & Other Recycling Opportunities](#)
- [Refuse Collection](#)
- [Residential Leaf Collection](#)
- [Resource Recovery Holiday Collection Calendar](#)
- [Solid Waste Hauler Permitting and Reporting](#)
- [Street Cleaning](#)
- [WasteSmart](#)
- [Yard Waste Recycling](#)

It is our responsibility to properly use, store, and dispose of hazardous waste. All household hazardous waste is disposed of by a licensed hazardous waste disposal firm.

Household Hazardous Waste & Electronics Collection Center Location & Hours

Location: [3224 Colvin Street](#) (click for map)

- **From the West:** Travel east on Duke Street and turn right onto S. Quaker Lane. Then take the first left onto Colvin Street. You will see the site on your right.
- **From the East:** Travel west on Duke Street and turn left onto S. Quaker Lane. Then take the first left onto Colvin Street. You will see the site on your right.
- **From the North:** Take Braddock Road, King Street or Seminary/Janneys Lane to N. Quaker Lane. Travel south on N. Quaker Lane to Duke Street; turn left. Travel east on Duke Street to S. Quaker Lane (an immediate right off of Duke St); turn right. Then take the first left onto Colvin Street. You will see the site on your right.

Operating Procedures for the Household Hazardous Waste & Electronics Drop-off Center

In order to protect staff and members of the public, the HHW Center is following the below procedures until further notice:

SHARE



City Household Hazardous Waste & Electronics Center



Rules to keep you and our workers safe



***CONSIDER** whether the materials can be **STORED AT HOME** until a later date and only use the site if necessary (e.g. if you are moving or unable to store materials).



*Participants are asked to wear a **facial covering or mask**.



*Staff is **unable to assist with unloading** at this time due to physical distancing precautions related to COVID-19.



*Beginning **June 8** the site resumes normal hours on **SATURDAYS and MONDAYS** from 7:30am - 3:30 pm.



*Bring **ID or utility bill** to show proof of residency.

For the most up-to-date information on Resource Recovery service updates due to COVID-19 visit:

ALEXANDRIAVA.GOV/RESOURCECOVERY

City Household Hazardous Waste & Electronics Center



Rules to keep you and our workers safe

1. Enter Queue

2. Remain in vehicle. **DO NOT** walk material into the site



3. Pull up to traffic cone until instructed to pull into site

4. Show ID or utility bill to staff through a **CLOSED** window as proof of residency



5. **REMAIN IN VEHICLE** until staff stages utility cart for your use

6. Exit vehicle once staff has **distanced** themselves



7. Unload your items onto the provided **cart**

8. Staff will retrieve cart once you **RETURN TO YOUR VEHICLE**

9. Exit the site

For the most up-to-date information on Resource Recovery service updates due to COVID-19 visit:

ALEXANDRIAVA.GOV/RESOURCECOVERY

- When arriving at the center, residents should **enter the vehicle queue** and wait until the vehicle ahead has departed, or staff members have instructed them to proceed, before entering the site.

Be mindful of traffic cones, barricades, signage, and gates that may be used to aid in traffic flow.

- **DO NOT walk materials into the site.** To ensure physical distancing is maintained, residents are not permitted to walk into the site. Residents who walk materials in through the gate will be turned away and asked to return in their vehicles.
- The drop-off center is for **Alexandria residents only**. Residents must confirm residency by showing government ID (e.g., a driver's license) or a utility bill to staff through a **CLOSED** vehicle window.
- Residents should remain in their vehicles while staff can stage a utility cart for their use and **only exit the vehicle after staff has distanced themselves**.
- Residents are asked to follow [guidance](#) from the U.S. Centers for Disease Control and Prevention to **maintain 6 feet of physical distance** and **wear cloth face coverings** while they are dropping off items.
- Because of physical distancing precautions related to COVID-19, residents are responsible for removing items from their vehicles and loading them onto the provided cart. **Staff members are unable to assist residents with unloading** at this time.
- Residents should return to their vehicles after unloading and **wait for staff to retrieve and move the utility cart until exiting the site**.

Acceptable and Unacceptable Hazardous Waste & Electronic Items

Acceptable Household Hazardous Waste Items

- Antifreeze
- Battery Acid
- Fire Extinguishers
- Household Cleaning Products
- Lawn Care Products
- Garden Products

- Gasoline
- Motor oil
- Auto Cleaning Products
- Car Batteries
- [Fluorescent Light Bulbs](#)
- Oil-based Paints*
- Lacquers
- Spray can Paint
- Thinners
- Flammable Waxes & Abrasives
- Driveway Sealer
- Household Batteries**
- Drain Cleaner
- Flammable Caulks & Adhesives
- Varnishes
- Mineral Spirits
- [Mercury thermostats & thermometers](#)
- Herbicides
- Pesticides
- Ant Bait or Traps
- Rodent Control Products
- Insect Spray Cans
- Pet Supplies
- Photographic Chemicals

* Latex (water-based) paint is not considered hazardous material. Dried out cans of latex paint can be disposed of in the regular trash.

** Household, alkaline batteries (AA, AAA) can be thrown away in the regular trash.

Unacceptable Hazardous Waste Items

- Explosives
- Biological waste
- Unknown substances
- [Helium Tanks](#)
- Ammunition
- Radioactive materials
- Unlabeled substances
- Propane, oxygen or acetylene Tanks (please return to the supplier;

tanks less than 5 gallons can be thrown away as trash, if empty, and if partially full, then bring to the HHW Center.)

Electronics - Acceptable Items

- Calculators
- CD-ROM / DVD Drives
- Memory & Circuit Boards
- PC's / Laptops / Notebooks
- Monitors (LCD, Plasma & CRT)
- All Computer Peripherals:
- Keyboards, Mice, Cables, External Drives
- Fax Machines & Modems
- All Rechargeable & Button Batteries
- Desktop printers (laser & ink jet) their cartridges
- Desktop scanners & copiers
- LED bulbs
- Cell Phones, Blackberries & PDA's
- Stereos and speakers
- Uninterruptible Power Supplies (UPS)
- Video & Audio Equipment
- Wires/Cables/Extension Cords
- Televisions
- CRT's (Cathode Ray Tubes)
- LCD's
- Plasma & Rear Projection
- Storage Media* and their cases: (DVD's, CD's, ZIP, Floppy Disks, Etc.)
- Digital Cameras
- Small kitchen appliances and microwaves.

Notes: Alkaline batteries can be disposed of as trash in curbside collection

* Dispose of VHS and cassette tapes with the regular trash

Acceptable Appliances include:


- Refrigerators
- Freezers
- Air Conditioning Units
- Dehumidifiers
- Any items containing refrigerant

These items contain either chlorofluorocarbon (CFC) refrigerants or hydrochlorofluorocarbon (HCFC) refrigerants depending on their date of manufacture. Information about the dangers of CFC's is available on the [EPA website](#).

These items are not acceptable as regular trash nor can they be disposed of at the Covanta Energy Facility on Eisenhower Ave. Disposal options for these items include:

1. Have your contractor or delivery service exchange your old appliance at time of delivery.
2. Call the Resource Recovery Division at 703.746.4410 to arrange for a special appliance pickup
Note: a \$20.00 service fee may apply for large appliances
3. Residents may deliver their appliance at no cost to the HHW & Electronics Collection Center located at 3224 Colvin St.

Fluorescent Lightbulbs (CFL's) and Mercury – Use, Breakage Cleanup & Disposal

Use: Compact fluorescent lights (CFLs) are lighting more homes than ever before, and EPA is encouraging Americans to use and recycle them safely. Carefully recycling CFLs prevents the release of mercury into the environment and allows for the reuse of glass, metals and other materials that make up fluorescent lights. * [Please read this flyer](#)  about the use and safe disposal of CFLs.

Breakage Clean Up: Fluorescent light bulbs and some older thermostats and thermometers contain a very small amount of mercury sealed within glass tubing. Learn more about [EPA Clean Up Recommendations](#) for broken fluorescent light bulbs and other mercury containing items.

Please contact the City Fire Department's Special Operations Battalion Chief at 703.746.5277 for further information about mercury spill clean up

Disposal: Unbroken fluorescent bulbs or properly sealed broken bulbs can be taken to the City's [Household Hazardous Waste & Electronics Collection Center](#).

Material Preparation

Household Hazardous Waste

- Please leave all materials in their originally labeled containers.
- Containers should be sealed and properly packaged for transportation.
- Do not mix chemical substances – even similar products from different manufacturers.

Electronics

- Delete all information from computer hard-drives

Disclaimer: *The City of Alexandria is not responsible for and does not erase computer hard drives or memory.*

[Read](#) an article on preparing a computer for donation.

Eligible Participants

The City of Alexandria provides weekly household hazardous waste and electronics recycling collection for City residents ONLY (i.e. those living in the following zip codes: 22301, 22302, 22304, 22305, 22311, 22312, and 22314). Proof of residency is required.

Hazardous Waste and Electronic Disposal / Recycling Information for Businesses

Conditionally Exempt Small Quantity Generators: Business may NOT use the City's HHW collection program to dispose of any hazardous waste. All businesses that produce hazardous wastes (including conditionally exempt small quantity generators, CESQG) should contact a licensed and permitted hazardous waste disposal company to properly document and dispose of their hazardous wastes. A partial list of companies is provided below for your convenience. Please contact the Resource Recovery Division main telephone number: 703-746-4410 for additional information.

The City does not endorse any of the businesses below, please check certifications before selecting a vendor.

- Asbestos Disposal Companies:

- Environmental Waste Specialists, Inc., 703-502-0100, 14100 Sullyfield Circle, Suite 400, Chantilly, VA 20151
- First Piedmont Corporation, 1-434-432-0211, P.O. Box 1069, Chatham, VA 24531
- Hazardous Waste Disposal Companies
 - Care Environmental Corp., 1-973-299-0774, 100 US Highway 46, Bldg. A, Mountain Lakes, NJ 07046
 - Clean Harbors Environmental Services, Inc., 1-800-638-4440, 1104 West Roslyn Road, Colonial Heights, VA 23834
 - Clean Venture, Inc., 1-410-368-9170, 2931 Whittington Avenue, Baltimore, MD 21230
 - Eco-Flo, 1-301-498-4550, 8520 Corridor Road, Suite M, Savage, MD 20763
 - Environmental Management Services, Inc., 1-301-309-0475, 1688 East Gude Drive, Suite 301, Rockville, MD 20850
 - Potomac Environmental, Inc., 1-540-659-1894, P.O. Box 1836, Stafford, VA 22555
 - Remac America, Inc., 1-800-600-9608, 10860 Spring Knoll Drive, Potomac Industrial Park, Potomac, MD 20854
- Medical/Infectious Waste Disposal Service Companies
 - Clean Venture, Inc., 1-410-368-9170, 2931 Whittington Avenue, Baltimore, MD 21230
 - Environmental Management Services, Inc., 1-301-309-0475, 1688 East Gude Drive, Suite 301, Rockville, MD 20850
 - SteriCycle, 1-800-234-7822, 5901 Chemical Road, Baltimore, MD 21226
- Petroleum Contaminated Soil or Products Disposal Companies
 - First Piedmont Corporation, 703-432-0211, P.O. Box 1069, Chatman, VA 24531
- Specific Collection Service Companies

- Davis Industries, Inc., (Junk car removal), 703-550-7402, 9920 Richmond Highway, Lorton, VA 22079
- U.S. Filter, (Waste oil & anti-freeze collection), 1-410-633-0606, 6305 East Lombard Street, Baltimore, MD 21224
- Mid-States Oil, (Waste oil collection), 1-410-354-9500, 3520 Fairfield Road, Baltimore, MD 21226
- Valley Proteins, (Rendering of animal waste & cooking oil), 1-410-355-4800, 1515 Open Street, Baltimore, MD 21226
- U.S. Filter, (Waste oil & anti-freeze collection), 1-888-749-8344, 5800 Farrington Avenue, Alexandria, VA 22304
- Willow Spring Wrecker Service, (Junk car removal), 703-631-9339, 12815 Lee Highway, Fairfax, VA 22030


Electronics Recycling Information

KnowToxics: www.knowtoxics.com and click on private recycling services.

Local Electronics Recyclers: Call for pricing

- [Computer CORE:](#) 3846 King St, Alexandria, VA 22302 PH: 703-931-7346
- [Securis:](#) 14801 Willard Rd, Ste 800, Chantilly, VA 20151 703-436-1967
- [eAssett Solutions:](#) 134 W Jefferson ST, Falls Church, VA 22046 703-534-5865
- [Shred Station Express:](#) 5604 General Washington Dr, Alexandria, VA 22312 703-347-4638

Less Toxic & Reuse Opportunities

Residents and businesses can reduce the need to use the household hazardous waste site by using [less toxic products](#)  and donating reusable electronics to charities.

Hazardous Product	Hazardous Component	Less Toxic Option	Proper Disposal
Stains/Finishes	Glycols, ethers, ketones, minerals, spirits, toluene, xylene, other volatile organic compounds	Water-based finishes	Store in screw top container. Save for household hazardous waste collection.
Oil-Based Paints	Alcohol, acetone, esters, ketones, petroleum distillates, other volatile compounds	Use water-based paints*	Share leftovers with friends or neighbors; save for household hazardous waste collection.
Used Oil	Hydrocarbon, heavy metals	none; use recycled oil	Can be recycled. Contact oil collection center or service station; save for household hazardous waste collection.
Bleach Cleaners	Lye, hydrogen peroxide, sodium or calcium hypochlorite	Baking soda or borax	In well-ventilated area, use up as intended. Never mix with ammonia.

Ammonia-Based Cleaners	Ammonia, ethanol	White vinegar, lemon juice	In well-ventilated area, use up as intended. Never mix with chlorine bleach.
Drain Opener	Lye, sodium hypochlorite	Prevent blockage with biological clog preventers; remove clogs with plunger or plumber's "snake"	Save for household hazardous waste collection.
Oven Cleaner	Lye, ammonia	Catch drips with foil or cookie sheets; for cleaning use baking soda, water, scouring pad	In well-ventilated area, use up as intended. Save for household hazardous waste collection.
Pesticides	Almost all pesticides are hazardous. Call US EPA for a list of banned pesticides	Remove food source, use traps and baits, or biological controls	Save for household hazardous waste collection.
Paint Thinners	Alcohol, acetone, esters, ketones, petroleum distillates, other	Water in water based paints	Store in screw top container, allow paint solids to settle to bottom & pour off clear thinner to use again. Save remainder for household hazardous waste collection.

	volatile organic compounds	
*Water-based, Latex paints	Not considered hazardous	Share leftovers with friends or neighbors; add kitty litter or saw dust to left over and allow the paint can to dry out before throwing in the trash. Can be brought to household hazardous waste collection.

Additional Resources

- [HHW & Electronics Brochure](#) 
- [Environmental Protection Agency \(EPA\)](#)



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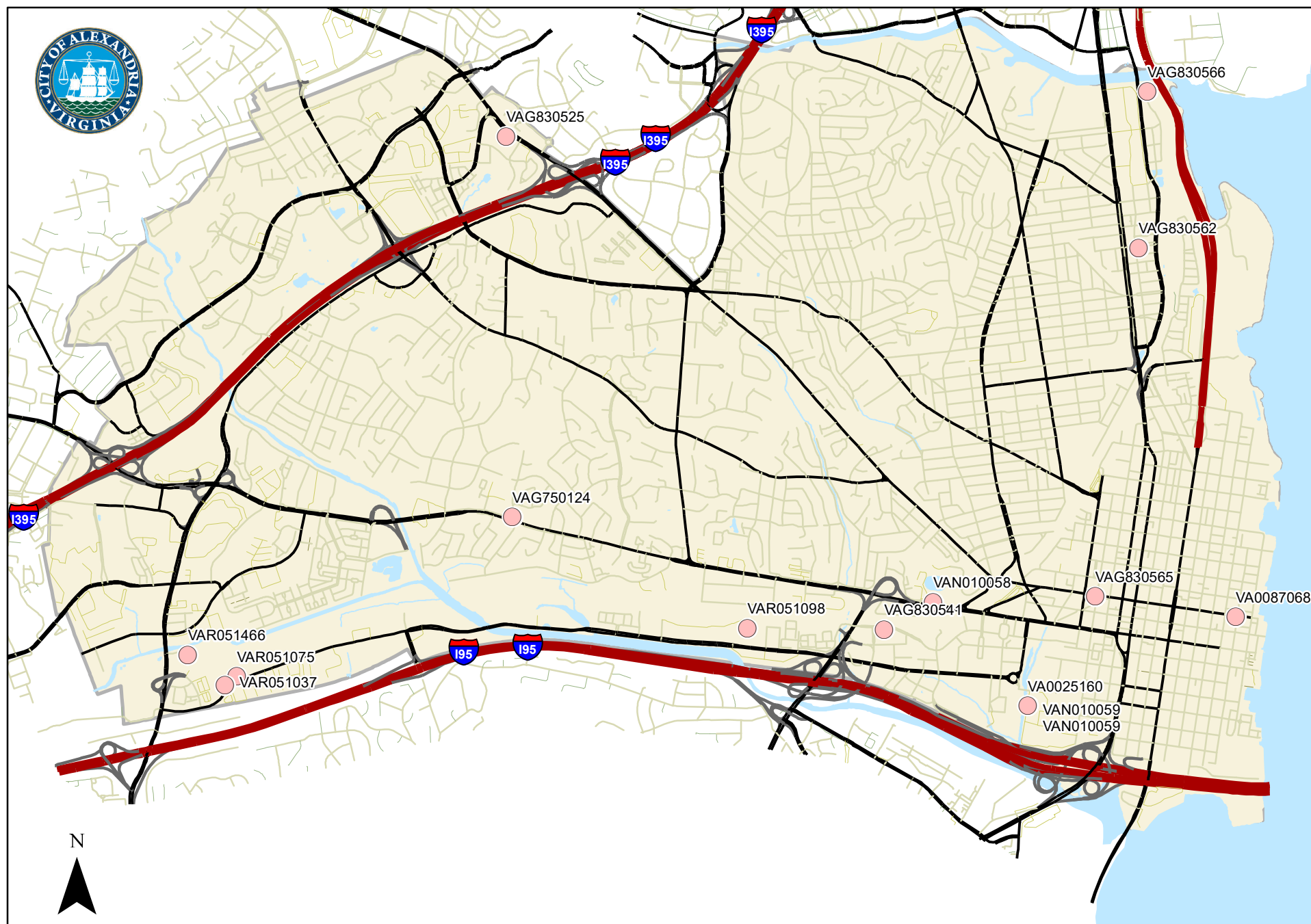
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City of Alexandria Permitted Discharges MS4 Reporting Year 2020-2021



VPDES Permits PY 2020-2021

INDIVIDUAL PERMITS

Classification	Type	Facility Name	Permit No	Expiration Date	Location Address 1	Location City	Location State
Active	Individual Permits	Alexandria Renew Enterprises WWTP	VA0025160	6/30/2026	1500 Eisenhower Ave	Alexandria	VA
Active	Individual Permits	Alexandria Combined Sewer System	VA0087068	8/31/2023	Various locations	Alexandria	VA

GENERAL PERMITS

Classification	Type	Facility	Permit No	Expiration Date	Location Address 1	Location City	Location State
Active	Vehicle Wash and Laundry GP	Enterprise Rent A Car - Alexandria	VAG750124	10/15/2022	4213 Duke St	Alexandria	VA
Active	Stormwater Industrial GP	United Parcel Service - Alexandria	VAR051037	6/30/2024	5601 Eisenhower Ave	Alexandria	VA
Active	Stormwater Industrial GP	Covanta Alexandria Arlington Incorporated	VAR051075	6/30/2024	5301 Eisenhower Ave	Alexandria	VA
Active	Stormwater Industrial GP	WMATA - Alexandria Metro Rail Yard	VAR051098	6/30/2024	3101 Eisenhower Ave	Alexandria	VA
Active	Stormwater Industrial GP	Virginia Paving Company - Alexandria Plant	VAR051466	6/30/2024	5601 Courtney Ave	Alexandria	VA
Active	Nutrient Trading GP	Alexandria Renew Enterprises WWTP	VAN010059	12/31/2021	1500 Eisenhower Ave	Alexandria	VA
Active	Nutrient Trading GP	Virginia American Water Prince William - Aggregate	VAN010058	12/31/2021	2223 Duke St	Alexandria	VA
Active	Petroleum Discharge GP	Robinson Terminal South Robinson Landing	VAG830512	2/25/2023	2 Duke St	Alexandria	VA
Active	Petroleum Discharge GP	King Street Liberty	VAG830525	2/25/2023	4368 King St	Alexandria	VA
Active	Petroleum Discharge GP	Hoffman Town Centre Blocks 4 and 5	VAG830541	2/25/2023	2410 and 2460 Mill Rd	Alexandria	VA
Active	Petroleum Discharge GP	Institute for Defense Analyses Potomac Yard	VAG830548	2/25/2023	701 E Glebe Rd	Alexandria	VA
Active	Petroleum Discharge GP	Alexandria Bus Depot	VAG830554	2/25/2023	600 N Royal St	Alexandria	VA
Active	Petroleum Discharge GP	WMATA - Alexandria Metro Rail Yard	VAG830551	2/25/2023	3101 Eisenhower Ave	Alexandria	VA
Active	Petroleum Discharge GP	Metro Virginia Office Building	VAG830558	2/25/2023	2395 Mill Rd	Alexandria	VA
Active	Petroleum Discharge GP	Potomac Yards Landbay H/I	VAG830562	2/25/2023	2551 Main Line Blvd	Alexandria	VA
Active	Petroleum Discharge GP	King Street Liberty	VAG830525	2/25/2023	4368 King St	Alexandria	VA
Active	Petroleum Discharge GP	Potomac Yards Land Bay F East Infrastructure	VAG830566	2/25/2023	3801 Potomac Ave	Alexandria	VA
Active	Petroleum Discharge GP	1300 King Street	VAG830565	2/25/2023	1300 King St	Alexandria	VA

Strikethrough = No longer indicated in the permit table; Red font = New permits for 2020-2021

Source Information: <https://www.deq.virginia.gov/permits-regulations/permits/water/surface-water-virginia-pollutant-discharge-elimination-system>



City of Alexandria, Virginia
Department of Planning & Zoning

SPECIAL USE PERMIT CERTIFICATE

Article XI, Division A, Section 11-510 of the 1992 Zoning Ordinance of the City of Alexandria, Virginia requires that you display this Special Use Permit in a conspicuous and publicly accessible place. A copy of the list of conditions associated with the special use permit shall be kept on the premises and made available for examination by the public upon request.

Special Use Permit	#2020-00087
Approved by Planning and Zoning:	November 20, 2020
Permission is hereby granted to:	Cristian Velasco
to use the premises located at:	2400 Mount Vernon Avenue
for the following purpose:	see attached report

It is the responsibility of the Special Use Permit holder to adhere to the conditions approved by City Council. The Department of Planning and Zoning will periodically inspect the property to identify compliance with the approved conditions. If any condition is in violation, the permit holder will be cited and issued a ticket. The first violation carries a monetary fine. Continued violations will cause staff to docket the special use permit for review by City Council for possible revocation.

November 20, 2020

Karl Moritz (by T. LaColla)

Date

Karl Moritz, Director
Department of Planning and Zoning

DATE: November 20, 2020

TO: Tony LaColla, Division Chief, Land Use Services
Department of Planning and Zoning

FROM: Anna Kohlbrenner, Planner
Department of Planning and Zoning

SUBJECT: Special Use Permit #2020-00087
Administrative Review for Special Use Permit for a New Use
Site Use: Restaurant with outdoor dining
Applicant: Cristian Velasco
Location: 2400 Mount Vernon Avenue
Zone: CL/Commercial Low

Request

The applicant, Cristian Velasco, proposes a restaurant with outdoor dining at 2400 Mount Vernon Avenue. The applicant proposes 20 indoor seats and eight outdoor seats for the Italian Gelato ice cream restaurant. The eight outdoor seats would be arranged at the side of the building. The fast-casual restaurant would be open Tuesday-Sunday 8 a.m. – 10 p.m. and closed Mondays. The lot also contains an eight-space parking lot to the rear of the building. Loading and unloading would occur between 9 a.m. – 1 p.m., twice a week. The applicant does not propose live entertainment.

Parking

Pursuant to Section 8-200(A)(17)(a) of the Zoning Ordinance, restaurants within the enhanced transit area are required to provide a minimum of one parking space per 1,000 square feet of floor area. The approximately 1,550 square foot structure would require two parking spaces. Outdoor dining up to 20 seats are exempt from providing parking spaces. Section 8-100(A)(9) of the Zoning Ordinances exempts nonresidential uses from providing parking if the requirement is two spaces or less. Therefore, the applicant does not have to satisfy a parking requirement.

Community Outreach

Public notice was provided through eNews, via the City's website, and by posting a placard on the site. In addition, Del Ray Citizens Association and Del Ray Land Use Committee was sent written notification of the current application. Staff did not receive any comments.

Staff Action

Staff supports the applicants request to operate a restaurant at 2400 Mount Vernon Avenue. The small-scale restaurant is not expected to produce neighborhood impacts, as several restaurants and businesses surround the area.

Staff hereby approves the Special Use Permit request.

ADMINISTRATIVE ACTION - DEPARTMENT OF PLANNING AND ZONING:

Date: November 20, 2020

Action: Approved


Tony LaColla, Division Chief

Attachments: 1) Special Use Permit Conditions
2) Statement of Consent
3) Department Comments

CONDITIONS OF SPECIAL USE PERMIT #2020-00087

The new owner is responsible for ensuring compliance with all applicable codes and ordinances and ensuring that the following conditions are adhered to at all times. Violation of any of the SUP conditions may result in fines and/or referral to public hearing by the Planning Commission and City Council.

1. The special use permit shall be granted to the applicant only or to any corporation in which the applicant has a controlling interest. (P&Z)
2. All patrons must leave the premises one hour after the closing hour. (P&Z)
3. The maximum number of indoor seats at the restaurant shall comply with the state building code. (P&Z)
4. The number of outdoor seats shall be eight. All outdoor dining furniture must remain on private property and may not encroach into the public right-of-way. (P&Z)
5. The applicant shall conduct employee training sessions on an ongoing basis, including as part of any employee orientation, to discuss all SUP provisions and requirements. (P&Z)
6. No food, beverages, or other material shall be stored outside, with the exception of materials specified in other conditions. (P&Z)
7. Delivery vehicles operated and managed by the applicant are permitted. Delivery vehicles must be parked off-street when not in use. (P&Z)
8. Indoor limited, live entertainment may be offered and must comply with the City's noise ordinance. No admission or cover fee shall be charged. All entertainment shall be subordinate to the principal function of the restaurant as an eating establishment. Any advertising of the entertainment shall reflect the subordinate nature of the entertainment by featuring food service as well as the entertainment. (P&Z)
9. All windows shall remain transparent. The placement or construction of items that block the visibility through windows of the interior of the commercial space from the street and sidewalk, including but not limited to walls, window film, storage cabinets, carts, shelving, boxes, coat racks, storage bins, and closets, shall be prohibited. This is not intended to prevent retailers from displaying their goods in display cases that are oriented towards the street frontage. (P&Z)
10. The applicant shall require its employees who drive to use off-street parking. (T&ES)
11. The applicant shall encourage its employees to use public transportation to travel to and from work. The business shall contact Go Alex at goalex@alexandriava.gov for information on establishing an employee transportation benefits program. (T&ES)

12. The applicant shall provide information about alternative forms of transportation to access the site, including but not limited to printed and electronic business promotional material, posting on the business website, and other similar methods. Contact Go Alex at goalex@alexandriava.gov for more information about available resources. (T&ES)
13. The applicant shall encourage patrons to park off-street through the provision of information about nearby garages or lots in the business' advertising and website. (T&ES)
14. Exterior power washing of the building shall not be completed using any kind of detergents. (T&ES)
15. Chemicals, detergents or cleaners stored outside the building shall be kept in an enclosure with a roof. (T&ES)
16. If used cooking oil is stored outside, the drum shall be kept securely closed with a bung (a secure stopper that seals the drum) when not receiving used oil, it shall be placed on secondary containment, and it shall be kept under cover to prevent rainwater from falling on it. (T&ES)
17. Trash and garbage shall be stored inside or in sealed containers that do not allow odors to escape, invasion by animals, or leaking. No trash or debris shall be allowed to accumulate outside of those containers. Outdoor containers shall be maintained to the satisfaction of the Directors of P&Z and T&ES, including replacing damaged lids and repairing/replacing damaged dumpsters. (P&Z) (T&ES)
18. Kitchen equipment, including floor mats, shall not be cleaned outside, nor shall any cooking residue or wash water be washed into the streets, alleys or storm sewers. (T&ES)
19. The applicant shall control cooking odors, smoke and any other air pollution from operations at the site and prevent them from leaving the property or becoming a nuisance to neighboring properties, as determined by the Department of Transportation & Environmental Services. (T&ES)
20. All waste products including but not limited to organic compounds (solvents and cleaners) shall be disposed of in accordance with all local, state and federal ordinances or regulations. (T&ES)
21. Supply deliveries, loading, and unloading activities shall not occur between the hours of 11:00pm and 7:00am. (T&ES)
22. The use must comply with the city's noise ordinance. No amplified sound shall be audible at the property line after 10:00 pm. (T&ES)
23. Litter on the site and on public rights-of-way and spaces adjacent to or within 75 feet of the premises shall be picked up at least twice a day and at the close of business, and more

often if necessary, to prevent an unsightly or unsanitary accumulation, on each day that the business is open to the public. (P&Z)

24. The Director of Planning and Zoning shall review the special use permit after it has been operational for one year, and shall docket the matter for consideration by the Planning Commission and City Council if (a) there have been documented violations of the permit conditions which were not corrected immediately, constitute repeat violations or which create a direct and immediate adverse zoning impact on the surrounding community; (b) the director has received a request from any person to docket the permit for review, as the result of a complaint that rises to the level of a violation of the permit conditions_or (c) the director has determined that there are problems with the operation of the use and that new or revised conditions are needed. (P&Z)

CITY DEPARTMENT COMMENTS

Legend: C - code requirement R - recommendation S - suggestion F - finding

Transportation & Environmental Services:

F-1 SWM has no comments.

R-1 The applicant shall require its employees who drive to use off-street parking. (T&ES)

R-2 The applicant shall encourage its employees to use public transportation to travel to and from work. The business shall contact Go Alex at goalex@alexandriava.gov for information on establishing an employee transportation benefits program. (T&ES)

R-3 The applicant shall provide information about alternative forms of transportation to access the site, including but not limited to printed and electronic business promotional material, posting on the business website, and other similar methods. Contact Go Alex at goalex@alexandriava.gov for more information about available resources. (T&ES)

R-4 The applicant shall encourage patrons to park off-street through the provision of information about nearby garages or lots in the business' advertising and website. (T&ES)

R-5 Exterior power washing of the building shall not be completed using any kind of detergents. (T&ES)

R-6 Chemicals, detergents or cleaners stored outside the building shall be kept in an enclosure with a roof. (T&ES)

R-7 If used cooking oil is stored outside, the drum shall be kept securely closed with a bung (a secure stopper that seals the drum) when not receiving used oil, it shall be placed on secondary containment, and it shall be kept under cover to prevent rainwater from falling on it. (T&ES)

R-8 Trash and garbage shall be stored inside or in sealed containers that do not allow odors to escape, invasion by animals, or leaking. No trash or debris shall be allowed to accumulate outside of those containers. Outdoor containers shall be maintained to the satisfaction of the Directors of P&Z and T&ES, including replacing damaged lids and repairing/replacing damaged dumpsters. (P&Z) (T&ES)

R-9 Kitchen equipment, including floor mats, shall not be cleaned outside, nor shall any cooking residue or wash water be washed into the streets, alleys or storm sewers. (T&ES)

R-10 The applicant shall control cooking odors, smoke and any other air pollution from operations at the site and prevent them from leaving the property or becoming a nuisance to neighboring properties, as determined by the Department of Transportation & Environmental Services. (T&ES)

R-11 All waste products including but not limited to organic compounds (solvents and cleaners) shall be disposed of in accordance with all local, state and federal ordinances or regulations. (T&ES)

R-12 Supply deliveries, loading, and unloading activities shall not occur between the hours of 11:00pm and 7:00am. (T&ES)

R-13 The use must comply with the city's noise ordinance. No amplified sound shall be audible at the property line after 10:00 pm. (T&ES)

Code Enforcement:

C-1 A building permit and plan review are required prior to the start of construction.

Health Department:

No comments received.

Parks and Recreation:

No comments received.

Police Department:


No comments received.

Fire:

No comments or concerns. Occupant load does not require a fire prevention permit.

STATEMENT OF CONSENT

The undersigned hereby agrees and consents to the attached conditions of this Special Use Permit #2020-00087. The undersigned also hereby agrees to obtain all applicable licenses and permits required for a restaurant at 2400 Mount Vernon Ave.


Applicant - Signature

CRISTIAN VELASCO
Applicant - Printed

November 20/2020
Date

NOVEMBER 20/2020
Date

**General VPDES Permit for
Small Municipal Separate Storm Sewer Systems
Permit No. VAR040057**

Year 3 Annual Report
July 1, 2020 – June 30, 2021
City of Alexandria, Virginia

Appendix D – Minimum Control Measure #4, Construction Site Stormwater Runoff Control

1. E&SC Ordinance (excerpt)

Sec. 5-4-1 - Definitions.

As used in this chapter, and pursuant to 9 VAC 25-840, the following terms shall have the meanings set forth below, unless the context requires a different meaning:

- (a) "Agreement in lieu of a plan" means a contract between the city and the owner which specifies conservation measures which must be implemented in the construction or modification of a single-family residence; this contract may be executed by the director in lieu of an erosion and sediment control plan.
- (b) "Alexandria Water Quality Volume" means the volume equal to the first one-half inch of runoff multiplied by the impervious surface of the land development project. This is separate and in addition to the state stormwater management water quality requirement.
- (c) "Applicant" shall mean any person submitting an erosion and sediment control plan or an agreement in lieu of a plan for approval or requesting the issuance of a permit, when required, authorizing land-disturbing activities to commence.
- (d) "Certified inspector" means an employee or agent of the city who (i) holds a certificate of competence from the soil and water conservation board in the area of project inspection or (ii) is enrolled in the board's training program for project inspection and successfully completes such program within one year after enrollment.
- (e) "Certified plan reviewer" means an employee or agent of a VESCP authority who (i) holds a certificate of competence from the board in the area of plan review, (ii) is enrolled in the board's training program for plan review and successfully completes such program within one year after enrollment, or (iii) is licensed as a professional engineer, architect, landscape architect, land surveyor pursuant to Article 1 (§ 54.1-400 et seq.) of Chapter 4 of Title 54.1, or professional soil scientist as defined in § 54.1-2200.
- (f) "Certified program administrator" means an employee or agent of a VESCP authority who (i) holds a certificate of competence from the board in the area of program administration or (ii) is enrolled in the board's training program for program administration and successfully completes such program within one year after enrollment.
- (g) "Director" means the director of transportation and environmental services, designee or duly authorized agent.
- (h) "Erosion and sediment control plan," "conservation plan" or "plan," shall mean a document containing material for the conservation of soil and water resources of an unit or group of units of land. It may include appropriate maps, an appropriate soil and water plan, inventory and management information with needed interpretations, and a record of decisions contributing to conservation treatments. The plan shall contain all major conservation decisions to assure that the entire unit or units of land will be so treated to achieve the conservation objectives.
- (i) "Erosion impact source area" shall mean an area of land not associated with current land-disturbing activity but subject to persistent erosion resulting in the delivery of sediment onto neighboring properties or into state waters. This definition shall not apply to any lot or parcel of land of 10,000 square feet or less used for residential purposes or to shorelines where the erosion results from wave action or other coastal processes.
- (j) "Land-disturbing activity" for the purposes of this chapter shall mean any land change which may result in soil erosion from water or wind and the movement of sediments into state waters or onto lands in the commonwealth, including, but not limited to, clearing, grading, excavating, transporting and filling of land.
- (k) "Natural channel design concepts" means the utilization of engineering analysis and fluvial geomorphic processes to create, rehabilitate, restore, or stabilize an open conveyance system for the purpose of creating or recreating a stream that conveys its bankfull storm event within its banks and allows larger flows to access its bankfull bench and its floodplain.

- (l) "Owner" shall mean the owner or owners of the freehold of the premises or of a lesser estate therein, a mortgagee or vendee in possession, an assignee of rents, a receiver, an executor, a trustee, a lessee or another person, firm or corporation in control of a property.
- (m) "Peak flow rate" means the maximum instantaneous flow from a given storm condition at a particular location.
- (n) "Permittee" shall mean the person to whom the permit authorizing land-disturbing activities is issued or the person who certifies that the approved erosion and sediment control plan will be followed.
- (o) "Person" for the purposes of this chapter shall mean any individual, partnership, firm, association, joint venture, public or private corporation, trust, estate, commission, board, public or private institution, utility, cooperative, county, city, town, or other political subdivision of the commonwealth, interstate body, or other legal entity.
- (p) "Plan-approving authority" shall mean the department of transportation and environmental services which shall be responsible for determining the adequacy of a plan submitted for land-disturbing activities on a unit or group of units of lands and for approving plans.
- (q) "Runoff volume" means the volume of water that runs off the land development project from a prescribed storm event.
- (r) "State waters" shall mean all waters on the surface and or wholly or partially underground that is within or bordering the commonwealth or that is within the jurisdiction of the commonwealth. (Ord. No. 4489, 6/16/07, Sec. 1; Ord. No. 4957, 6/13/15, Sec. 1)

Sec. 5-4-1.1 - Approved erosion and sediment control plan required—construction of buildings.

Except as provided in section 5-4-5 of this code, it shall be unlawful for any persons to construct or erect any building or structure on any land within the city unless there is in force an approved erosion and sedimentation control plan issued under the provisions of this chapter. (Ord. No. 4489, 6/16/07, Sec. 1)

Sec. 5-4-2 - Same—enlargement of buildings.

Except as provided in section 5-4-5 of this code, it shall be unlawful for any person to alter any building or structure on any land within the city in such manner as to change the land area covered by the building or structure unless there is in force an approved erosion and sedimentation control plan issued under the provisions of this chapter. (Ord. No. 4489, 6/16/07, Sec. 1)

Sec. 5-4-3 - Same—change or disturb terrain.

- (a) Except as provided in section 5-4-5 of this code, 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 unless there is in force an approved erosion and sedimentation control plan issued under the provisions of this chapter.
- (b) Except as provided in section 5-4-5 of this code, 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 unless there is in force an approved erosion and sedimentation control plan issued under the provisions of this chapter (Ord. No. 4489, 6/16/07, Sec. 1)

Sec. 5-4-3.1 - Same—erosion impact source area.

Notwithstanding any contrary provision of this chapter, it shall be unlawful for any property owner to fail, neglect or refuse to implement an erosion and sediment control plan, approved by the director, and within such reasonable time as the director shall specify, for any land designated by the director as an erosion impact source area. (Ord. No. 4489, 6/16/07, Sec. 1; Ord. No. 4957, 6/13/15, Sec. 1)

Sec. 5-4-3.2 - Wetlands mitigation banks.

In accordance with the procedure set forth by § 62.1-44.15-51(E) of the Code of Virginia which is herein incorporated, any person engaging in the creation and operation of wetland mitigation banks in multiple jurisdictions, which have been approved and are operated in accordance with applicable federal and state guidance, laws, or regulations for the establishment, use, and operation of mitigation banks, pursuant to a permit issued by the Department of Environmental Quality, the Marine Resources Commission, or the U.S. Army Corps of Engineers, may, at the option of that person, file general erosion and sediment control specification for wetland mitigation banks annually with the Virginia Soil and Water Conservation Board (board) for review and approval consistent with guidelines established by the board. (Ord. No. 4489, 6/16/07, Sec. 1; Ord. No. 4957, 6/13/15, Sec. 1)

Sec. 5-4-4 - Compliance with approved plan.

- (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. (Ord. No. 4489, 6/16/07, Sec. 1)

Sec. 5-4-5 - Exceptions.

The provisions of this chapter shall not apply to any construction, reconstruction, repair or alteration of any building or structure when no land is disturbed and no trees, shrubs, grass or vegetation is destroyed or removed, nor to any of the following:

- (a) The construction or erection of any building or structure when the disturbed land area of the site is less than 2,500 square feet in size, provided there is no natural or man-made drainage ditch, swale draining in excess of 2,500 square feet, or storm sewer on the disturbed land and no existing or proposed grade on the disturbed land exceeds 10 percent.
- (b) The alteration of any building or structure when the disturbed land area of the site will be less than 2,500 square feet, provided there is no natural or man-made drainage ditch, swale draining in excess of 2,500 square feet, or storm sewer on the disturbed land and no existing or proposed grade on the disturbed land exceeds 10 percent.
- (c) The clearing, grading, excavating, filling or changing the contour of, or removing topsoil from, less than 2,500 square feet of land, provided there is no natural or man-made drainage ditch, swale draining in excess of 2,500 square feet, or storm sewer on the disturbed land and no existing or proposed grade on the disturbed land exceeds 10 percent.
- (d) The clearing, grading, excavating, filling or changing the contour of, or removing topsoil from, less than 2,500 square feet of land, provided there is no natural or manmade drainage ditch, swale draining in excess of 2,500 square feet or storm sewer on the disturbed land, and further provided the disturbance of the land does not cause sedimentation on land outside the exterior boundaries of the land disturbed.
- (e) The removal or destruction of trees, shrubs, grass, weeds, vegetation, ground cover, or other plant life which cover less than 2,500 square feet of land, provided there is no natural or manmade drainage ditch, swale draining in excess of 2,500 square feet, or storm sewer on the disturbed land and no existing or proposed grade on the disturbed land exceeds 10 percent.
- (f) The planting, trimming, pruning or removal of trees, shrubs, grass, weeds, vegetation, ground cover or other plant life pursuant to chapter 2 of title 6 of this code.

- (g) The removal or destruction of trees, shrubs, grass, weeds, vegetation, ground cover or other plant life which is dead, poisonous or infected with disease or injurious insects or pests.
- (h) The gardening and care of lawns.
- (i) The removal or destruction of trees, shrubs, grass, weeds, vegetation, ground cover or other plant life from lots of less than 2,500 square feet on which there now exists a dwelling.
- (j) The exploration or drilling for oil and gas including the well site, roads, feeder lines and off-site disposal areas.
- (k) The repair or rebuilding of the tracts, right-of-way, bridges, communication facilities and other related structures and facilities of a railroad company.
- (l) Shore erosion control projects on tidal waters when the projects are approved by local wetlands boards, the Marine Resources Commission and/or the U.S. Army Corps of Engineers and located on tidal waters and within nonvegetated or vegetated wetlands as defined in Title 28.2 of the Code of Virginia. However, any associated land that is disturbed outside of this exempted area shall remain subject to the article and the regulations adopted pursuant thereto.
- (m) Emergency work to protect life, limb or property, and emergency repairs; provided, that, if the land-disturbing activity would have required an approved erosion and sediment control plan if the activity were not an emergency, the land area disturbed shall be shaped and stabilized in accordance with the requirements of the plan-approving authority.
- (n) Individual utility service connections.
- (o) Installation, maintenance, or repair of any underground public utility when such activity occurs on an existing hard surfaced road, street, or sidewalk provided the land-disturbing activity is confined to the area of the road, street, or sidewalk which is hard surfaced.
- (p) Septic tank lines or drainage fields unless included in an overall plan for land-disturbing activity relating to construction of the building to be served by the septic tank system.
- (q) Surface or deep mining.
- (r) Tilling, planting, or harvesting of agricultural, horticultural, or forest crops, or livestock feedlot operations; including engineering operations as follows: construction of terraces, terrace outlets, check dams, desilting basins, dikes, ponds, ditches, strip cropping, lister furrowing, contour cultivating, contour furrowing, land drainage and land irrigation. However, this exception shall not apply to harvesting of forest crops unless the area on which harvesting occurs is forested artificially or naturally in accordance with the provisions of Chapter 11 (§ 10.1-1100 et seq.) of this title or is converted to bona fide agricultural or improved pasture use as described in subsection B of § 10.1-1163.
- (s) Agricultural engineering operations including, but not limited, to the construction of terraces, terrace outlets, check dams, desilting basins, dikes, ponds not required to comply with the provisions of the Dam Safety Act, Article 2 (§ 10.1-604 et seq.) of Chapter 6 of the Erosion and Sediment Control Law, ditches, strip cropping, lister furrowing, contour cultivating, contour furrowing, land drainage and irrigation.
- (t) Installation of fence and sign posts or telephone and electric poles and other kinds of posts or poles. (Ord. No. 4489, 6/16/07, Sec. 1; Ord. No. 4957, 6/13/15, Sec. 1)

Sec. 5-4-6 - Permits not to be issued without approved erosion and sedimentation control plan when plan required by chapter.

- (a) No permit shall be issued to construct, erect, or alter any building or structure on any land within the city until a plan has been submitted and approved in accordance with the provisions of this chapter and the applicant has certified in writing that the plan will be followed. The person responsible for carrying out the plan shall provide the name of an individual holding a certificate of competence to the program authority, as provided by § 62.1-44.15:52, who will be in charge of and responsible for

carrying out the land disturbing activity. However, any plan-approving authority may waive the certificate of competence requirement for an agreement in lieu of a plan for construction of a single family residence. If a violation occurs during the land-disturbing activity, then the person responsible for carrying out the agreement in lieu of a plan shall correct the violation and provide the name of an individual holding a certificate of competence, as provided by § 62.1-44.15:52. Failure to provide the name of an individual holding a certificate of competence prior to engaging in land-disturbing activities may result in revocation of the approval of the plan and the person responsible for carrying out the plan shall be subject to the penalties provided in this article.

- (b) No permit shall be issued to clear, grade, excavate, fill, remove topsoil from or change the contour of any land within the city until a plan has been submitted and approved in accordance with the provisions of this chapter and the applicant has certified in writing that the plan will be followed. (Ord. No. 4489, 6/16/07, Sec. 1; Ord. No. 4957, 6/13/15, Sec. 1)

Sec. 5-4-7 - Minimum criteria; city handbook.

- (a) The director shall administer and enforce the provisions of this chapter.
- (b) This chapter, the erosion and sediment control regulations of the Department of Environmental Quality (9 VAC 25-840 et seq.), and the "Virginia Erosion and Sediment Control Handbook, Third Edition, 1992, which are incorporated herein by reference, shall be an integral part of the city's erosion and sediment control program and shall comprise the city's "Erosion and Sediment Control Handbook." The text of these regulations is on file in the office of the director.
- (c) In addition to the minimum requirements for controlling erosion and sedimentation for land-disturbing activities which are contained in 9 VAC 25-840, the following additional minimum requirements shall apply:
 - (1) Protection of adjacent properties.
 - a. Properties adjacent to the site of a land disturbance shall be protected from sediment deposition. This may be accomplished by preserving a well-vegetated buffer strip around the lower perimeter of the land disturbance, by installing perimeter controls such as sediment barriers, filters, dikes, sediment basins or by a combination of such measures.
 - b. Vegetated buffer strips may be used alone only where runoff in sheet flow is expected. Buffer strips should be at least 20 feet in width. If at any time it is found that a vegetated buffer strip alone is ineffective in stopping sediment movement onto adjacent property, additional perimeter controls must be provided.
 - (2) The director may require sediment basins or traps for smaller disturbed areas where deemed necessary. The sediment basin requirement may also be waived if the director agrees that site conditions do not warrant its construction.
 - (3) Cut and fill slopes. Cut and fill slopes must be designed and constructed in a manner which will minimize erosion. Consideration must be given to the length and steepness of the slope, the soil type, upslope drainage area, groundwater conditions and other applicable factors. Slopes which are found to be eroding excessively within one year of construction must be provided with additional slope-stabilizing measures until the problem is corrected. The following guidelines are provided to aid site planners and plan reviewers in developing an adequate design.
 - a. Roughened soil surfaces are generally preferred to smooth surfaces on slopes.
 - b. Diversions should be constructed at the top of long, steep slopes which have significant drainage areas above the slope. Diversions or terraces may also be used to reduce slope length.
 - (4) The following additional stormwater management criteria shall apply: A stormwater management plan consistent with the requirements of Section 13-109(F) in Article XIII of the Alexandria Zoning Ordinance (the Environmental Management Ordinance and the Virginia Stormwater Management Program (VSMP) regulations shall apply. For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of this section shall be satisfied by compliance with water quantity

requirements in the Stormwater Management Act (§ 62.1-44.15:24 et seq.) and attendant regulations, unless such land-disturbing activities are in accordance with the grandfathering provisions of the VSMP regulations.

- (5) Runoff rate and channel adequacy must be verified with engineering calculations to the satisfaction of the director.
- (6) All channel improvements or modifications must comply with all applicable laws and regulations.
- (7) If the applicant chooses an option which includes stormwater detention, the applicant must provide the city with a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the party responsible for performing the maintenance. The responsible party may be an individual, organization or the city, whichever has consented to carry out the maintenance. If the designated maintenance responsibility is with an individual or organization other than the city, a maintenance agreement should be executed between the responsible party and the city.
- (8) Stabilization adequate to prevent erosion must be provided at the outlets of all pipes and paved channels. Energy dissipators shall be installed as required by the director.
- (9) Working in or crossing watercourses. Construction vehicles should be kept out of watercourses to the extent possible. Where in-channel work is necessary, precautions must be taken to stabilize the work area during construction to minimize erosion. The channel (including bed and banks) must always be re-stabilized immediately after in-channel work is completed.
- (10) Underground utility lines shall be installed in accordance with the following standard in addition to other applicable criteria: no more than 100 feet of trench are to be opened at one time.
- (11) Maintenance. All temporary and permanent erosion and sediment control practices must be maintained and repaired as specified in 9 VAC 25-840-60.
- (12) Submission of an erosion and sediment control plan to the city is a grant of unlimited right of entry to the property to officials or agents of the city for the purposes of determining adequacy of the proposed plan and inspection of land-disturbing activities for compliance with the approved plan.
- (d) The "Virginia Erosion and Sediment Control Handbook, Third Edition, 1992" and the tree planting and preservation regulations authorized by § 11-410(CC)(1) of the Zoning Ordinance of the City of Alexandria, and known as the city's Landscape Guidelines, shall be used by any applicant making a submittal under this chapter and by the director in his or her review and consideration of the adequacy of landscaping elements included in any erosion and sediment control plan submitted. (Ord. No. 4489, 6/16/07, Sec. 1; Ord. No. 4957, 6/13/15, Sec. 1)

Sec. 5-4-8 - Erosion and sediment control plans.

- (a) Applications for approved erosion and sediment control plans shall be submitted to and filed with the director as part of the plan of development pursuant to the requirements in Article XIII of the Alexandria Zoning Ordinance, on forms prepared by the city, prior to the time any work subject to this chapter is begun on land. Fees for reviewing erosion and sediment control plans, grading plans and performing field inspections for all new structures, exterior alteration, plumbing, electrical, or mechanical building permits where more than 2,500 square feet are disturbed shall be required, the fee to be determined by the director. Five copies of an erosion and sediment control plan or grading plan must accompany any application, parts of which shall also be on forms prepared by the city. Upon receipt of an application and plans, the director shall consider the plan in light of the provisions of this chapter, and Virginia Erosion and Sediment Control Law and attendant regulations, and promptly approve the plan, disapprove the plan or approve the plan with modifications, noting thereon any changes that will be required. The director shall promptly notify the applicant of his or her decision on a plan. Any approved plan shall be issued, dated, and bear the manual signature of the director or appropriate designee prior to the commencement of land-disturbing activities.
- (b) An application shall show the following:

- (1) The name, address and telephone number of the applicant.
- (2) The name, address and telephone number of the owner of record.
- (3) The name, address and telephone number of the person preparing the plan.
- (4) The location of the site, including lot number and tax map page number.
- (5) The total land area, area being disturbed and proposed amount of previous and impervious area.
- (6) Soil types by AASHO classification (or other classifications used by soil engineers), if available.
- (7) Method for collecting and depositing stormwater.
- (8) Test boring and soil test results when:
 - a. the site is in an area of the city known or suspected by the director to have soil problems or unstable soil;
 - b. any proposed slope on the site exceeds a grade of 20 percent;
 - c. the presence of ground water in substantial amounts is known or suspected by the director to be on the site; or
 - d. unstable soil is known or suspected by the director to be on the site.
- (9) Methods for control of contamination of land when the site is in an area found by the director to be contaminated by a toxic substance and hazardous to the public health, safety and welfare. Said methods shall comply and be in accordance with the "Administrative Procedures for Control of Contaminated Land, Alexandria, Virginia," dated October 30, 1976, that were promulgated by the city manager and adopted by the city council on November 23, 1976, by ordinance number 2145. These administrative procedures may be amended or revised from time to time by the city manager with the approval of the city council by motion.
- (10) A general description of existing trees, shrubs, grass, weeds, vegetation, ground cover and other plant life.
- (11) Any other pertinent information the director may require.
 - (c) An erosion and sediment control plan shall follow the format of map number 4, plate 6-4 of chapter 6 of the city's erosion and sediment control handbook. The plan shall also include appropriate title blocks, scales and a vicinity map.
 - (d) Where land-disturbing activities involve lands under the jurisdiction of more than one local control program an erosion and sediment control plan may, at the option of the applicant, be submitted to the Virginia Soil and Water Conservation Board for review and approval rather than to each jurisdiction concerned.
 - (e) When land-disturbing activity will be required of a contractor performing construction work pursuant to a construction contract, the preparation, submission and approval of an erosion control plan shall be the responsibility of the owner. (Ord. No. 4489, 6/16/07, Sec. 1; Ord. No. 4957, 6/13/15, Sec. 1)

**General VPDES Permit for
Small Municipal Separate Storm Sewer Systems
Permit No. VAR040057**

Year 3 Annual Report
July 1, 2020 – June 30, 2021
City of Alexandria, Virginia

**Appendix E – Minimum Control Measure #5, Post-Construction Stormwater Management for
New Development and Development on Prior Developed Lands**

1. Local VSMP Authority Approval Letter
2. Environmental Management Ordinance
3. Public Stormwater Facility BMP Inspections and Description of Significant Maintenance
4. Private Stormwater Facility BMP Inspections
5. Stormwater Management Facilities Installed this Permit Year
6. City Stormwater BMP Location Map
7. Stormwater BMP Maintenance Agreement example
8. Letter to owners of Single-Family Lot BMPs
9. Sample Single-Family Educational Materials for Single-Lot BMPs
10. Development Forms Webpage
11. Oronoco Remediation Update



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

December 22, 2014

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

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,

A handwritten signature in black ink, appearing to read "David K. Paylor".

David K. Paylor

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

ARTICLE XIII. - ENVIRONMENTAL MANAGEMENT

FOOTNOTE(S):

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Editor's note— Ord. No. 4865, § 1, adopted March 15, 2014, repealed Art. XIII and enacted a new article as set out herein. The former Art. XIII, §§ 13-100—13-120, pertained to similar subject matter and derived from Ord. No. 4443, § 1, adopted April 22, 2006.

Sec. 13-100. - General findings.

The Chesapeake Bay is one of the most productive estuaries in the world, providing substantial economic and social benefits to the people of the Commonwealth of Virginia. Healthy state and local economies are integrally related to and dependent upon the health of the Chesapeake Bay. The general welfare of the people of the Commonwealth depends upon the health of the Bay.

The waters of the Chesapeake Bay and its tributaries, including the Potomac River and Alexandria's local streams, have been degraded significantly by point source and nonpoint source pollution, which threatens public health and safety and the general welfare.

13-101 - Purpose.

- (A) It is the policy of the City of Alexandria, Virginia to protect the quality of water in the Chesapeake Bay and its tributaries and, to that end, to require all land uses and land development in the city to:
 - (1) Safeguard the waters of the commonwealth from pollution;
 - (2) Prevent any increase in pollution of state waters;
 - (3) Reduce existing pollution of state waters; and
 - (4) Promote water resource conservation.
- (B) To fulfill this policy, this Article XIII is adopted to minimize potential pollution from stormwater runoff, minimize potential erosion and sedimentation, reduce the introduction of harmful nutrients and toxins into state waters, maximize rainwater infiltration while protecting groundwater, and ensure the long-term performance of the measures employed to accomplish the statutory purpose.
- (C) The provisions of this chapter shall be deemed severable, and the invalidity or unenforceability of any individual provision or section hereof shall not affect the validity and enforceability of the remaining provisions of the chapter.

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) 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. 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.

- (A) *Administrator*. The person responsible for the administration of this Article XIII, which in the city shall be the director of T&ES or his/her designee.
- (B) *Alexandria water quality volume default*. The volume equal to the first 0.5 inch of runoff multiplied by the total impervious area of the site as defined herein.
- (C) *Applicant*. A person who has submitted, or plans to submit, a plan of development or an exception request to the city or a person seeking approval from the city for any activity that is regulated under this article.
- (D) *Best management practice (BMP)*. Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices, including both structural and nonstructural practices, to prevent or reduce the pollution of surface water and groundwater systems from the impacts of land-disturbing activities.
- (E) *Buffer area*. An area of natural or established vegetation managed to protect other components of a resource protection area and state waters from significant degradation due to land disturbances. To effectively perform this function, the buffer area will achieve a 75 percent reduction of sediments and a 40 percent reduction of nutrients. A 100-foot wide buffer area shall be considered to meet this standard.
- (F) *Chesapeake Bay Preservation Act land-disturbing activity*. A land-disturbing activity including clearing, grading, or excavation that results in a land disturbance equal or greater than 2,500 square feet and less than one acre in all areas of the city designated as subject to the regulations adopted pursuant to the Chesapeake Bay Preservation Act, Code of Virginia, § 62.1-44.15:67 et seq.
- (G) *Clean Water Act* or *CWA* means the federal Clean Water Act (33 U.S.C § 1251 et seq.), formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972, Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483, and Public Law 97-117, or any subsequent revisions thereto.
- (H) *Common plan of development or sale*. A contiguous area where separate and distinct construction activities may be taking place at different times on different schedules.
- (I) *Control measure*. Any best management practice or stormwater management facility, or other method used to minimize the discharge of pollutants to state waters.
- (J) *Department (DEQ)*. The Virginia Department of Environmental Quality.
- (K) *Development*. Land disturbance and the resulting landform associated with the construction or substantial alteration of residential, commercial, industrial, institutional, recreational, transportation, or utility facilities or structures or the clearing of land for non-agricultural or non-silvicultural purposes.
- (L) *Director of T&ES/Director of P&Z*. Director of T&ES means the director of transportation and environmental services of the City of Alexandria. Director of P&Z means the director of planning and zoning of the City of Alexandria.
- (M) *Floodway*. All lands as defined in subsection 6-303(K) 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 authorizing a category of discharges under the federal Clean Water Act and the Virginia Stormwater Management Act within a geographical area of the Commonwealth of Virginia.

- (O) *Highly erodible soils.* Soils (excluding vegetation) with an erodibility index (EI) from sheet and rill erosion equal to or greater than eight. The erodibility index for any soil is defined as the product of the formula $RKLS/T$, where K is the soil susceptibility to water erosion in the surface layer; R is the rainfall and runoff; LS is the combined effects of slope length and steepness; and T is the soil loss tolerance.
- (P) *Highly permeable soils.* Soils with a given potential to transmit water through the soil profile. Highly permeable soils are identified as any soil having a permeability equal to or greater than six inches of water movement per hour in any part of the soil profile to a depth of 72 inches (permeability groups "rapid" and "very rapid"), as found in the "National Soil Survey Handbook" of November 1996 in the "Field Office Technical Guide" of the U.S. Dept. of Agriculture Natural Resources Conversation Service.
- (Q) *Impervious cover.* A surface composed of any material that significantly impedes or prevents natural infiltration of water into the soil. Impervious surfaces include, but are not limited to: roofs, buildings, streets, parking areas, and any concrete, asphalt, or compacted gravel surface.
- (R) *Intermittent stream.* Any natural or engineered channel (measured from top of bank) with flowing water during certain times of the year, when groundwater provides for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow. Acceptable methodologies for establishing the presence of an intermittent stream will be provided by the director of T&ES pursuant to subsection 13-104(C).
- (S) *Isolated wetlands of minimal ecological value.* Those wetlands, as defined in 9VAC25-210-10, that:
- (i) Do not have a surface water connection to other state waters;
 - (ii) Are less than one-tenth of an acre in size;
 - (iii) Are not located in a Federal Emergency Management Agency designated 100-year floodplain;
 - (iv) Are not identified by the Virginia Natural Heritage Program as a rare or state significant natural community;
 - (v) Are not forested; and
 - (vi) Do not contain listed federal or state threatened or endangered species.
- (T) *Land disturbance or land-disturbing activity.* A manmade change to the land surface that potentially changes its runoff characteristics, including clearing, grading, filling, or excavation.
- (U) *Layout.* A conceptual drawing sufficient to provide for the specified stormwater management facilities required at the time of approval.
- (V) *Minor modification.* An amendment to an existing general permit before its expiration not requiring extensive review and evaluation including, but not limited to, changes in EPA promulgated test protocols, increasing monitoring frequency requirements, changes in sampling locations, and changes to compliance dates within the overall compliance schedules. A minor general permit modification or amendment does not substantially alter general permit conditions, substantially increase or decrease the amount of surface water impacts, increase the size of the operation, or reduce the capacity of the facility to protect human health or the environment.
- (W) *Natural channel.* A nontidal waterway that is part of the natural topography and is generally characterized as being irregular in cross section with a meandering course.
- (X) *Nonpoint source pollution.* Contamination from diffuse sources that is not regulated as point source pollution under Section 402 of the Clean Water Act.
- (Y) *Nontidal wetlands.* Those wetlands, other than tidal wetlands, that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under

normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, as defined by the U.S. Environmental Protection Agency pursuant to Section 404 of the Federal Clean Water Act, in 33 CFR 328.3b.

- (Z) *Operator*. The owner or operator of any facility or activity subject to regulation under this Article XIII.
- (AA) *Permittee*. The person to whom a state permit is issued, including any owner or operator whose construction site is covered under a state construction general permit.
- (BB) *Person*. Any individual, corporation, partnership, association, municipality, commission, or political subdivision, of a state, governmental body, including federal, state, or local entity as applicable, any interstate body or any other legal entity.
- (CC) *Pre-development*. The land use that exists at the time that plans for the development are submitted to the city. Where phased development or plan approval occurs (preliminary grading, roads and utilities, etc.), the land use at the time the first item is submitted shall establish pre-development conditions.
- (DD) *Post-development*. Conditions that reasonably may be expected or anticipated to exist after completion of the development activity on a specific site or tract of land.
- (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). 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.
- (FF) *Redevelopment*. The process of developing land that is or has been previously developed.
- (GG) *Regulations*. The Virginia Stormwater Management Program (VSMP) Permit Regulations, 9VAC-25-870, as amended.
- (HH) *Restored stormwater conveyance system*. A stormwater conveyance system that has been designed and constructed using natural channel design concepts. Restored stormwater conveyance systems include the main channel and the flood-prone area adjacent to the main channel.
- (II) *Resource management area (RMA)*. A Chesapeake Bay Preservation Area overlay designation as further defined in section 13-105(C).
- (JJ) *Resource protection area (RPA)*. A Chesapeake Bay Preservation Area overlay designation as further defined in section 13-105(B).
- (KK) *Shoreline*. Land contiguous to a body of water.
- (LL) *Site*. The land or water area where any facility or land-disturbing activity is physically located or conducted, including adjacent land used or preserved in connection with the facility or land-disturbing activity. Areas channelward of mean low water in tidal Virginia shall not be considered part of a site. The following shall be used for determining water quality and water quantity requirements in sections 13-109(E) and (F): 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 constitute the site; 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 constitute the site.
- (MM) *State*. The Commonwealth of Virginia.

- (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, and their attendant regulations.
- (OO) *State Water Control Law*. Chapter 3.1 (62.1-44.2 et seq.) of Title 62.1 of the Code of Virginia.
- (PP) *State waters*. All waters on the surface or in the ground, wholly or partially within or bordering the commonwealth or within its jurisdiction, including wetlands.
- (QQ) *Stormwater*. Precipitation that is discharged across the land surface or through conveyances to one or more waterways and that may include stormwater runoff, snow melt runoff, and surface runoff and drainage.
- (RR) *Stormwater management facility*. A device that controls stormwater runoff and changes the characteristics of that runoff including, but not limited to, the quantity and quality, the period of release or the velocity of flow.
- (SS) *Stormwater management plan*. A document or documents containing material describing methods for complying with the requirements of section 13-114 of this article.
- (TT) *Stormwater pollution prevention plan (SWPPP)*. A document that is prepared in accordance with section 13-113 of this article and good engineering practices and that identifies potential sources of pollutants that may reasonably be expected to affect the quality of stormwater discharges from the construction site, and otherwise meet the requirements of this article. In addition the document shall identify and require the implementation of control measures, and shall include, but not be limited to the inclusion of, or the incorporation by reference of, an approved erosion and sediment control plan, and a pollution prevention plan.
- (UU) *Subdivision*. Means the same as defined in section 2-197.2 of the Alexandria Zoning Ordinance.
- (VV) *Substantial alteration*. Expansion or modification of a building or development that would result in land disturbance exceeding an area of 2,500 square feet in the resource management area only.
- (WW) *Tidal shore*. Land contiguous to a tidal body of water between the mean low water level and the mean high water level.
- (XX) *Tidal wetlands*. Vegetated and nonvegetated wetlands as defined in Section 28.2-1300 of the Code of Virginia.
- (YY) *Top of Bank*. To the extent applicable, top of bank shall be determined on prevailing professional standards and the best professional judgment of the director.
- (ZZ) *Total maximum daily load (TMDL)*. The sum of the individual wasteload allocations for point sources, load allocations for nonpoint sources, natural background loading, and a margin of safety. TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure. The TMDL process provides for point versus nonpoint source trade-offs.
- (AAA) *Use*. Any activity on the land other than development, including, but not limited to agriculture, horticulture, and silviculture.
- (BBB) *Virginia Stormwater Management Act*. Article 2.3 (§ 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 and regulations.
- (DDD) *Virginia Stormwater Management Program (VSMP)*. 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.

- (EEE) *VSMP authority.* An authority approved by the Virginia State Water Control Board to operate a VSMP. For the purposes of this article, the city is the VSMP authority.
- (FFF) *VSMP 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 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 authority permit requirements in 9VAC-25-870 and the requirements of this article.
- (GGG) *Water body with perennial flow.* A body of water that flows in a natural or engineered channel year-round during a year of normal precipitation. This includes, but is not limited to streams, estuaries, and tidal embayments and may include drainage ditches or channels constructed in wetlands or from former natural drainage ways that convey perennial flow. Lakes and ponds, through which a perennial stream flows, are a part of the perennial stream. Generally, the water table is located above the streambed for most of the year and groundwater is the primary source for stream flow. The width of the perennial stream extends from top-of-bank to top-of-bank of the channel or to the limits of the normal water level for a pond or lake when there is no definable top-of-bank. Acceptable methodologies for establishing the presence of a water body with perennial flow will be provided by the director of T&ES pursuant to subsection 13-104(C).
- (HHH) *Water-dependent facility.* A development of land that cannot exist outside of the resource protection area and must be located on the shoreline by reason of the intrinsic nature of its operation. These facilities include, but are not limited to:
- (i) Ports;
 - (ii) The intake and outfall structures of power plants, water treatment plants, sewage treatment plants, and storm sewers;
 - (iii) Marinas and other boat docking facilities;
 - (iv) Beaches and other public water-oriented recreation areas; and
 - (v) Fisheries or other marine resources facilities.
- (III) *Watershed.* The total drainage area contributing runoff to a single point.
- (JJJ) *Wetlands.* Tidal and nontidal wetlands.

13-104 - Administration.

- (A) *Responsibility for administration.* The director of T&ES, or his/her designee, is charged with responsibility for the administration of this Article XIII.
- (B) *Duties and authority.* In the administration of this Article XIII the duties and authority of the director of T&ES shall include, without limitation:
- (1) Receiving applications for plan of development approval;
 - (2) Reviewing applications to determine if they contain all information required and necessary for a determination of their merit;
 - (3) Reviewing applications to determine their compliance with the provisions and intent of this Article XIII and their merit;

- (4) Docketing items for hearing before the planning commission and conferring with the city manager to schedule public hearings before the city council as necessary on applications;
 - (5) Preparing a staff report for each application;
 - (6) Interpreting the provisions of this Article XIII to ensure that its intent is carried out.
- (C) *Rules, regulations, and procedures.* The director of T&ES shall promulgate rules, regulations, and procedures for the administration and enforcement of this Article XIII and shall promulgate rules, regulations, and procedures for the processing of applications that ensure full review, comment, and recommendations on each application by the department of transportation and environmental services. The city manager shall promulgate rules and procedures for review by other departments of applications, where such review is determined to be necessary or desirable and such procedures may include the establishment of a development review committee composed of departments of the city whose expertise is necessary or desirable in the review of applications. All such rules, regulations, and procedures shall be transmitted to the city council at the time of issuance.
- (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 et seq. The schedule of fees is set per approved council docket.
- (E) *Responsibility for enforcement.* The director of T&ES shall have the authority and the responsibility of section 11-200 and section 13-126 to ensure that all buildings and structures and the use of all land complies with the provisions of this Article XIII.
- (F) The director of T&ES shall review, approve, disapprove, or approve with modifications or conditions or both the following elements of the plan of development:
- (1) The environmental site assessment, required pursuant to section 13-112
 - (2) The stormwater management plan, required pursuant to section 13-114 and approved in accordance with section 13-115
 - (3) The erosion and sediment control plan required pursuant to section 5-4-1.
 - (4) The water quality impact assessment, if required, pursuant to section 13-117
 - (5) Compliance of the plan of development with section 13-106 through section 13-110
- (G) The director of T&ES shall have the authority and the responsibility to enforce the requirement that a permittee must develop, implement, and keep at the site for inspection a stormwater pollution prevention plan that meets the requirements set forth in section 13-113 and a pollution prevention plan that meets the requirements set forth in section 13-116
- (H) Review and decision on applications for exceptions shall be as provided in section 13-119
- (I) Review and decision on applications for modifications to noncomplying land uses and structures shall be as provided in section 13-122
- (J) Review and decision on applications for exemptions shall be as provided in section 13-123
- (K) Review and decision on the remaining elements of the plan of development shall be as provided in the regulations of this ordinance and the City Code applicable to each such element.

13-105 - Designation of Chesapeake Bay Preservation Area Overlay District.

- (A) All land within the corporate limits of the city is designated as a Chesapeake Bay Preservation Area (CBPA). The CBPA is divided into resource protection areas and resource management areas. The regulations set forth in this Article XIII shall apply as an overlay district, and shall supersede any zoning, land use, or land development regulation of the City Code that is inconsistent with the provisions of this Article XIII.

- (B) Resource protection areas (RPAs) consist of sensitive land that has either an intrinsic water quality value due to the ecological and biological processes such land performs or that is sensitive to uses or activities such that the use results in significant degradation to the quality of state waters. In their natural condition, these lands provide for the removal, reduction, or assimilation of nonpoint source pollution entering the bay and its tributaries. An area of land that includes any one of the following land types shall be considered to be within the RPA:
- (1) Tidal wetlands;
 - (2) Tidal shores;
 - (3) Nontidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow;
 - (4) A buffer area of 100 feet (measured from top of bank) located adjacent to and landward of the components listed in subsections (1) through (3) above and along both sides of any water body with perennial flow. The full buffer area shall be designated as the landward component of the RPA notwithstanding the presence of permitted uses, encroachments, and vegetation clearing in compliance with this Article XIII.
- (C) Resource management areas (RMAs) include land that, if improperly used or developed, has a potential for causing significant water quality degradation or for diminishing the functional value of the RPA. Therefore, all lands in the city, not included in the RPA, shall constitute the RMA since all such land drains through natural or manmade conveyances to the Potomac River and Chesapeake Bay.

13-106 - Establishment of CBPA boundaries.

- (A) Chesapeake Bay Preservation Area boundaries are established by text, as provided in section 13-105. The city shall publish and update in a manner established by the director of T&ES pursuant to section 13-104(C) a general map depicting the location of identified CBPA features. However, in all cases it is the burden of the applicant to identify CBPA features and to delineate the appropriate RPA boundaries in accordance with the development review process required pursuant to section 13-111, or if no development review process is required, then through the environmental site assessment pursuant to section 13-112
- (B) Any property owner wishing to change the depiction of an RPA feature on the general map may conduct an environmental site assessment in section 13-112 and submit it to the director of T&ES. The director of T&ES may accept, modify, or reject the RPA delineation based on the evidence presented by the property owner and in consideration of all other available information.
- (C) In the event that a site-specific RPA boundary delineation is contested by an applicant or property owner, the applicant or property owner may request a meeting with the director of T&ES to review the decision. Requests for the meeting shall be made no more than 30 calendar days after notification of a modification or rejection of a proposed RPA delineation. The director of T&ES will preside over the meeting of the involved parties and reconsider the decision. The meeting participants will be notified by the director of T&ES within 30 calendar days after the meeting of the result of the reconsideration.

13-107 - Development, redevelopment, and uses permitted in RPAs.

The following criteria shall apply in RPAs unless the development, redevelopment, use, or land-disturbing activity is exempted under section 13-123 or granted an exception pursuant to section 13-119. All development, redevelopment, and uses within the RPA must comply with the performance criteria provided in section 13-109

- (A) The following are permitted within the RPA provided they do not require development, redevelopment, structures, grading, fill, draining, or dredging:
 - (1) Conservation or preservation of soil, water, vegetation, fish, shellfish, and other wildlife;
 - (2) Passive recreational activities, including but not limited to fishing, bird watching, hiking, boating, horseback riding, swimming, and canoeing; and
 - (3) Educational activities and scientific research.
- (B) The following are permitted within the RPA if approved by the director of T&ES. A water quality impact assessment may be required by the director of T&ES in accordance with section 13-117 if the project is located within an environmentally sensitive area, or is of sufficient scale to affect water quality.
 - (1) Repair and maintenance of existing piers, walkways, observation decks, wildlife management shelters, boathouses, and other similar water-related structures provided that there is no increase in structure footprint and that any required excavating and filling results in a land-disturbing activity of 2,500 square feet or less;
 - (2) Boardwalks, trails, and pathways;
 - (3) Historic preservation and archeological activities; and
 - (4) Repair and maintenance of existing flood control and stormwater management facilities.
- (C) The following, if permitted in the underlying zone, are allowed within the RPA if approved by the director of T&ES and provided that a water quality impact assessment is performed and accepted by the director of T&ES as complete in accordance with section 13-117
 - (1) A new or expanded water-dependent facility may be allowed provided that the following criteria are met:
 - (a) It does not conflict with the city master plan;
 - (b) Any non-water-dependent component is located outside of the RPA; and
 - (c) Access to the water-dependent facility is provided with the minimum disturbance necessary, and where practical, a single point of access is provided.
 - (2) Redevelopment may be allowed provided that the following criteria are met:
 - (a) There is no increase in impervious surface cover;
 - (b) There is no further encroachment within the RPA; and
 - (c) The proposed redevelopment is consistent with the city master plan.
 - (3) Public flood control and stormwater management facilities that drain or treat water from multiple development projects or from a significant portion of a watershed, may be allowed provided that:
 - (a) The director of T&ES has conclusively established that the location of the facility within the RPA is the optimum location;
 - (b) The size of the facility is the minimum necessary for flood control or stormwater quality treatment, or both;
 - (c) All applicable permits for construction in state or federal waters must be obtained from the appropriate state and federal agencies, such as the Army Corps of Engineers, the Virginia Department of Environmental Quality, and the Virginia Marine Resources Commission; and
 - (d) The facility is consistent with a city stormwater management program approved by the Virginia State Water Control Board.

- (4) Stream restoration projects and shoreline erosion control and stabilization projects, including the removal of trees and woody vegetation, employment of necessary restoration, control, and stabilization techniques, and establishment of appropriate vegetation, may be allowed in accordance with the best available technical advice and applicable permit conditions or requirements if approved by the city arborist.
- (D) In order to maintain the functional value of the RPA buffer area, existing vegetation may be removed if approved by the director of T&ES and only to provide for reasonable sight lines, access paths, general woodlot management, and best management practices to prevent upland erosion and concentrated flows of stormwater, as follows:
 - (1) Trees may be pruned or removed as necessary to provide for sight lines and vistas, provided that where removed, they shall be replaced with other vegetation that is equally effective in retarding runoff, preventing erosion, and filtering nonpoint source pollution from runoff. Replacement vegetation shall require the approval of the director of T&ES, in consultation with the department of recreation, parks, and cultural activities and the department of planning and zoning.
 - (2) Any path shall be constructed and surfaced so as to effectively control erosion.
 - (3) Dead, diseased, or dying trees or shrubbery and noxious weeds (such as Johnson grass, kudzu, and multiflora rose) may be removed and thinning of trees may be conducted. The director of T&ES may approve a long term management plan for a specific RPA that complies with professionally recognized management practices.
- (E) The following encroachments, if permitted in the underlying zone, are allowed to the RPA buffer area if approved by the director of T&ES and provided that a water quality impact assessment is performed and accepted by the director of T&ES as complete in accordance with section 13-117
 - (1) When the application of the buffer area would result in the loss of a buildable area on a lot or parcel recorded prior to October 1, 1989, encroachments into the buffer area may be approved by the director of T&ES in accordance with the following criteria:
 - (a) Encroachments into the buffer area shall be the minimum necessary to achieve a reasonable buildable area for a principal structure and necessary utilities;
 - (b) Where practicable, a vegetated area that will maximize water quality protection, mitigate the effects of the buffer encroachment, and is equal to the area of encroachment into the buffer area shall be established elsewhere on the lot; and
 - (c) The encroachment may not extend into the seaward 50 feet of the buffer area.
 - (2) When the application of the buffer area would result in the loss of buildable area on a lot or parcel recorded between October 1, 1989 and March 1, 2002, encroachments into the buffer area may be approved by the director of T&ES in accordance with the following criteria:
 - (a) The lot or parcel was created as a result of a legal process conducted in conformity with the city's subdivision regulations;
 - (b) Any conditions or mitigation measures imposed through previously approved exceptions must be met;
 - (c) If a stormwater BMP was previously required, the BMP shall be evaluated to determine if it continues to function effectively, and, if necessary, the BMP shall be reestablished or repaired and maintained as required; and
 - (d) The criteria in (1) above of this section shall be met.

Development, redevelopment, and uses authorized by the underlying zone are permitted in the RMA provided such activity is carried out in accordance with all applicable criteria in this Article XIII. The director of T&ES may, due to the unique characteristics of a site or the intensity of the proposed development, redevelopment, or use require a water quality impact assessment as provided in subsections 13-117(C) and (D).

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.

- (A) No more land shall be disturbed than is necessary to provide for the proposed use, development, or redevelopment.
- (B) Indigenous vegetation shall be preserved to the maximum extent practicable consistent with the use, development, or redevelopment proposed.
- (C) Development or redevelopment shall minimize impervious cover consistent with the proposed use or development.
- (D) The proposed development or redevelopment shall comply with section 5-4-1 et seq. of the City Code (erosion and sediment control).
- (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.
 - (1) The entire water quality volume from the site shall be treated. When the development, redevelopment, or use constitutes disturbing only a small portion of a tax map parcel greater than five acres in size, the director of T&ES may establish criteria for allowing the parcel to be divided into sub-basins.
 - (2) Single-family 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-family detached residential structures are exempt from subsections (4) and (5) below. The Alexandria water quality volume default requirement in subsection (6) still applies.
 - (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 shall be applied.
 - (4) New development. The total phosphorus load of new development projects shall not exceed 0.41 pounds per acre per year, as calculated pursuant to this section.
 - (5) Development of prior developed lands:
 - (a) For land-disturbing activities disturbing greater than or equal to one acre that results in no net increase in impervious cover from the pre-development condition, the total

phosphorus load shall be reduced at least 20 percent below the pre-development total phosphorus load.

- (b) For regulated land-disturbing activities disturbing less than one acre that results in no net increase in impervious cover from the pre-development condition, the total phosphorus load shall be reduced at least ten percent below the predevelopment total phosphorus load.
 - (c) For land-disturbing activities that result in a net increase in impervious cover over the pre-development conditions, the design criteria for new development shall be applied to the increased impervious area. Depending on the area of disturbance, the criteria of subsections (a) or (b) above shall be applied to the remainder of the site.
 - (d) In lieu of subsection (c), the total phosphorus load of a linear development project as defined in 9VAC25-870-10 occurring on prior developed lands shall be reduced 20 percent below the predevelopment total phosphorus load.
 - (e) The total phosphorus load shall not be required to be reduced below the applicable standard for new development unless standards applied by other parts of this article require a more stringent standard.
- (6) For new development and development on prior developed lands in subsections (4) and (5) above, the entire Alexandria water quality volume default from the site shall be treated, or the requirements must be met consistent with section 13-110
 - (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 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 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 required 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.
 - (9) When the requirements of subsections (4) and (5) have otherwise been met, the requirement to treat the entire Alexandria water quality volume default in subsection (6) may be achieved in accordance with alternative stormwater management equivalency options presented in section 13-110
 - (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, linear development controls in 9VAC25-870-76, and criteria associated with stormwater impoundment structures in 9VAC25-870-85.
 - (11) Notwithstanding the above requirements, any site with (a) an intermittent stream contained within an existing natural channel, or (b) a non-tidal wetland that does not meet the criteria

for designation as a resource protection area in section 13-105(B), must meet the following additional water quality performance criteria:

- (a) Measures must be taken to protect these features from direct stormwater runoff from impervious surfaces and to preserve their water quality functions.
 - (b) A 50-foot wide vegetated area preserved where present, or established where not present, on the outward edge of these features shall be considered a sufficient BMP to meet this standard if the vegetated area is designed to prevent erosion and scouring.
 - (c) The BMP requirement in (b) above may alternatively be met through the use of a smaller vegetated area in combination with equivalent on-site stormwater treatment and/or equivalent off-site options presented in section 13-110 if approved by the director of T&ES.
 - (d) Development, redevelopment, uses, and land-disturbing activities allowed in the vegetated area shall be the same as those allowed in RPAs as described in section 13-107. Delineation of the vegetated area shall be accomplished in the manner prescribed in section 13-106
 - (e) The director of T&ES may waive the requirements of (b) above if the non-tidal wetland is demonstrated to the director of T&ES's satisfaction that it qualifies as an isolated wetland of minimal ecological value defined in section 13-103(K).
- (F) All development and redevelopment shall meet the following channel protection and flood protection requirements. Compliance with this section satisfies the stormwater management requirements of section 5-4-7(c)(4) of the City Code (erosion and sediment control):
- (1) Channel protection. Concentrated stormwater flow shall be released into a stormwater conveyance system and shall meet the criteria of this section, where applicable, from the point of discharge to a point within the limits of analysis in subsection (d).
 - (a) *Manmade stormwater conveyance systems.* When stormwater from a development is discharged to a manmade stormwater conveyance system, following the land-disturbing activity, either:
 - (i) The manmade stormwater conveyance shall convey the post-development peak flow rate from the two-year 24-hour storm event without causing erosion of the system. Detention of stormwater or downstream improvements may be incorporated into the land-disturbing activity to meet this criterion, at the discretion of the director; or
 - (ii) The peak discharge requirements for concentrated stormwater flow to natural stormwater conveyance systems in subsection (c) shall be met.
 - (b) *Restored stormwater conveyance systems.* When stormwater from a development is discharged to a restored stormwater conveyance system that has been restored using natural design concepts, following the land-disturbing activity, either:
 - (i) The development shall be consistent, in combination with other stormwater runoff, with the design parameters of the restored stormwater conveyance system that is functioning in accordance with the design objectives; or
 - (ii) The peak discharge requirements for concentrated stormwater flow to natural stormwater conveyance systems in subsection (c) shall be met.
 - (c) *Natural stormwater conveyance systems.* When stormwater from a development is discharged to a natural stormwater conveyance system the maximum peak flow rate from the one-year 24-hour storm following the land-disturbing activity shall be calculated either:
 - (i) In accordance with the following methodology:

$$Q_{\text{Developed}} \leq \text{I.F.} * (Q_{\text{Pre-developed}} * RV_{\text{Pre-developed}}) / RV_{\text{Developed}}$$

Under no condition shall $Q_{\text{Developed}}$ be greater than $Q_{\text{Pre-developed}}$ nor shall $Q_{\text{Developed}}$ be required to be less than that calculated in the equation $(Q_{\text{Forest}} * RV_{\text{Forest}}) / RV_{\text{Developed}}$; where

I.F. (Improvement Factor) equals 0.8 for sites > 1 acre or 0.9 for sites ≤ 1 acre.

$Q_{\text{Developed}}$ = The allowable peak flow rate of runoff from the developed site.

$RV_{\text{Developed}}$ = The volume of runoff from the site in the developed condition.

$Q_{\text{Pre-developed}}$ = The peak flow rate of runoff from the site in the pre-developed condition.

$RV_{\text{Pre-developed}}$ = The volume of runoff from the site in pre-developed condition.

Q_{Forest} = The peak flow rate of runoff from the site in a forested condition.

RV_{Forest} = The volume of runoff from the site in a forested condition.

- (d) *Limits of analysis.* Unless subsection (c) is utilized to show compliance with the channel protection criteria, stormwater conveyance systems shall be analyzed for compliance with channel protection criteria to a point where either:
 - (i) Based on land area, the site's contributing drainage area is less than or equal to 1.0 percent of the total watershed area; or
 - (ii) Based on peak flow rate, the site's peak flow rate from the one-year 24-hour storm is less than or equal to 1.0 percent of the existing peak flow rate for the one-year 24-hour storm event prior to implementation of any stormwater quantity control measures.
- (2) Flood protection. Concentrated stormwater flow shall be released into a stormwater conveyance system and shall meet one of the following criteria as demonstrated by the use of acceptable hydrologic and hydraulic methodologies:
 - (a) Concentrated stormwater flow to stormwater conveyance systems that currently do not experience localized flooding during the ten-year 24-hour storm event:
 - (i) The point of discharge releases stormwater into a stormwater conveyance system that, following the land-disturbing activity, confines the post-development peak flow rate from the ten-year 24-hour storm event within the stormwater conveyance system; and
 - (ii) Unless waived under (iv), the post-development peak flow rate for the ten-year 24-hour storm event shall be less than the predevelopment peak flow rate from the ten-year 24-hour storm event.
 - (iii) Detention of stormwater or downstream improvements may be incorporated into the approved land-disturbing activity to meet (i) and (ii), at the discretion of the director of T&ES.
 - (iv) A waiver of the detention requirements and/or the downstream stormwater limits of analysis in subsection (2)(c) may be granted by the director based on factors including but not limited to the project's location in the watershed.
 - (b) Concentrated stormwater flow to stormwater conveyance systems that currently experience localized flooding during the ten-year 24-hour storm event: The point of discharge either:
 - (i) Confines the post-development peak flow rate from the ten-year 24-hour storm event within the stormwater conveyance system to avoid the localized flooding.

Additional detention of stormwater or downstream improvements may be incorporated into the approved land-disturbing activity to meet this criterion, at the discretion of the director; or

- (ii) Releases a post-development peak flow rate for the ten-year 24-hour storm event that is less than the pre-development peak flow rate from the ten-year 24-hour storm event.
 - (iii) A waiver of the detention requirement may be granted by the director of T&ES based on factors including but not limited to the amount of stormwater runoff generated, the severity of flooding issues in the watershed and/or the lack of adequacy of the existing conveyance system.
- (c) Limits of analysis. Stormwater conveyance systems shall be analyzed for compliance with flood protection criteria to a point where:
 - (i) The site's contributing drainage area is less than or equal to 1.0 percent of the total watershed area draining to a point of analysis in the downstream stormwater conveyance system;
 - (ii) Based on peak flow rate, the site's peak flow rate from the ten-year 24-hour storm even is less than or equal to 1.0 percent to the existing peak flow rate from the ten-year 24-hour storm event prior to the implementation of any stormwater quantity control measures; or,
 - (iii) The stormwater conveyance system enters a mapped floodplain or other flood-prone area adopted in accordance with section 6-300 et seq. of the City Code.
- (d) Alternative limits of analysis. If section 13-109(F)(2)(a)(i) and (ii) or 109(F)(2)(b)(ii) are utilized to comply with the flood protection criteria the downstream limit of analysis shall extend to:
 - (i) A point that is at least 150 feet downstream of a point where the receiving pipe or channel is joined by another that has a drainage area that is at least 90 percent of the size of the first drainage area at the point of confluence; or
 - (ii) A point that is at least 150 feet downstream of a point where the drainage area is 360 acres or greater.
- (3) Increased volumes of sheet flow resulting from pervious or disconnected impervious areas, or from physical spreading of concentrated flow through level spreaders, must be identified and evaluated for potential impacts on down-gradient properties or resources. Increased volumes of sheet flow that will cause or contribute to erosion, sedimentation, or flooding of down gradient properties or resources shall be diverted to a stormwater management facility or a stormwater conveyance system that conveys the runoff without causing down-gradient erosion, sedimentation, or flooding. If all runoff from the site is sheet flow and the conditions of this subsection are met, no further water quantity controls are required.
- (4) For the purposes of computing pre-development runoff, all pervious lands on the site shall be assumed to be in good hydrologic condition in accordance with the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) standards, regardless of conditions existing at the time of computation. Pre-development runoff calculations utilizing other hydrologic conditions may be utilized provided that it is demonstrated to and approved by the director of T&ES that actual site conditions warrant such considerations.
- (5) Pre-development and post-development runoff characteristics and site hydrology shall be verified by site inspections, topographic surveys, available soil mapping or studies, and calculations consistent with good engineering practices. Guidance provided in the Virginia Stormwater Management Handbook and by the Virginia Stormwater BMP Clearinghouse shall be considered appropriate practices.

- (6) The director of T&ES may waive these requirements provided in subsection (2) in cases where stormwater detention would conflict with the city's flood management programs. The waiver may be granted based on factors including, but not limited to, the project's location in the watershed and/or off-site improvement to upgrade the downstream conveyance systems.
- (7) Post-development concentrated surface waters shall not be discharged on adjoining property, unless an easement expressly authorizing such discharge has been granted by the owner of the affected land.
- (G) It shall be the responsibility of the owner of any stormwater quality or quantity management facility established to meet the requirements of (E) and (F) above to provide adequate maintenance for proper functioning of the system. The following requirements apply to all existing and future facilities constructed in the city:
 - (1) The owner shall enter into a stormwater BMP maintenance agreement (agreement) with the city that provides all necessary provisions to ensure compliance with this article, to include access for inspections. The agreement shall require the provision of long-term maintenance of stormwater BMPs and provide for inspections. Facility-specific inspection frequency and maintenance requirements shall be set by city policy and procedures. The BMP maintenance agreement shall be set forth in an instrument recorded in the city land records. The stormwater BMP maintenance agreement form will be provided by the director of T&ES in accordance with section 13-104(C).
 - (2) The owner shall prepare and submit inspection and maintenance reports to the city in accordance with city policies and procedures for the specific facility. Inspection and maintenance reports shall be signed by the owner of the facility or an individual acting on the owner's behalf, a registered professional, or a person who holds an appropriate certificate of competence from the board. Such certification shall state that the facility is being adequately maintained as designed.
 - (3) The owner shall provide the city with access to the facility to perform quality assurance inspections and follow up inspections to ensure adequate maintenance has been conducted a minimum of once every five years, or on a more frequent basis at the discretion of the director. If inadequate maintenance is observed by the city, the owner will be notified and an adequate period specified for corrective action. If the corrective action is not performed within the specified time, the city may perform the necessary corrections and bill the property owner. In cases of repeated instances of failure to perform required maintenance, sanctions may be imposed as provided in section 13-126

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

- (A) The director of T&ES, in consultation with the director of planning and zoning and the director of recreation, parks, and cultural activities, as appropriate, shall establish equivalent stormwater management options that may be used to meet the requirements of section 13-109(E)(6) and section 13-109(E)(11)(c). Options shall include the following:
 - (1) Specific on-site and off-site improvements that have been determined by the director of T&ES to achieve a pollutant removal equal to or greater than what would have been achieved had a traditional BMP been required; and
 - (2) Monetary contributions to the Alexandria water quality improvement fund provided for in subsection (C) below.
- (B) Improvements may include, but not necessarily be limited to, stream restoration, stream daylighting, removal of existing RPA encroachments, RPA enhancement, street cleaning, combined sewer system separation, and permanent preservation of open space areas beyond the city's baseline open space preservation requirements.

- (C) Monetary contributions to the Alexandria water quality improvement fund shall be calculated by the director of T&ES based on estimates of the cost of actually installing and maintaining on-site BMPs through their life cycle. These costs will be updated on a periodic basis by the director of T&ES as required.
- (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:
 - (1) Whether there is an opportunity to control impervious surface cover that comes into routine contact with vehicles, including but not limited to parking areas, streets and roadways except for public roads exempt under section 13-109; loading docks; equipment, material, and waste storage areas; and vehicle fueling, washing, storage, maintenance, and repair areas;
 - (2) Whether other environmental and public benefits such as site design, open space, tree preservation, and landscaping can be achieved;
 - (3) Whether on-site stormwater detention would conflict with the city's flood management programs;
 - (4) Whether site-specific constraints would make on-site treatment difficult or impractical, especially when the site consists of a single-family residence separately built and not part of a subdivision;
 - (5) Whether there are opportunities readily available for off-site improvements within the general vicinity of the site that will provide greater water quality benefits than on-site improvements;
 - (6) Whether there are opportunities to control specific pollutants of concern identified within the watershed or subwatershed, including but not limited to those identified by the department of environmental quality in its most recent 303(d) Total Maximum Daily Load (TMDL) Priority List;
 - (7) Whether there are opportunities to implement the Water Quality Management Supplement to the city master plan and the city's Virginia Stormwater Management Permit (VSMP) for its municipally owned separate storm sewer system discharges as issued by the Department of Environmental Quality; and
 - (8) Whether the cost of implementing available off-site improvements is reasonably equivalent to that of a monetary contribution;
 - (9) Single family 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.
- (E) Final approval of equivalency options used for a particular site shall be made at the sole discretion of the director of T&ES.
- (F) The city hereby establishes a dedicated fund known as the Alexandria water quality improvement fund to be used in conjunction with this Article XIII, the water quality management supplement to the city master plan, and the city's municipal separate storm sewer system (MS4) general permit issued by the Virginia Department of Environmental Quality. The purpose of the fund is to reduce nonpoint source pollution and improve stream quality and habitat through appropriate activities including, but not limited to: new BMPs, retrofit of existing BMPs, riparian enhancements, stream bank stabilization and/or restoration, public education and outreach, demonstration projects, water quality monitoring and analysis, and other activities to meet TMDL requirements.

- (A) Any development, redevelopment, or use exceeding 2,500 square feet of land disturbance within the CBPA shall be subject to the development review process outlined in subsection (C) below prior to any clearing of the site, or the issuance of any building, land use, or land development permit. However, any land-disturbing activity less than one acre within the CBPA shall not be required to complete a registration statement for coverage under the general permit, but shall be subject to all aspects of the development review process, to include the water quality and quantity criteria in subsections 13-109(E) and (F). Further, any detached single-family home construction within or outside of a common plan of development or sale that is not otherwise exempt shall not be required to complete a registration statement, but shall adhere to all other requirements of the general permit and all applicable requirements of this article.
- (B) Notwithstanding subsection (A) above, all development, redevelopment, or use in the RPA, or in the vegetated area established under subsection 13-109(E)(11), regardless of the amount of land disturbance, shall be subject to the review criteria established in section 13-107 prior to any clearing of the site or the issuance of any building, land use, or land development permit.
- (C) The development review process application shall consist of the plans and studies identified below, such application forms as the director of T&ES shall require and the appropriate fees, which together shall constitute the plan of development. The plans and studies identified in this section may be coordinated or combined with other required submission materials, as deemed appropriate by the director of T&ES. The plan of development shall contain the following elements:
 - (1) A site plan in accordance with the provisions of section 11-400 of this ordinance or other applicable law and, if applicable, a subdivision plat in accordance with the provisions of Chapter 5, Title 7 of the City Code;
 - (2) An environmental site assessment as detailed in section 13-112
 - (3) A landscape plan in accordance with the provisions of section 113-117(D)(3) of this ordinance certified by qualified design professionals practicing within their areas of competence;
 - (4) A stormwater management plan as detailed in section 13-114 and approved in accordance with section 13-115
 - (5) An erosion and sediment control plan in accordance with the provisions of Chapter 4, Title 5 of the City Code;
 - (6) Completion of the stormwater pollution prevention plan checklist referring to standard plan language included in the final plan; and
 - (7) For all land disturbance, development, or redevelopment within an RPA, or within an environmentally sensitive area as determined by the director of T&ES pursuant to section 13-117(C) or section 13-117(D), or for an exception under section 13-119, a water quality impact assessment as detailed in section 13-117
- (D) No development, redevelopment, uses, or land disturbing activities may commence until the director of T&ES has approved the final site plan and a state construction general permit has been issued based on approval of a complete and accurate registration statement signed and submitted by the operator, if such registration statement is required. The following shall be required for final site plan approval:
 - (1) Evidence that a general VPDES permit for discharges of stormwater from construction activities has been issued, if such general permit is required;
 - (2) Approval by the director of T&ES of all requirements as outlined in subsection (C) above;
 - (3) Payment of all applicable fees in accordance with section 113-104(D);
 - (4) Demonstration to the satisfaction of the director of T&ES, through the review of the final site plan application and attendant materials and supporting documentation, that all land

clearing, construction, disturbance, land development, and drainage will be done in accordance with this Article XIII.

- (5) Review of a signed standard maintenance and monitoring agreement for the long term maintenance of stormwater BMPs, and proof of recordation per section 13-109(G).
- (E) As a condition of final plan approval, any development, redevelopment, or land-disturbing activity of one acre or greater must develop prior to the land-disturbing activity, implement, and keep at the site for inspection a stormwater pollution prevention plan that meets the requirements set forth in section 13-113, which includes a pollution prevention plan that meets the requirements set forth in section 13-116

13-112 - Environmental site assessment.

- (A) The environmental site assessment shall clearly delineate the individual components of the RPA as well as the total geographic extent of the RPA as defined in section 13-105(B) through a methodology approved by the director of T&ES under the authority of section 13-104(C).
- (B) The environmental site assessment shall also clearly describe, map, or explain the following:
 - (1) Intermittent streams contained within a natural channel through a methodology approved by the director of T&ES under the authority of section 13-104(C).
 - (2) Highly erodible and highly permeable soils if available from existing public documents or documents available to the applicant;
 - (3) Steep slopes greater than 15 percent in grade;
 - (4) Known areas of contamination;
 - (5) Springs, seeps, and related features; and
 - (6) A listing of all wetlands permits required by law (evidence that such permits have been obtained shall be presented to the director of T&ES before permits will be issued to allow commencement of grading or other on-site activity).
- (C) Wetlands delineations shall be performed consistent with current procedures promulgated by the U.S. Army Corps of Engineers and the Environmental Protection Agency.
- (D) Site-specific evaluations or delineations of RPA boundaries shall be certified by a professional engineer, land surveyor, landscape architect, soil scientist, or wetland delineator certified or licensed to practice in the Commonwealth of Virginia.
- (E) In the event that no part of the site plan area contains any elements described in subsection (A) or (B) above, the applicant and the party responsible for the evaluation may, in lieu of providing an environmental site assessment plan, so certify the finding, in writing and under oath, to the director of T&ES. Any permit issued in reliance upon such a certification where said certification is factually inaccurate or incorrect shall be void ab initio. Such invalidity shall be in addition to any other penalties which may be imposed upon the makers of such certification.
- (F) The environmental site assessment shall be drawn at the same scale as the preliminary site plan or subdivision plat, and shall be certified as complete and accurate by a professional engineer or a certified land surveyor. This requirement may be waived by the director of T&ES when the proposed use or development would result in less than 5,000 square feet of disturbed area.

13-113 - Stormwater pollution prevention plan.

- (A) The stormwater pollution prevention plan (SWPPP) shall include the content specified in 9VAC25-870-54, 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).

- (B) The SWPPP shall be amended by the operator whenever there is a change in design, construction, operation, or maintenance that has a significant effect on the discharge of pollutants to state waters that is not addressed in the existing SWPPP.
- (C) The SWPPP must be maintained by the operator at a central location on-site. If an on-site location is not available, notice of the SWPPP's location must be posted near the main entrance at the construction site. Operators shall make the SWPPP available for public review in accordance with Section II of the general permit, either electronically or in hard copy.

13-114 - Stormwater management plan.

- (A) The stormwater management plan must apply the stormwater technical requirements of section 13-109 to the entire site. Individual lots in a new residential, commercial, or industrial development or sale, including those developed under subsequent owners, shall not be considered separate land-disturbing activities. Instead, the common plan, as a whole, shall be considered to be a single land disturbing activity. The plan shall consider all sources of surface runoff and all sources of subsurface and groundwater flows converted to surface runoff. The plan shall contain maps, charts, graphs, tables, photographs, narrative descriptions, explanations, calculations, and citations to supporting references as appropriate to communicate the information required by this Article XIII. At a minimum, the stormwater management plan must contain the following:
 - (1) Information on the type and location of stormwater discharges; information on the features to which stormwater is being discharged including surface waters, and the pre-development and post-development drainage areas;
 - (2) Contact information including the name, address, and telephone number of the owner and the tax reference and parcel number of the property or properties affected;
 - (3) A narrative that includes a description of current site conditions and final site conditions;
 - (4) A general description of the proposed stormwater management facilities and a maintenance agreement and inspection schedule in accordance with section 13-109(G) to ensure that the facilities will be operated and maintained after construction is complete;
 - (5) Information on the proposed stormwater management facilities, including:
 - (a) The type of facilities;
 - (b) Location, including geographic coordinates;
 - (c) Acres treated; and
 - (d) The surface waters into which the facility will discharge.
 - (6) Hydrologic and hydraulic computations, including runoff characteristics.
 - (7) Documentation and calculations verifying compliance with the water quality and water quantity requirements of section 13-109
 - (8) A map or maps of the site that depicts the topography of the site and includes:
 - (a) All contributing drainage areas;
 - (b) Existing streams, ponds, culverts, ditches, wetlands, other water bodies, and floodplains;
 - (c) Soil types, relevant geological formations, forest cover, and other vegetative areas;
 - (d) Current land use including existing structures, roads, and locations of known utilities and easements;

- (e) Sufficient information on adjoining parcels to assess the impacts of stormwater from the site on these parcels;
 - (f) The limits of clearing and grading, and the proposed drainage patterns on the site;
 - (g) Proposed buildings, roads, parking areas, utilities, and stormwater management facilities; and
 - (h) Proposed land use with tabulation of the percentage of surface area to be adapted to various uses, including but not limited to planned locations of utilities, roads, and easements.
- (B) If an operator intends to meet the water quality requirements set forth in section 13-109(E) through the use of off-site credits in accordance with section 13-109(E)(8), then a letter of availability from the off-site provider must be included. Approved off-site options must achieve the necessary reductions prior to the commencement of the applicant's land-disturbing activity except as otherwise allowed by Section 62.1-44.15:35 of the Code of Virginia.
 - (C) If the operator intends to utilize the alternative stormwater management equivalency options in section 13-110 to meet the Alexandria water quality volume default in section 13-109(E)(6) or the additional water quality performance criteria of section 13-109(E)(8), then the operator must submit a narrative and any required calculations.
 - (D) Site specific facilities for phased projects shall be designed for the ultimate development of the contributing project watershed based on zoning, comprehensive plans, local public facility master plans, or other similar planning documents.
 - (E) Elements of stormwater management plans that include activities regulated under Chapter 4 of Title 54.1 of the Code of Virginia be appropriately sealed and signed by professional registered in the Commonwealth of Virginia and performed in accordance with procedures, consistent with good engineering practice, established by the director of T&ES pursuant to section 13-104(C).
 - (F) All stormwater designs that require analysis of pressure hydraulic systems and/or inclusion and design of flow control structures must be sealed by a professional engineer registered in the Commonwealth of Virginia.
 - (G) An as-built drawing for permanent stormwater management facilities shall be submitted to the director of T&ES in accordance with section 13-114. The as-built drawing shall be appropriately sealed and signed by a professional registered in the Commonwealth of Virginia certifying that the stormwater facilities have been constructed in accordance with the approved plan.
 - (H) The plan shall establish a long-term schedule for inspection and maintenance of stormwater management facilities that includes all maintenance requirements and persons responsible for performing maintenance. If the designated maintenance responsibility is with a party other than the City of Alexandria, then a maintenance agreement shall be executed between the responsible party and the city in accordance with section 13-109(G).

13-115 - Stormwater management plan review.

- (A) The director of T&ES shall review stormwater management plans and shall approve or disapprove a stormwater management plan in accordance with the following:
 - (1) The director of T&ES shall determine the completeness of the plan in accordance with section 13-114 and shall notify the applicant, in writing, of such determination within 15 calendar days of receipt. If the plan is deemed incomplete, the above written notification shall contain the reasons the plan is deemed incomplete.
 - (2) The director of T&ES shall have an additional 60 calendar days from the date of the communication of completeness to review the plan, except that if a determination of completeness is not made and communicated within 15 days, then the plan shall be deemed complete and the director of T&ES shall have 60 calendar days from the date of submission to review the plan.

- (3) The director of T&ES shall review any plan that has been previously disapproved within 45 calendar days of the date of re-submission.
- (4) During the review period, the plan shall be approved or disapproved and the decision communicated in writing to the person responsible for the land-disturbing activity or the designated agent. If the plan is not approved, the reasons for not approving the plan shall be provided in writing. Approval or denial shall be based on the plan's compliance with the requirements of this article.
- (5) If a plan meeting all requirements of this article is submitted and no action is taken within the time frame provided in this subsection, the plan will be deemed approved.
- (B) Approved stormwater management plans may be modified as follows:
 - (1) Modifications to an approved stormwater management plan shall be allowed only after review and written approval by the director of T&ES. The director of T&ES shall have 60 calendar days to respond in writing either approving or disapproving such request.
 - (2) The director of T&ES may require that an approved stormwater management plan be amended, within a time prescribed by the director of T&ES, to address any deficiencies noted during inspection.
- (C) The director of T&ES shall require the submission of an as-built drawing for permanent stormwater facilities. The director of T&ES may elect not to require as-built drawings for stormwater management facilities for which recorded maintenance agreements are not required.

13-116 - Pollution prevention plan.

- (A) The pollution prevention plan is required by 9VAC25-870-56 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.
- (B) The pollution prevention plan shall include effective best management practices to prohibit the following discharges:
 - (1) Wastewater from washout of concrete, unless managed by an appropriate control;
 - (2) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials;
 - (3) Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; and
 - (4) Soaps or solvents used in vehicle and equipment washing.
- (C) Discharges from dewatering activities, including discharges from dewatering of trenches or excavations, are prohibited unless managed by appropriate controls.

13-117 - Water quality impact assessment.

- (A) The purpose of the water quality impact assessment is to:
- (1) Identify the impacts of a proposed use, development, or redevelopment on water quality and lands within an RPA;
 - (2) Ensure that, where a use, development, or redevelopment does take place within an RPA, it will be located on those portions of the site and in a manner that will be least disruptive to the natural functions of the RPA;
 - (3) Identify the impacts of a proposed use, development, or redevelopment within an RMA where the director of T&ES has determined that the proximity to an RPA, the environmentally sensitive characteristics of the site, or the proposed scale and intensity has the potential to affect water quality;
 - (4) Specify mitigation that will address water quality protection under the foregoing circumstances or under an exception under section 13-116
- (B) A water quality impact assessment is required for any proposed development or redevelopment in the RPA, except that at the discretion of the director of T&ES a water quality impact assessment may not be required if the activity is addressed under section 13-107(A), section 13-107(B), or section 13-107(D). There are two types of water quality impact assessments: water quality minor impact assessments and water quality major impact assessments.
- (C) A water quality minor impact assessment is required for development or redevelopment within RPAs or under an exception which involves 5,000 or less square feet of land disturbance; or for any development or redevelopment within the RMA that involves 5,000 or less square feet of land disturbance adjacent to an RPA, if required by the director of T&ES due to the presence or proximity of wetlands, potential for harmful discharge of contaminants from the property, or slopes greater than 15 percent which are proposed to be disturbed. A minor assessment must demonstrate that the undisturbed buffer area, enhanced vegetative plantings, and any required BMPs will result in the removal of no less than 75 percent of sediments and 40 percent of nutrients from post-development stormwater runoff and that will retard runoff, prevent erosion, and filter nonpoint source pollution the equivalent of the full undisturbed buffer area. Such an assessment shall include a site plan that shows the following:
- (1) Location and description of the existing characteristics and conditions of the components of the RPA as identified in section 13-105(B) and delineated in the environmental site assessment required by section 13-112
 - (2) Location and nature of the proposed encroachment into the buffer area, including: type of paving material; areas of clearing or grading; location of any structures, drives, or other impervious cover; and sewage disposal systems or reserve drainfield sites;
 - (3) Type and location of enhanced vegetation and/or proposed BMPs to mitigate the proposed encroachment;
 - (4) Location of existing vegetation on-site, including the number and types of trees and other vegetation to be removed in the buffer to accommodate the encroachment or modification; and
 - (5) Revegetation plan that supplements the existing buffer vegetation in a manner that provides for pollutant removal, erosion, and runoff control. The revegetation plan will incorporate native vegetation to the extent practicable.
- (D) A water quality major impact assessment is required for development or redevelopment within RPAs or under an exception that involves more than 5,000 square feet of land disturbance; or for any development or redevelopment within the RMA which involves more than 5,000 square feet of land disturbance adjacent to an RPA, if required by the director of T&ES due to the presence or proximity of wetlands, potential for harmful discharge of contaminants from the property, or slopes greater than 15 percent which are proposed to be disturbed. The following elements shall be included in a water quality major impact assessment:

- (1) All of the information required in a water quality minor impact assessment as specified in subsection (C) above;
- (2) A hydrogeological element that:
 - (a) Describes the existing topography, soils, hydrology, and geology of the site;
 - (b) Describes the impacts of the proposed development or redevelopment on topography, soils, hydrology, and geology on the site;
 - (c) Indicates the following:
 - (i) Disturbance or reduction of wetlands and justification for such action;
 - (ii) Disruption or reductions in the supply of water to wetlands, streams, lakes, rivers, or other water bodies;
 - (iii) Disruptions to existing hydrology, including wetland and stream circulation patterns;
 - (iv) Source location and description of proposed fill material (may, at applicant's risk, be provided when the U.S. Army Corps of Engineers permit application is submitted);
 - (v) Location of dredge materials and location of dumping area for such materials (may, at applicant's risk, be provided when the U.S. Army Corps of Engineers permit application is submitted);
 - (vi) Locations of and impacts on adjacent shellfish beds, submerged aquatic vegetation, and fish spawning areas (may, at applicant's risk, be provided when the U.S. Army Corps of Engineers permit application is submitted);
 - (vii) The estimated pre- and post-development pollutant loads in runoff as delineated in the stormwater management plan required by section 13-113
 - (viii) Estimation of percent increase in impervious surface on the site and identification of the type(s) of surfacing materials to be used;
 - (ix) Percent of the site to be cleared for the project;
 - (x) Anticipated duration and phasing schedule of the construction period; and
 - (xi) Listing of all requisite permits from all applicable agencies necessary to develop the project;
 - (d) Describes the proposed mitigation measures for the potential hydrogeological impacts. Potential mitigation measures include:
 - (i) Proposed erosion and sediment control measures, which may include minimizing the extent of the cleared area, perimeter controls, reduction of runoff velocities, measures to stabilize disturbed areas, schedule and personnel for site inspection;
 - (ii) Proposed stormwater management system;
 - (iii) Creation of wetlands to replace those lost; and
 - (iv) Minimizing cut and fill.
- (3) A supplement to the landscape plan that:
 - (a) Identifies and delineates the location of all significant plant material, including all trees on site six inches or greater diameter breast height. Where there are groups of trees, stands shall be outlined.
 - (b) Describes the impacts the development or use will have on the existing vegetation. Information should include:

- (i) General limits of clearing based on all anticipated improvements, including buildings, drives, and utilities;
 - (ii) Clear delineation of all trees which will be removed; and
 - (iii) Description of plant species to be disturbed or removed.
- (c) Describes the potential measures for mitigation. Possible mitigation measures include:
 - (i) Replanting schedule for trees and other significant vegetation removed for construction, including a list of possible plants and trees to be used;
 - (ii) Demonstration that the proposed plan will preserve to the greatest extent possible any significant trees and vegetation on the site and will provide maximum erosion and overland flow benefits from such vegetation;
 - (iii) Demonstration that indigenous plants are to be used to the greatest extent possible; and
 - (iv) Identification of the natural processes and ecological relationships inherent at the site, and an assessment of the impact of the proposed use and development of the land, including mitigating measures proposed in the water quality impact assessment, on these processes and relationships.
- (E) A water quality minor impact assessment shall be certified as complete and accurate by a professional engineer or a certified land surveyor. The additional elements required in a water quality major impact assessment shall be certified as complete and accurate by a professional engineer and by a qualified environmental scientist.
- (F) For any water quality impact assessment to proceed, the director of T&ES must first approve it for completeness and compliance with this Article XIII. Upon receipt of any water quality major impact assessment application, the director of T&ES may determine if review by the department is warranted and may request the department to review the assessment and respond with written comments. Any comments by the department will be incorporated into the final review by the director of T&ES provided that such comments are provided by the department within 90 days of the request.
 - (1) For a water quality minor impact assessment, the director of T&ES shall base this finding on the following criteria:
 - (a) The necessity of the proposed encroachment and the ability to place improvements elsewhere on the site to avoid disturbance of the buffer area;
 - (b) Impervious surface is minimized;
 - (c) Proposed BMPs, where required achieve the requisite reductions in pollutant loadings;
 - (d) The development, as proposed, meets the purpose and intent of these regulations;
 - (e) The cumulative impact of the proposed development when considered in relation to other development within the RPA in the vicinity, both existing and proposed, will not result in a significant degradation of water quality.
 - (2) For a water quality major impact assessment, the director of T&ES shall base this finding on the following criteria:
 - (a) Within any RPA, the proposed development is water-dependent or constitutes redevelopment;
 - (b) The disturbance of wetlands shall comply with state and federal regulations;
 - (c) The development will not result in significant disruption of the hydrology of the site;

- (d) The development will not result in significant degradation of water quality that could adversely affect aquatic vegetation or life;
- (e) The development will not result in unnecessary destruction of plant material on site;
- (f) Proposed erosion and sediment control measures are adequate to achieve the required reductions in runoff, and prevent off-site transport of sediment during and after construction;
- (g) Proposed stormwater management measures are adequate to control the stormwater runoff to achieve the required standard for pollutant control; and
- (h) Proposed revegetation of disturbed areas will provide adequate erosion and sediment control benefits, as determined by the director of T&ES.

13-118 - Final plans.

- (A) Final site plans and subdivision plats subject to this Article XIII for all lands within the CBPA shall include the following additional information:
 - (1) A copy showing issuance of all wetlands permits required by law; and
 - (2) A BMP inspection schedule and maintenance agreement between the city and applicant as deemed necessary and appropriate by the director of T&ES to ensure proper maintenance of best management practices in order to assure their continued performance.
- (B) The following installation and bonding requirements shall be met.
 - (1) Where buffer areas, landscaping, stormwater management facilities or other specifications of an approved plan are required, no certificate of occupancy shall be issued until the installation of required plant materials or facilities is completed, in accordance with the approved site plan.
 - (2) When the occupancy of a structure is desired prior to the completion of the required landscaping, stormwater management facilities, or other specifications of an approved plan, a certificate of occupancy may be issued only if the applicant provides to the city a surety bond or equivalent satisfactory to the director of T&ES in amount equal to the remaining plant materials, related materials, and installation costs of the required landscaping or facilities and/or maintenance costs for any required stormwater management facilities during the construction period.
 - (3) Unless otherwise approved by the director of T&ES for a phased project, all required landscaping shall be installed and approved by the first planting season following issuance of a certificate of occupancy or the surety bond may be forfeited to the city.
 - (4) Unless otherwise approved by the director of T&ES for a phased project, all required stormwater management facilities or other specifications shall be installed and approved within 18 months of project commencement. Should the applicant fail, after proper notice, to initiate, complete or maintain appropriate actions required by the approved plan, the surety bond may be forfeited to the city. The city may collect from the applicant the amount by which the reasonable cost of required actions exceeds the amount of surety held.
 - (5) After all required actions of the approved site plan have been completed, the applicant must submit a written request for a final inspection. If the requirements of the approved plan have been completed to the satisfaction of the director of T&ES, such unexpended or unobligated portion of the surety bond held shall be refunded to the applicant or terminated within 60 days following the receipt of the applicant's request for final inspection. The director of T&ES may require a certificate of substantial completion from a professional engineer or licensed surveyor before making a final inspection.

13-119 - Exceptions.

- (A) Unless otherwise provided in this Article XIII, a request for an exception to the requirements of this Article XIII shall be made pursuant to this section in writing to the director of T&ES. The request shall identify the impacts of the proposed exception on water quality and on lands within the RMA and RPA through the performance of a water quality impact assessment that complies with the provisions of section 13-117 to the extent applicable.
- (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:
 - (1) Granting the exception will not confer upon the applicant any special privileges that are denied to other property owners in the CBPA overlay district;
 - (2) The exception is not based upon conditions or circumstances that are self-created or self-imposed, nor does the exception arise from conditions or circumstances either permitted or noncomplying that are related to adjacent parcels;
 - (3) The exception is the minimum necessary to afford relief;
 - (4) The exception will be consistent with the purpose and intent of the overlay district, and not injurious to water quality, the neighborhood or otherwise detrimental to the public welfare;
 - (5) Reasonable and appropriate conditions are imposed, as warranted, to prevent the allowed activity from causing degradation of water quality.
- (C) Economic hardship alone is not sufficient reason to grant an exception from the requirements of this Article XIII.
- (D) Under no circumstances shall the city allow an exception to the requirement that a qualified land-disturbing activity obtain the required construction general permit or other state permits.
- (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. 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 have been considered and found not available.
- (G) Exceptions to section 13-107 shall be heard and determined by the planning commission after hearing and notice pursuant to section 11-300. The schedule for reviewing the exception shall be made by the director of T&ES and the director of planning and zoning. The schedule shall provide, in a manner approved by the city manager, reasonable opportunity for review and action by the environmental policy commission prior to any formal action by the planning commission so that any recommendation of support, denial, or modification can be considered as part of the planning commission's deliberations.
- (H) A record of all exceptions granted shall be maintained by the director of T&ES.
- (I) Any person aggrieved by a decision of the director of T&ES or planning commission under this section may appeal as provided in section 13-120

13-120 - Appeals.

- (A) Any person aggrieved by a final case decision of the director of T&ES in the administration, interpretation or enforcement of this Article XIII or on any application hereunder may appeal such decision to the planning commission, by filing a notice of appeal, in writing, stating the grounds of appeal, with the secretary of the planning commission within 14 days of the issuance of such decision; provided, that any person aggrieved, who had no actual knowledge of the

issuance of such decision, may file an appeal within 14 days of the last day on which notice provided in section 11-300 or section 11-408 of this ordinance is given for any element of the plan of development. A notice of appeal shall be accompanied by a filing fee of \$100.00.

- (B) The planning commission shall conduct a public hearing on any appeal filed pursuant to section 13-120(A), notice for which shall be provided in accordance with the applicable provisions of section 11-300 of this ordinance. Following the conclusion of the hearing, the planning commission may affirm, reverse or modify the decision of the director of T&ES, or vacate the decision and remand the matter to the director of T&ES for further consideration.
- (C) Any person aggrieved by a decision of the planning commission issued pursuant to section 13-119(D) or section 13-120(B), or the city manager, may appeal the decision to the city council, by filing a notice of appeal, in writing, stating the grounds of appeal, with the city clerk within 14 days of the issuance of the decision.
- (D) The city council shall conduct a public hearing on any appeal filed pursuant to subsection (C), notice for which shall be provided in accordance with the applicable provisions of section 11-300 of this ordinance. Following the conclusion of the hearing, the council may affirm, reverse or modify the decision of the commission, or vacate the decision and remand the matter to the planning commission or the director of T&ES for further consideration.
- (E) Notwithstanding the provisions of subsections (A) through (D) above, an applicant or any aggrieved party who elects to appeal shall appeal the director of T&ES's decision of approval or disapproval of a stormwater management plan application by filing a notice of appeal with the director of T&ES within 30 days after service of such decision. The filing of such notice, and proceedings thereafter, shall be governed by Part 2A of the Rules of the Supreme Court of Virginia, and judicial review shall be had in the Circuit Court of the City of Alexandria on the record previously established, and shall otherwise be in accordance with the Administrative Process Act, Virginia Code Sections 9-6.14:1 et seq.

13-121 - Hearings.

- (A) Any applicant, permittee, or person subject to this article aggrieved by any action of the city taken without a formal hearing, or by inaction of the city, may demand in writing a formal hearing by the planning commission, provided a petition requesting such hearing is filed with the director of T&ES within 30 days after notice of such action is given by the director of T&ES.
- (B) The hearings held under this section shall be conducted by the planning commission at a regular or special meeting of the planning commission or by at least one member of the planning commission designated by the planning commission to conduct such hearings on behalf of the planning commission at any other time and place authorized by the planning commission.
- (C) A verbatim record of the proceedings of such hearing shall be taken and filed with the planning commission. Depositions may be taken and read as in actions at law.
- (D) The planning commission or its designated member, as the case may be, shall have power to issue subpoenas and subpoenas duces tecum, and at the request of any party shall issue such subpoenas. The failure of a witness without legal excuse to appear or testify or to produce documents shall be acted upon by the city whose action may include the procurement of an order of enforcement from the circuit court. Witnesses who are subpoenaed shall receive the same fees and reimbursements for mileage as in civil actions.

13-122 - Noncomplying land uses and structures.

- (A) Any land use or structure lawfully existing on January 28, 1992, or any land use or structure that exists at the time of any amendment to this Article XIII that does not comply as a result of the amendment, shall be deemed noncomplying.

- (B) Any proposed land use or structure for which an applicant has a an approved preliminary site plan, building permit, subdivision plan, plot plan, or special use permit on or before February 23, 2004 that would not comply under proposed amendments to Article XIII pursuant to the December 10, 2001 amendments to 9VAC10-20-10 et seq. may be constructed in accordance with the provisions of this Article XIII in effect at the time of submittal, except that the proposed land use or structure shall comply with any new requirements to the maximum extent practicable. Upon completion, the land use or structure shall be deemed noncomplying.
- (C) Any application for a proposed land use or structure that is not exempt pursuant to (A) or (B) above shall comply with amendments to Article XIII adopted pursuant to the December 10, 2001 amendments to 9VAC10-20-10 et seq.
- (D) Nothing in this Article XIII shall prevent the reconstruction of noncomplying structures destroyed by any casualty unless the reconstruction is otherwise restricted by this ordinance or other portions of the City Code. Such reconstruction shall occur within two years after the destruction or damage and there shall be no increase in the amount of impervious area and no further encroachment in the RPA, to the extent possible by sound engineering practices.
- (E) Any noncomplying land use or structure may continue and be maintained, including renovation, remodeling, and other cosmetic alterations provided that the activity does not result in land disturbance and that there is no net increase in nonpoint source pollutant load.
- (F) A request to enlarge or expand a principal noncomplying structure within an RPA buffer area may be approved by the director of T&ES through an administrative process provided that:
 - (a) The principal structure remains intact and the modification is compatible in bulk and scale to those in the surrounding neighborhood area, as determined by the director of planning and zoning. If these criteria are not met, the modification shall be subject to the exception request process requirements of section 13-119
 - (b) There will be no increase in nonpoint source pollution load.
 - (c) Any development or land disturbance exceeding an area of 2,500 square feet complies with section 5-4-1 et seq. of the City Code (erosion and sediment control).
 - (d) The director of T&ES finds that the request is consistent with the criteria provided in section 13-116(B).
- (G) A request to construct or modify a non-attached noncomplying accessory structure, or a request to modify or expand a noncomplying land use (e.g., a parking area, boat storage area, active recreation fields, etc.), shall only be approved through the exceptions process outlined in section 13-119

13-123 - Exemptions.

- (A) The following uses, which may involve structures, fill, flooding, draining, dredging, or excavating, shall be exempted from section 13-107, to the extent specifically enumerated in these regulations and not prohibited by any other provision of the City Code or applicable law and subject to the director of T&ES review and approval of design and construction plans for compliance with this Article XIII:
 - (1) Construction, installation, operation and maintenance of electric, natural gas, fiber-optic, and telephone lines, railroads and public roads constructed by VDOT or by or for the City of Alexandria in accordance with VDOT standards (built separately from development projects regulated under section 13-106), and their appurtenant structures. The exemption of public roads is further conditioned on the alignments being designed to prevent or otherwise minimize the encroachment in the RPA buffer and to minimize adverse effects on water quality.
 - (2) Construction, installation, and maintenance of water, sewer, natural gas, underground telecommunications and cable television lines owned or permitted by the City of Alexandria

or a service authority shall be exempt from the requirements of section 13-107 provided that:

- (a) To the degree possible, the location of such utilities and facilities shall be outside RPAs;
 - (b) No more land shall be disturbed than is necessary to provide for the proposed utility installation; and
 - (c) All such construction, installation, and maintenance of such utilities and facilities shall be in compliance with all applicable state and federal requirements and permits, and designed and conducted in a manner that protects water quality.
- (B) Notwithstanding any other provisions of this article, the following uses, which may involve structures, fill, flooding, draining, dredging, or excavating, shall be exempt from this article:
- (1) Land-disturbing activities less than 2,500 square feet not part of a larger common plan of development or sale, except as may be required in section 13-107 for CPBA;
 - (2) Land disturbances associated with permitted surface or deep mining operations and projects, or oil and gas operations and projects conducted under the provisions of Title 45.1 of the Code of Virginia;
 - (3) Routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original construction of a project. The paving of existing road with a compacted or impervious surface and re-establishment of existing ditches and shoulders is deemed routine maintenance if performed in accordance with this subsection;
 - (4) Conducting land-disturbing activities in response to a public emergency where the related work requires immediate authorization to avoid imminent endangerment to human health or the environment. In such situations, the director of T&ES shall be advised of the disturbance within seven days of commencing the land-disturbing activity and compliance with this Article XIII shall be required within 30 days of commencing the land-disturbing activity;
 - (5) Land clearing for agricultural or silvicultural purposes, and related activities, in accordance with Section 62.1-44.15:34.C.2 of the Code of Virginia; and
 - (6) Activities under a state or federal reclamation program to return an abandoned property to an agricultural or open land use.
- (C) Discharges to a sanitary sewer or a combined sewer shall be exempt from section 13-113 (stormwater pollution prevention plan), section 13-116 (pollution prevention plan), and the requirement to obtain a VSMP construction general permit unless otherwise required by City Code or state or federal law . All other applicable portions of this article shall continue to apply.
- (D) Single-family 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-family detached residential structures are exempt from the water quality requirements of sections 109(E)(3) and (E)(4) except the Alexandria water quality volume default requirement in section 13-109(E)(5) still applies.

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. 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.

- (2) Land-disturbing activities that obtain an initial state construction general permit on or after July 1, 2014 shall be conducted in accordance with the technical criteria in sections 13-109(E) and (F), except for as provided in subsection (B) below, and shall remain subject to this technical criteria for two additional state permit cycles. After such time, portions of the project not under construction shall become subject to any new technical criteria adopted by the board.
- (3) Nothing in this section shall preclude an operator from constructing to a more stringent standard at his/her discretion.
- (B) Grandfathering provisions established in 9VAC25-870-48 shall apply to this article as applicable. Any land-disturbing activity shall be considered grandfathered by the VSMP authority and shall be subject to the technical criteria of 9VAC25-870-93 through 9VAC25-870-99, 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, (iii) will comply with the technical criteria of 9VAC25-870-93 through 99, (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;
 - (2) A state permit has not been issued prior to July 1, 2014; and
 - (3) Land disturbance did not commence prior to July 1, 2014.
- (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 provided:
 - (1) There has been an obligation of locality, state or federal funding, in whole or in part, prior to July 1, 2012, or the department has approved a stormwater management plan prior to July 1, 2012;
 - (2) A state permit has not been issued prior to July 1, 2014; and
 - (3) Land disturbance did not commence prior to July 1, 2014.
- (D) Land-disturbing activities grandfathered under subsections (A) and (B) of this section shall remain subject to 9VAC25-870-93 through 99 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.
- (F) Nothing in this section shall preclude an operator from constructing to a more stringent standard at his discretion.
- (G) However, these applicable land-disturbing activities are also subject to more stringent City criteria effective prior to July 1, 2014. This includes the definition of "site," treating the entire Alexandria water quality volume in section 13-109(E), the pre/post-development peak flow rate requirement for the ten-year 24-hour storm event in section 13-109(F)(2), the requirements in section 13-109(F)(3), and the requirements in section 13-109(F)(7).

13-125 - Monitoring and inspections.

- (A) The director of T&ES shall inspect the land-disturbing activity during construction for compliance with this Article XIII, including but not limited to compliance with the approved erosion and sediment control plan, compliance with the approved stormwater management plan,

development, updating, and implementation of the pollution prevention plan, and development and implementation of any additional control measures necessary to address a TMDL.

- (B) The director of T&ES may, at reasonable times and under reasonable circumstances, enter any establishment or upon any property, public or private, for the purpose of obtaining information or conducting surveys or investigations necessary in the enforcement of the provisions of this Article XIII.
- (C) In accordance with a performance bond with surety, cash escrow, letter of credit, any combination thereof, or such other legal arrangement or instrument, the director of T&ES may also enter any establishment or upon any property, public or private, for the purpose of initiating or maintaining appropriate actions that are required by the permit conditions associated with a land-disturbing activity when a permittee, after proper notice, has failed to take acceptable action within a time specified.
- (D) Pursuant to Section 62.1-44.15:40 of the Code of Virginia, the director of T&ES may require every permit applicant or permittee, or any such person subject to the requirements of this Article XIII to furnish when requested such application materials, plans, specifications, and other pertinent information as may be necessary to determine the effect of the discharge on the quality of state waters, or such other information as may be necessary to accomplish the purpose of this Article XIII.
- (E) Post-construction inspections of stormwater management facilities required by the provisions of this Article XIII shall be conducted by the director of T&ES pursuant to section 13-109(G).

13-126 - Penalties.

- (A) Under the authority of 9VAC25-870-116 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) and its attendant regulations:
 - (1) If the director determines that there is a failure to comply with the VSMP 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.
 - (a) The notice shall specify the measures needed to comply with the permit conditions and shall specify the time within which such measures shall be completed. Upon failure to comply within the time specified, a stop work order may be issued in accordance with subsection (b) or the permit may be revoked by the director of T&ES.
 - (b) If a permittee fails to comply with a notice issued in accordance with this section within the time specified, the director of T&ES may issue an order requiring the owner, permittee, person responsible for carrying out an approved plan, or the person conducting the land-disturbing activities without an approved plan or required permit to cease all land-disturbing activities until the violation of the permit has ceased, or an approved plan and required permits are obtained, and specified corrective measures have been completed.

Such orders shall be issued in accordance with local procedures. Such orders shall become effective upon service on the person by certified mail, return receipt requested, sent to his address specified in the land records of the locality, or by personal delivery by an agent of the director of T&ES. However, if the director of T&ES finds that any such violation 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, it may issue, without advance notice or hearing, an emergency order directing such person to cease immediately all land-disturbing activities on the site and shall provide an opportunity for a hearing, after reasonable notice as to the time and place thereof, to such person, to affirm, modify, amend, or cancel such emergency order. If a person who has been issued an order is not complying with the terms thereof, the director of T&ES may institute a proceeding for an injunction, mandamus, or other appropriate remedy in accordance with subsection (3) below.

- (2) In addition to any other remedy provided by this article, if the director of T&ES or his designee determines that there is a failure to comply with the provisions of this article, they may initiate such informal and/or formal administrative enforcement procedures in a manner that is consistent with local public facilities/engineering manuals and/or specific policy.
- (3) Any person violating or failing, neglecting, or refusing to obey any rule, regulation, ordinance, order, approved standard or specification, or any permit condition issued by the director of T&ES may be compelled in a proceeding instituted in the appropriate local court by the locality to obey same and to comply therewith by injunction, mandamus or other appropriate remedy.
- (4) 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.
 - (b) The director of T&ES may issue a summons for collection of the civil penalty and the action may be prosecuted in the appropriate court.
 - (c) In imposing a civil penalty pursuant to this subsection, the court may consider the degree of harm caused by the violation and also the economic benefit to the violator from noncompliance.
 - (d) Any civil penalties assessed by a court as a result of a summons issued by the city shall be paid into the treasury of the city and specifically placed into the Alexandria water quality improvement fund established in section 13-110 and used for the purpose of minimizing, preventing, managing, or mitigating pollution of the waters of

the city and abating environmental pollution therein in such manner as the court may, by order, direct.

- (5) Notwithstanding any other civil or equitable remedy provided by this section or by law, any person who willfully or negligently violates any provision of this article, any order of the director of T&ES, any condition of a permit, or any order of a court shall, be guilty of a misdemeanor punishable by confinement in jail for not more than 12 months or a fine of not less than \$2,500.00 nor more than \$32,500.00, or both.
- (B) Under the authority of Section 62.1-44.15:74 of the Code of Virginia the director of T&ES shall have the following authority to enforce provisions of this Article XIII required or authorized under Section 62.1-44.15:73 of the Code of Virginia (the Chesapeake Bay Preservation Act) and its attendant regulations:
 - (1) Any person who: (i) violates any provision of this ordinance or (ii) violates or fails, neglects, or refuses to obey any final notice, order, rule, regulation, or variance or permit condition authorized under this ordinance shall, upon such finding by an appropriate circuit court, be assessed a civil penalty not to exceed \$5,000.00 for each day of violation. Such civil penalties may, at the discretion of the court assessing them, be directed to be paid into the Alexandria water quality improvement fund for the purpose of abating environmental damage to or restoring Chesapeake Bay Preservation Areas therein, in such a manner as the court may direct by order, except that where the violator is the city itself or its agent, the court shall direct the penalty to be paid into the state treasury.
 - (2) With the consent of any person who: (i) violates any provision of this ordinance related to the protection of water quality in Chesapeake Bay Preservation Areas or (ii) violates or fails, neglects, or refuses to obey any notice, order, rule, regulation, or variance or permit condition authorized under this ordinance, the city may provide for the issuance of an order against such person for the one-time payment of civil charges for each violation in specific sums, not to exceed \$10,000.00 for each violation. Such civil charges shall be paid into the city water quality improvement fund for the purpose of abating environmental damage to or restoring Chesapeake Bay Preservation Areas therein, except that where the violator is the city itself or its agent, the civil charges shall be paid into the state treasury. Civil charges shall be in lieu of any appropriate civil penalty that could be imposed under subsection (A) above. Civil charges may be in addition to the cost of any restoration required or ordered by the city.
- (C) In addition to subsections (A) and (B) above, the director of T&ES shall have the enforcement provisions available in section 11-200 of this ordinance.

(Ord. No. 4865, § 1, 3-15-14; Ord. No. 4903, § 1, 10-18-14)

ARTICLE XIII. - ENVIRONMENTAL MANAGEMENT

FOOTNOTE(S):

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Editor's note— Ord. No. 4865, § 1, adopted March 15, 2014, repealed Art. XIII and enacted a new article as set out herein. The former Art. XIII, §§ 13-100—13-120, pertained to similar subject matter and derived from Ord. No. 4443, § 1, adopted April 22, 2006.

Sec. 13-100. - General findings.

The Chesapeake Bay is one of the most productive estuaries in the world, providing substantial economic and social benefits to the people of the Commonwealth of Virginia. Healthy state and local economies are integrally related to and dependent upon the health of the Chesapeake Bay. The general welfare of the people of the Commonwealth depends upon the health of the Bay.

The waters of the Chesapeake Bay and its tributaries, including the Potomac River and Alexandria's local streams, have been degraded significantly by point source and nonpoint source pollution, which threatens public health and safety and the general welfare.

13-101 - Purpose.

- (A) It is the policy of the City of Alexandria, Virginia to protect the quality of water in the Chesapeake Bay and its tributaries and, to that end, to require all land uses and land development in the city to:
 - (1) Safeguard the waters of the commonwealth from pollution;
 - (2) Prevent any increase in pollution of state waters;
 - (3) Reduce existing pollution of state waters; and
 - (4) Promote water resource conservation.
- (B) To fulfill this policy, this Article XIII is adopted to minimize potential pollution from stormwater runoff, minimize potential erosion and sedimentation, reduce the introduction of harmful nutrients and toxins into state waters, maximize rainwater infiltration while protecting groundwater, and ensure the long-term performance of the measures employed to accomplish the statutory purpose.
- (C) The provisions of this chapter shall be deemed severable, and the invalidity or unenforceability of any individual provision or section hereof shall not affect the validity and enforceability of the remaining provisions of the chapter.

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) 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. 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.

- (A) *Administrator*. The person responsible for the administration of this Article XIII, which in the city shall be the director of T&ES or his/her designee.
- (B) *Alexandria water quality volume default*. The volume equal to the first 0.5 inch of runoff multiplied by the total impervious area of the site as defined herein.
- (C) *Applicant*. A person who has submitted, or plans to submit, a plan of development or an exception request to the city or a person seeking approval from the city for any activity that is regulated under this article.
- (D) *Best management practice (BMP)*. Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices, including both structural and nonstructural practices, to prevent or reduce the pollution of surface water and groundwater systems from the impacts of land-disturbing activities.
- (E) *Buffer area*. An area of natural or established vegetation managed to protect other components of a resource protection area and state waters from significant degradation due to land disturbances. To effectively perform this function, the buffer area will achieve a 75 percent reduction of sediments and a 40 percent reduction of nutrients. A 100-foot wide buffer area shall be considered to meet this standard.
- (F) *Chesapeake Bay Preservation Act land-disturbing activity*. A land-disturbing activity including clearing, grading, or excavation that results in a land disturbance equal or greater than 2,500 square feet and less than one acre in all areas of the city designated as subject to the regulations adopted pursuant to the Chesapeake Bay Preservation Act, Code of Virginia, § 62.1-44.15:67 et seq.
- (G) *Clean Water Act* or *CWA* means the federal Clean Water Act (33 U.S.C § 1251 et seq.), formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972, Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483, and Public Law 97-117, or any subsequent revisions thereto.
- (H) *Common plan of development or sale*. A contiguous area where separate and distinct construction activities may be taking place at different times on different schedules.
- (I) *Control measure*. Any best management practice or stormwater management facility, or other method used to minimize the discharge of pollutants to state waters.
- (J) *Department (DEQ)*. The Virginia Department of Environmental Quality.
- (K) *Development*. Land disturbance and the resulting landform associated with the construction or substantial alteration of residential, commercial, industrial, institutional, recreational, transportation, or utility facilities or structures or the clearing of land for non-agricultural or non-silvicultural purposes.
- (L) *Director of T&ES/Director of P&Z*. Director of T&ES means the director of transportation and environmental services of the City of Alexandria. Director of P&Z means the director of planning and zoning of the City of Alexandria.
- (M) *Floodway*. All lands as defined in subsection 6-303(K) 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 authorizing a category of discharges under the federal Clean Water Act and the Virginia Stormwater Management Act within a geographical area of the Commonwealth of Virginia.

- (O) *Highly erodible soils.* Soils (excluding vegetation) with an erodibility index (EI) from sheet and rill erosion equal to or greater than eight. The erodibility index for any soil is defined as the product of the formula $RKLS/T$, where K is the soil susceptibility to water erosion in the surface layer; R is the rainfall and runoff; LS is the combined effects of slope length and steepness; and T is the soil loss tolerance.
- (P) *Highly permeable soils.* Soils with a given potential to transmit water through the soil profile. Highly permeable soils are identified as any soil having a permeability equal to or greater than six inches of water movement per hour in any part of the soil profile to a depth of 72 inches (permeability groups "rapid" and "very rapid"), as found in the "National Soil Survey Handbook" of November 1996 in the "Field Office Technical Guide" of the U.S. Dept. of Agriculture Natural Resources Conversation Service.
- (Q) *Impervious cover.* A surface composed of any material that significantly impedes or prevents natural infiltration of water into the soil. Impervious surfaces include, but are not limited to: roofs, buildings, streets, parking areas, and any concrete, asphalt, or compacted gravel surface.
- (R) *Intermittent stream.* Any natural or engineered channel (measured from top of bank) with flowing water during certain times of the year, when groundwater provides for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow. Acceptable methodologies for establishing the presence of an intermittent stream will be provided by the director of T&ES pursuant to subsection 13-104(C).
- (S) *Isolated wetlands of minimal ecological value.* Those wetlands, as defined in 9VAC25-210-10, that:
- (i) Do not have a surface water connection to other state waters;
 - (ii) Are less than one-tenth of an acre in size;
 - (iii) Are not located in a Federal Emergency Management Agency designated 100-year floodplain;
 - (iv) Are not identified by the Virginia Natural Heritage Program as a rare or state significant natural community;
 - (v) Are not forested; and
 - (vi) Do not contain listed federal or state threatened or endangered species.
- (T) *Land disturbance or land-disturbing activity.* A manmade change to the land surface that potentially changes its runoff characteristics, including clearing, grading, filling, or excavation.
- (U) *Layout.* A conceptual drawing sufficient to provide for the specified stormwater management facilities required at the time of approval.
- (V) *Minor modification.* An amendment to an existing general permit before its expiration not requiring extensive review and evaluation including, but not limited to, changes in EPA promulgated test protocols, increasing monitoring frequency requirements, changes in sampling locations, and changes to compliance dates within the overall compliance schedules. A minor general permit modification or amendment does not substantially alter general permit conditions, substantially increase or decrease the amount of surface water impacts, increase the size of the operation, or reduce the capacity of the facility to protect human health or the environment.
- (W) *Natural channel.* A nontidal waterway that is part of the natural topography and is generally characterized as being irregular in cross section with a meandering course.
- (X) *Nonpoint source pollution.* Contamination from diffuse sources that is not regulated as point source pollution under Section 402 of the Clean Water Act.
- (Y) *Nontidal wetlands.* Those wetlands, other than tidal wetlands, that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under

normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, as defined by the U.S. Environmental Protection Agency pursuant to Section 404 of the Federal Clean Water Act, in 33 CFR 328.3b.

- (Z) *Operator*. The owner or operator of any facility or activity subject to regulation under this Article XIII.
- (AA) *Permittee*. The person to whom a state permit is issued, including any owner or operator whose construction site is covered under a state construction general permit.
- (BB) *Person*. Any individual, corporation, partnership, association, municipality, commission, or political subdivision, of a state, governmental body, including federal, state, or local entity as applicable, any interstate body or any other legal entity.
- (CC) *Pre-development*. The land use that exists at the time that plans for the development are submitted to the city. Where phased development or plan approval occurs (preliminary grading, roads and utilities, etc.), the land use at the time the first item is submitted shall establish pre-development conditions.
- (DD) *Post-development*. Conditions that reasonably may be expected or anticipated to exist after completion of the development activity on a specific site or tract of land.
- (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). 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.
- (FF) *Redevelopment*. The process of developing land that is or has been previously developed.
- (GG) *Regulations*. The Virginia Stormwater Management Program (VSMP) Permit Regulations, 9VAC-25-870, as amended.
- (HH) *Restored stormwater conveyance system*. A stormwater conveyance system that has been designed and constructed using natural channel design concepts. Restored stormwater conveyance systems include the main channel and the flood-prone area adjacent to the main channel.
- (II) *Resource management area (RMA)*. A Chesapeake Bay Preservation Area overlay designation as further defined in section 13-105(C).
- (JJ) *Resource protection area (RPA)*. A Chesapeake Bay Preservation Area overlay designation as further defined in section 13-105(B).
- (KK) *Shoreline*. Land contiguous to a body of water.
- (LL) *Site*. The land or water area where any facility or land-disturbing activity is physically located or conducted, including adjacent land used or preserved in connection with the facility or land-disturbing activity. Areas channelward of mean low water in tidal Virginia shall not be considered part of a site. The following shall be used for determining water quality and water quantity requirements in sections 13-109(E) and (F): 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 constitute the site; 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 constitute the site.
- (MM) *State*. The Commonwealth of Virginia.

- (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, and their attendant regulations.
- (OO) *State Water Control Law*. Chapter 3.1 (62.1-44.2 et seq.) of Title 62.1 of the Code of Virginia.
- (PP) *State waters*. All waters on the surface or in the ground, wholly or partially within or bordering the commonwealth or within its jurisdiction, including wetlands.
- (QQ) *Stormwater*. Precipitation that is discharged across the land surface or through conveyances to one or more waterways and that may include stormwater runoff, snow melt runoff, and surface runoff and drainage.
- (RR) *Stormwater management facility*. A device that controls stormwater runoff and changes the characteristics of that runoff including, but not limited to, the quantity and quality, the period of release or the velocity of flow.
- (SS) *Stormwater management plan*. A document or documents containing material describing methods for complying with the requirements of section 13-114 of this article.
- (TT) *Stormwater pollution prevention plan (SWPPP)*. A document that is prepared in accordance with section 13-113 of this article and good engineering practices and that identifies potential sources of pollutants that may reasonably be expected to affect the quality of stormwater discharges from the construction site, and otherwise meet the requirements of this article. In addition the document shall identify and require the implementation of control measures, and shall include, but not be limited to the inclusion of, or the incorporation by reference of, an approved erosion and sediment control plan, and a pollution prevention plan.
- (UU) *Subdivision*. Means the same as defined in section 2-197.2 of the Alexandria Zoning Ordinance.
- (VV) *Substantial alteration*. Expansion or modification of a building or development that would result in land disturbance exceeding an area of 2,500 square feet in the resource management area only.
- (WW) *Tidal shore*. Land contiguous to a tidal body of water between the mean low water level and the mean high water level.
- (XX) *Tidal wetlands*. Vegetated and nonvegetated wetlands as defined in Section 28.2-1300 of the Code of Virginia.
- (YY) *Top of Bank*. To the extent applicable, top of bank shall be determined on prevailing professional standards and the best professional judgment of the director.
- (ZZ) *Total maximum daily load (TMDL)*. The sum of the individual wasteload allocations for point sources, load allocations for nonpoint sources, natural background loading, and a margin of safety. TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure. The TMDL process provides for point versus nonpoint source trade-offs.
- (AAA) *Use*. Any activity on the land other than development, including, but not limited to agriculture, horticulture, and silviculture.
- (BBB) *Virginia Stormwater Management Act*. Article 2.3 (§ 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 and regulations.
- (DDD) *Virginia Stormwater Management Program (VSMP)*. 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.

- (EEE) *VSMP authority.* An authority approved by the Virginia State Water Control Board to operate a VSMP. For the purposes of this article, the city is the VSMP authority.
- (FFF) *VSMP 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 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 authority permit requirements in 9VAC-25-870 and the requirements of this article.
- (GGG) *Water body with perennial flow.* A body of water that flows in a natural or engineered channel year-round during a year of normal precipitation. This includes, but is not limited to streams, estuaries, and tidal embayments and may include drainage ditches or channels constructed in wetlands or from former natural drainage ways that convey perennial flow. Lakes and ponds, through which a perennial stream flows, are a part of the perennial stream. Generally, the water table is located above the streambed for most of the year and groundwater is the primary source for stream flow. The width of the perennial stream extends from top-of-bank to top-of-bank of the channel or to the limits of the normal water level for a pond or lake when there is no definable top-of-bank. Acceptable methodologies for establishing the presence of a water body with perennial flow will be provided by the director of T&ES pursuant to subsection 13-104(C).
- (HHH) *Water-dependent facility.* A development of land that cannot exist outside of the resource protection area and must be located on the shoreline by reason of the intrinsic nature of its operation. These facilities include, but are not limited to:
- (i) Ports;
 - (ii) The intake and outfall structures of power plants, water treatment plants, sewage treatment plants, and storm sewers;
 - (iii) Marinas and other boat docking facilities;
 - (iv) Beaches and other public water-oriented recreation areas; and
 - (v) Fisheries or other marine resources facilities.
- (III) *Watershed.* The total drainage area contributing runoff to a single point.
- (JJJ) *Wetlands.* Tidal and nontidal wetlands.

13-104 - Administration.

- (A) *Responsibility for administration.* The director of T&ES, or his/her designee, is charged with responsibility for the administration of this Article XIII.
- (B) *Duties and authority.* In the administration of this Article XIII the duties and authority of the director of T&ES shall include, without limitation:
- (1) Receiving applications for plan of development approval;
 - (2) Reviewing applications to determine if they contain all information required and necessary for a determination of their merit;
 - (3) Reviewing applications to determine their compliance with the provisions and intent of this Article XIII and their merit;

- (4) Docketing items for hearing before the planning commission and conferring with the city manager to schedule public hearings before the city council as necessary on applications;
 - (5) Preparing a staff report for each application;
 - (6) Interpreting the provisions of this Article XIII to ensure that its intent is carried out.
- (C) *Rules, regulations, and procedures.* The director of T&ES shall promulgate rules, regulations, and procedures for the administration and enforcement of this Article XIII and shall promulgate rules, regulations, and procedures for the processing of applications that ensure full review, comment, and recommendations on each application by the department of transportation and environmental services. The city manager shall promulgate rules and procedures for review by other departments of applications, where such review is determined to be necessary or desirable and such procedures may include the establishment of a development review committee composed of departments of the city whose expertise is necessary or desirable in the review of applications. All such rules, regulations, and procedures shall be transmitted to the city council at the time of issuance.
- (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 et seq. The schedule of fees is set per approved council docket.
- (E) *Responsibility for enforcement.* The director of T&ES shall have the authority and the responsibility of section 11-200 and section 13-126 to ensure that all buildings and structures and the use of all land complies with the provisions of this Article XIII.
- (F) The director of T&ES shall review, approve, disapprove, or approve with modifications or conditions or both the following elements of the plan of development:
- (1) The environmental site assessment, required pursuant to section 13-112
 - (2) The stormwater management plan, required pursuant to section 13-114 and approved in accordance with section 13-115
 - (3) The erosion and sediment control plan required pursuant to section 5-4-1.
 - (4) The water quality impact assessment, if required, pursuant to section 13-117
 - (5) Compliance of the plan of development with section 13-106 through section 13-110
- (G) The director of T&ES shall have the authority and the responsibility to enforce the requirement that a permittee must develop, implement, and keep at the site for inspection a stormwater pollution prevention plan that meets the requirements set forth in section 13-113 and a pollution prevention plan that meets the requirements set forth in section 13-116
- (H) Review and decision on applications for exceptions shall be as provided in section 13-119
- (I) Review and decision on applications for modifications to noncomplying land uses and structures shall be as provided in section 13-122
- (J) Review and decision on applications for exemptions shall be as provided in section 13-123
- (K) Review and decision on the remaining elements of the plan of development shall be as provided in the regulations of this ordinance and the City Code applicable to each such element.

13-105 - Designation of Chesapeake Bay Preservation Area Overlay District.

- (A) All land within the corporate limits of the city is designated as a Chesapeake Bay Preservation Area (CBPA). The CBPA is divided into resource protection areas and resource management areas. The regulations set forth in this Article XIII shall apply as an overlay district, and shall supersede any zoning, land use, or land development regulation of the City Code that is inconsistent with the provisions of this Article XIII.

- (B) Resource protection areas (RPAs) consist of sensitive land that has either an intrinsic water quality value due to the ecological and biological processes such land performs or that is sensitive to uses or activities such that the use results in significant degradation to the quality of state waters. In their natural condition, these lands provide for the removal, reduction, or assimilation of nonpoint source pollution entering the bay and its tributaries. An area of land that includes any one of the following land types shall be considered to be within the RPA:
- (1) Tidal wetlands;
 - (2) Tidal shores;
 - (3) Nontidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow;
 - (4) A buffer area of 100 feet (measured from top of bank) located adjacent to and landward of the components listed in subsections (1) through (3) above and along both sides of any water body with perennial flow. The full buffer area shall be designated as the landward component of the RPA notwithstanding the presence of permitted uses, encroachments, and vegetation clearing in compliance with this Article XIII.
- (C) Resource management areas (RMAs) include land that, if improperly used or developed, has a potential for causing significant water quality degradation or for diminishing the functional value of the RPA. Therefore, all lands in the city, not included in the RPA, shall constitute the RMA since all such land drains through natural or manmade conveyances to the Potomac River and Chesapeake Bay.

13-106 - Establishment of CBPA boundaries.

- (A) Chesapeake Bay Preservation Area boundaries are established by text, as provided in section 13-105. The city shall publish and update in a manner established by the director of T&ES pursuant to section 13-104(C) a general map depicting the location of identified CBPA features. However, in all cases it is the burden of the applicant to identify CBPA features and to delineate the appropriate RPA boundaries in accordance with the development review process required pursuant to section 13-111, or if no development review process is required, then through the environmental site assessment pursuant to section 13-112
- (B) Any property owner wishing to change the depiction of an RPA feature on the general map may conduct an environmental site assessment in section 13-112 and submit it to the director of T&ES. The director of T&ES may accept, modify, or reject the RPA delineation based on the evidence presented by the property owner and in consideration of all other available information.
- (C) In the event that a site-specific RPA boundary delineation is contested by an applicant or property owner, the applicant or property owner may request a meeting with the director of T&ES to review the decision. Requests for the meeting shall be made no more than 30 calendar days after notification of a modification or rejection of a proposed RPA delineation. The director of T&ES will preside over the meeting of the involved parties and reconsider the decision. The meeting participants will be notified by the director of T&ES within 30 calendar days after the meeting of the result of the reconsideration.

13-107 - Development, redevelopment, and uses permitted in RPAs.

The following criteria shall apply in RPAs unless the development, redevelopment, use, or land-disturbing activity is exempted under section 13-123 or granted an exception pursuant to section 13-119. All development, redevelopment, and uses within the RPA must comply with the performance criteria provided in section 13-109

- (A) The following are permitted within the RPA provided they do not require development, redevelopment, structures, grading, fill, draining, or dredging:
 - (1) Conservation or preservation of soil, water, vegetation, fish, shellfish, and other wildlife;
 - (2) Passive recreational activities, including but not limited to fishing, bird watching, hiking, boating, horseback riding, swimming, and canoeing; and
 - (3) Educational activities and scientific research.
- (B) The following are permitted within the RPA if approved by the director of T&ES. A water quality impact assessment may be required by the director of T&ES in accordance with section 13-117 if the project is located within an environmentally sensitive area, or is of sufficient scale to affect water quality.
 - (1) Repair and maintenance of existing piers, walkways, observation decks, wildlife management shelters, boathouses, and other similar water-related structures provided that there is no increase in structure footprint and that any required excavating and filling results in a land-disturbing activity of 2,500 square feet or less;
 - (2) Boardwalks, trails, and pathways;
 - (3) Historic preservation and archeological activities; and
 - (4) Repair and maintenance of existing flood control and stormwater management facilities.
- (C) The following, if permitted in the underlying zone, are allowed within the RPA if approved by the director of T&ES and provided that a water quality impact assessment is performed and accepted by the director of T&ES as complete in accordance with section 13-117
 - (1) A new or expanded water-dependent facility may be allowed provided that the following criteria are met:
 - (a) It does not conflict with the city master plan;
 - (b) Any non-water-dependent component is located outside of the RPA; and
 - (c) Access to the water-dependent facility is provided with the minimum disturbance necessary, and where practical, a single point of access is provided.
 - (2) Redevelopment may be allowed provided that the following criteria are met:
 - (a) There is no increase in impervious surface cover;
 - (b) There is no further encroachment within the RPA; and
 - (c) The proposed redevelopment is consistent with the city master plan.
 - (3) Public flood control and stormwater management facilities that drain or treat water from multiple development projects or from a significant portion of a watershed, may be allowed provided that:
 - (a) The director of T&ES has conclusively established that the location of the facility within the RPA is the optimum location;
 - (b) The size of the facility is the minimum necessary for flood control or stormwater quality treatment, or both;
 - (c) All applicable permits for construction in state or federal waters must be obtained from the appropriate state and federal agencies, such as the Army Corps of Engineers, the Virginia Department of Environmental Quality, and the Virginia Marine Resources Commission; and
 - (d) The facility is consistent with a city stormwater management program approved by the Virginia State Water Control Board.

- (4) Stream restoration projects and shoreline erosion control and stabilization projects, including the removal of trees and woody vegetation, employment of necessary restoration, control, and stabilization techniques, and establishment of appropriate vegetation, may be allowed in accordance with the best available technical advice and applicable permit conditions or requirements if approved by the city arborist.
- (D) In order to maintain the functional value of the RPA buffer area, existing vegetation may be removed if approved by the director of T&ES and only to provide for reasonable sight lines, access paths, general woodlot management, and best management practices to prevent upland erosion and concentrated flows of stormwater, as follows:
 - (1) Trees may be pruned or removed as necessary to provide for sight lines and vistas, provided that where removed, they shall be replaced with other vegetation that is equally effective in retarding runoff, preventing erosion, and filtering nonpoint source pollution from runoff. Replacement vegetation shall require the approval of the director of T&ES, in consultation with the department of recreation, parks, and cultural activities and the department of planning and zoning.
 - (2) Any path shall be constructed and surfaced so as to effectively control erosion.
 - (3) Dead, diseased, or dying trees or shrubbery and noxious weeds (such as Johnson grass, kudzu, and multiflora rose) may be removed and thinning of trees may be conducted. The director of T&ES may approve a long term management plan for a specific RPA that complies with professionally recognized management practices.
- (E) The following encroachments, if permitted in the underlying zone, are allowed to the RPA buffer area if approved by the director of T&ES and provided that a water quality impact assessment is performed and accepted by the director of T&ES as complete in accordance with section 13-117
 - (1) When the application of the buffer area would result in the loss of a buildable area on a lot or parcel recorded prior to October 1, 1989, encroachments into the buffer area may be approved by the director of T&ES in accordance with the following criteria:
 - (a) Encroachments into the buffer area shall be the minimum necessary to achieve a reasonable buildable area for a principal structure and necessary utilities;
 - (b) Where practicable, a vegetated area that will maximize water quality protection, mitigate the effects of the buffer encroachment, and is equal to the area of encroachment into the buffer area shall be established elsewhere on the lot; and
 - (c) The encroachment may not extend into the seaward 50 feet of the buffer area.
 - (2) When the application of the buffer area would result in the loss of buildable area on a lot or parcel recorded between October 1, 1989 and March 1, 2002, encroachments into the buffer area may be approved by the director of T&ES in accordance with the following criteria:
 - (a) The lot or parcel was created as a result of a legal process conducted in conformity with the city's subdivision regulations;
 - (b) Any conditions or mitigation measures imposed through previously approved exceptions must be met;
 - (c) If a stormwater BMP was previously required, the BMP shall be evaluated to determine if it continues to function effectively, and, if necessary, the BMP shall be reestablished or repaired and maintained as required; and
 - (d) The criteria in (1) above of this section shall be met.

Development, redevelopment, and uses authorized by the underlying zone are permitted in the RMA provided such activity is carried out in accordance with all applicable criteria in this Article XIII. The director of T&ES may, due to the unique characteristics of a site or the intensity of the proposed development, redevelopment, or use require a water quality impact assessment as provided in subsections 13-117(C) and (D).

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.

- (A) No more land shall be disturbed than is necessary to provide for the proposed use, development, or redevelopment.
- (B) Indigenous vegetation shall be preserved to the maximum extent practicable consistent with the use, development, or redevelopment proposed.
- (C) Development or redevelopment shall minimize impervious cover consistent with the proposed use or development.
- (D) The proposed development or redevelopment shall comply with section 5-4-1 et seq. of the City Code (erosion and sediment control).
- (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.
 - (1) The entire water quality volume from the site shall be treated. When the development, redevelopment, or use constitutes disturbing only a small portion of a tax map parcel greater than five acres in size, the director of T&ES may establish criteria for allowing the parcel to be divided into sub-basins.
 - (2) Single-family 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-family detached residential structures are exempt from subsections (4) and (5) below. The Alexandria water quality volume default requirement in subsection (6) still applies.
 - (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 shall be applied.
 - (4) New development. The total phosphorus load of new development projects shall not exceed 0.41 pounds per acre per year, as calculated pursuant to this section.
 - (5) Development of prior developed lands:
 - (a) For land-disturbing activities disturbing greater than or equal to one acre that results in no net increase in impervious cover from the pre-development condition, the total

phosphorus load shall be reduced at least 20 percent below the pre-development total phosphorus load.

- (b) For regulated land-disturbing activities disturbing less than one acre that results in no net increase in impervious cover from the pre-development condition, the total phosphorus load shall be reduced at least ten percent below the predevelopment total phosphorus load.
 - (c) For land-disturbing activities that result in a net increase in impervious cover over the pre-development conditions, the design criteria for new development shall be applied to the increased impervious area. Depending on the area of disturbance, the criteria of subsections (a) or (b) above shall be applied to the remainder of the site.
 - (d) In lieu of subsection (c), the total phosphorus load of a linear development project as defined in 9VAC25-870-10 occurring on prior developed lands shall be reduced 20 percent below the predevelopment total phosphorus load.
 - (e) The total phosphorus load shall not be required to be reduced below the applicable standard for new development unless standards applied by other parts of this article require a more stringent standard.
- (6) For new development and development on prior developed lands in subsections (4) and (5) above, the entire Alexandria water quality volume default from the site shall be treated, or the requirements must be met consistent with section 13-110
 - (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 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 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 required 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.
 - (9) When the requirements of subsections (4) and (5) have otherwise been met, the requirement to treat the entire Alexandria water quality volume default in subsection (6) may be achieved in accordance with alternative stormwater management equivalency options presented in section 13-110
 - (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, linear development controls in 9VAC25-870-76, and criteria associated with stormwater impoundment structures in 9VAC25-870-85.
 - (11) Notwithstanding the above requirements, any site with (a) an intermittent stream contained within an existing natural channel, or (b) a non-tidal wetland that does not meet the criteria

for designation as a resource protection area in section 13-105(B), must meet the following additional water quality performance criteria:

- (a) Measures must be taken to protect these features from direct stormwater runoff from impervious surfaces and to preserve their water quality functions.
 - (b) A 50-foot wide vegetated area preserved where present, or established where not present, on the outward edge of these features shall be considered a sufficient BMP to meet this standard if the vegetated area is designed to prevent erosion and scouring.
 - (c) The BMP requirement in (b) above may alternatively be met through the use of a smaller vegetated area in combination with equivalent on-site stormwater treatment and/or equivalent off-site options presented in section 13-110 if approved by the director of T&ES.
 - (d) Development, redevelopment, uses, and land-disturbing activities allowed in the vegetated area shall be the same as those allowed in RPAs as described in section 13-107. Delineation of the vegetated area shall be accomplished in the manner prescribed in section 13-106
 - (e) The director of T&ES may waive the requirements of (b) above if the non-tidal wetland is demonstrated to the director of T&ES's satisfaction that it qualifies as an isolated wetland of minimal ecological value defined in section 13-103(K).
- (F) All development and redevelopment shall meet the following channel protection and flood protection requirements. Compliance with this section satisfies the stormwater management requirements of section 5-4-7(c)(4) of the City Code (erosion and sediment control):
- (1) Channel protection. Concentrated stormwater flow shall be released into a stormwater conveyance system and shall meet the criteria of this section, where applicable, from the point of discharge to a point within the limits of analysis in subsection (d).
 - (a) *Manmade stormwater conveyance systems.* When stormwater from a development is discharged to a manmade stormwater conveyance system, following the land-disturbing activity, either:
 - (i) The manmade stormwater conveyance shall convey the post-development peak flow rate from the two-year 24-hour storm event without causing erosion of the system. Detention of stormwater or downstream improvements may be incorporated into the land-disturbing activity to meet this criterion, at the discretion of the director; or
 - (ii) The peak discharge requirements for concentrated stormwater flow to natural stormwater conveyance systems in subsection (c) shall be met.
 - (b) *Restored stormwater conveyance systems.* When stormwater from a development is discharged to a restored stormwater conveyance system that has been restored using natural design concepts, following the land-disturbing activity, either:
 - (i) The development shall be consistent, in combination with other stormwater runoff, with the design parameters of the restored stormwater conveyance system that is functioning in accordance with the design objectives; or
 - (ii) The peak discharge requirements for concentrated stormwater flow to natural stormwater conveyance systems in subsection (c) shall be met.
 - (c) *Natural stormwater conveyance systems.* When stormwater from a development is discharged to a natural stormwater conveyance system the maximum peak flow rate from the one-year 24-hour storm following the land-disturbing activity shall be calculated either:
 - (i) In accordance with the following methodology:

$$Q_{\text{Developed}} \leq \text{I.F.} * (Q_{\text{Pre-developed}} * RV_{\text{Pre-developed}}) / RV_{\text{Developed}}$$

Under no condition shall $Q_{\text{Developed}}$ be greater than $Q_{\text{Pre-developed}}$ nor shall $Q_{\text{Developed}}$ be required to be less than that calculated in the equation $(Q_{\text{Forest}} * RV_{\text{Forest}}) / RV_{\text{Developed}}$; where

I.F. (Improvement Factor) equals 0.8 for sites > 1 acre or 0.9 for sites ≤ 1 acre.

$Q_{\text{Developed}}$ = The allowable peak flow rate of runoff from the developed site.

$RV_{\text{Developed}}$ = The volume of runoff from the site in the developed condition.

$Q_{\text{Pre-developed}}$ = The peak flow rate of runoff from the site in the pre-developed condition.

$RV_{\text{Pre-developed}}$ = The volume of runoff from the site in pre-developed condition.

Q_{Forest} = The peak flow rate of runoff from the site in a forested condition.

RV_{Forest} = The volume of runoff from the site in a forested condition.

- (d) *Limits of analysis.* Unless subsection (c) is utilized to show compliance with the channel protection criteria, stormwater conveyance systems shall be analyzed for compliance with channel protection criteria to a point where either:
 - (i) Based on land area, the site's contributing drainage area is less than or equal to 1.0 percent of the total watershed area; or
 - (ii) Based on peak flow rate, the site's peak flow rate from the one-year 24-hour storm is less than or equal to 1.0 percent of the existing peak flow rate for the one-year 24-hour storm event prior to implementation of any stormwater quantity control measures.
- (2) Flood protection. Concentrated stormwater flow shall be released into a stormwater conveyance system and shall meet one of the following criteria as demonstrated by the use of acceptable hydrologic and hydraulic methodologies:
 - (a) Concentrated stormwater flow to stormwater conveyance systems that currently do not experience localized flooding during the ten-year 24-hour storm event:
 - (i) The point of discharge releases stormwater into a stormwater conveyance system that, following the land-disturbing activity, confines the post-development peak flow rate from the ten-year 24-hour storm event within the stormwater conveyance system; and
 - (ii) Unless waived under (iv), the post-development peak flow rate for the ten-year 24-hour storm event shall be less than the predevelopment peak flow rate from the ten-year 24-hour storm event.
 - (iii) Detention of stormwater or downstream improvements may be incorporated into the approved land-disturbing activity to meet (i) and (ii), at the discretion of the director of T&ES.
 - (iv) A waiver of the detention requirements and/or the downstream stormwater limits of analysis in subsection (2)(c) may be granted by the director based on factors including but not limited to the project's location in the watershed.
 - (b) Concentrated stormwater flow to stormwater conveyance systems that currently experience localized flooding during the ten-year 24-hour storm event: The point of discharge either:
 - (i) Confines the post-development peak flow rate from the ten-year 24-hour storm event within the stormwater conveyance system to avoid the localized flooding.

Additional detention of stormwater or downstream improvements may be incorporated into the approved land-disturbing activity to meet this criterion, at the discretion of the director; or

- (ii) Releases a post-development peak flow rate for the ten-year 24-hour storm event that is less than the pre-development peak flow rate from the ten-year 24-hour storm event.
 - (iii) A waiver of the detention requirement may be granted by the director of T&ES based on factors including but not limited to the amount of stormwater runoff generated, the severity of flooding issues in the watershed and/or the lack of adequacy of the existing conveyance system.
- (c) Limits of analysis. Stormwater conveyance systems shall be analyzed for compliance with flood protection criteria to a point where:
 - (i) The site's contributing drainage area is less than or equal to 1.0 percent of the total watershed area draining to a point of analysis in the downstream stormwater conveyance system;
 - (ii) Based on peak flow rate, the site's peak flow rate from the ten-year 24-hour storm even is less than or equal to 1.0 percent to the existing peak flow rate from the ten-year 24-hour storm event prior to the implementation of any stormwater quantity control measures; or,
 - (iii) The stormwater conveyance system enters a mapped floodplain or other flood-prone area adopted in accordance with section 6-300 et seq. of the City Code.
- (d) Alternative limits of analysis. If section 13-109(F)(2)(a)(i) and (ii) or 109(F)(2)(b)(ii) are utilized to comply with the flood protection criteria the downstream limit of analysis shall extend to:
 - (i) A point that is at least 150 feet downstream of a point where the receiving pipe or channel is joined by another that has a drainage area that is at least 90 percent of the size of the first drainage area at the point of confluence; or
 - (ii) A point that is at least 150 feet downstream of a point where the drainage area is 360 acres or greater.
- (3) Increased volumes of sheet flow resulting from pervious or disconnected impervious areas, or from physical spreading of concentrated flow through level spreaders, must be identified and evaluated for potential impacts on down-gradient properties or resources. Increased volumes of sheet flow that will cause or contribute to erosion, sedimentation, or flooding of down gradient properties or resources shall be diverted to a stormwater management facility or a stormwater conveyance system that conveys the runoff without causing down-gradient erosion, sedimentation, or flooding. If all runoff from the site is sheet flow and the conditions of this subsection are met, no further water quantity controls are required.
- (4) For the purposes of computing pre-development runoff, all pervious lands on the site shall be assumed to be in good hydrologic condition in accordance with the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) standards, regardless of conditions existing at the time of computation. Pre-development runoff calculations utilizing other hydrologic conditions may be utilized provided that it is demonstrated to and approved by the director of T&ES that actual site conditions warrant such considerations.
- (5) Pre-development and post-development runoff characteristics and site hydrology shall be verified by site inspections, topographic surveys, available soil mapping or studies, and calculations consistent with good engineering practices. Guidance provided in the Virginia Stormwater Management Handbook and by the Virginia Stormwater BMP Clearinghouse shall be considered appropriate practices.

- (6) The director of T&ES may waive these requirements provided in subsection (2) in cases where stormwater detention would conflict with the city's flood management programs. The waiver may be granted based on factors including, but not limited to, the project's location in the watershed and/or off-site improvement to upgrade the downstream conveyance systems.
- (7) Post-development concentrated surface waters shall not be discharged on adjoining property, unless an easement expressly authorizing such discharge has been granted by the owner of the affected land.
- (G) It shall be the responsibility of the owner of any stormwater quality or quantity management facility established to meet the requirements of (E) and (F) above to provide adequate maintenance for proper functioning of the system. The following requirements apply to all existing and future facilities constructed in the city:
 - (1) The owner shall enter into a stormwater BMP maintenance agreement (agreement) with the city that provides all necessary provisions to ensure compliance with this article, to include access for inspections. The agreement shall require the provision of long-term maintenance of stormwater BMPs and provide for inspections. Facility-specific inspection frequency and maintenance requirements shall be set by city policy and procedures. The BMP maintenance agreement shall be set forth in an instrument recorded in the city land records. The stormwater BMP maintenance agreement form will be provided by the director of T&ES in accordance with section 13-104(C).
 - (2) The owner shall prepare and submit inspection and maintenance reports to the city in accordance with city policies and procedures for the specific facility. Inspection and maintenance reports shall be signed by the owner of the facility or an individual acting on the owner's behalf, a registered professional, or a person who holds an appropriate certificate of competence from the board. Such certification shall state that the facility is being adequately maintained as designed.
 - (3) The owner shall provide the city with access to the facility to perform quality assurance inspections and follow up inspections to ensure adequate maintenance has been conducted a minimum of once every five years, or on a more frequent basis at the discretion of the director. If inadequate maintenance is observed by the city, the owner will be notified and an adequate period specified for corrective action. If the corrective action is not performed within the specified time, the city may perform the necessary corrections and bill the property owner. In cases of repeated instances of failure to perform required maintenance, sanctions may be imposed as provided in section 13-126

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

- (A) The director of T&ES, in consultation with the director of planning and zoning and the director of recreation, parks, and cultural activities, as appropriate, shall establish equivalent stormwater management options that may be used to meet the requirements of section 13-109(E)(6) and section 13-109(E)(11)(c). Options shall include the following:
 - (1) Specific on-site and off-site improvements that have been determined by the director of T&ES to achieve a pollutant removal equal to or greater than what would have been achieved had a traditional BMP been required; and
 - (2) Monetary contributions to the Alexandria water quality improvement fund provided for in subsection (C) below.
- (B) Improvements may include, but not necessarily be limited to, stream restoration, stream daylighting, removal of existing RPA encroachments, RPA enhancement, street cleaning, combined sewer system separation, and permanent preservation of open space areas beyond the city's baseline open space preservation requirements.

- (C) Monetary contributions to the Alexandria water quality improvement fund shall be calculated by the director of T&ES based on estimates of the cost of actually installing and maintaining on-site BMPs through their life cycle. These costs will be updated on a periodic basis by the director of T&ES as required.
- (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:
 - (1) Whether there is an opportunity to control impervious surface cover that comes into routine contact with vehicles, including but not limited to parking areas, streets and roadways except for public roads exempt under section 13-109; loading docks; equipment, material, and waste storage areas; and vehicle fueling, washing, storage, maintenance, and repair areas;
 - (2) Whether other environmental and public benefits such as site design, open space, tree preservation, and landscaping can be achieved;
 - (3) Whether on-site stormwater detention would conflict with the city's flood management programs;
 - (4) Whether site-specific constraints would make on-site treatment difficult or impractical, especially when the site consists of a single-family residence separately built and not part of a subdivision;
 - (5) Whether there are opportunities readily available for off-site improvements within the general vicinity of the site that will provide greater water quality benefits than on-site improvements;
 - (6) Whether there are opportunities to control specific pollutants of concern identified within the watershed or subwatershed, including but not limited to those identified by the department of environmental quality in its most recent 303(d) Total Maximum Daily Load (TMDL) Priority List;
 - (7) Whether there are opportunities to implement the Water Quality Management Supplement to the city master plan and the city's Virginia Stormwater Management Permit (VSMP) for its municipally owned separate storm sewer system discharges as issued by the Department of Environmental Quality; and
 - (8) Whether the cost of implementing available off-site improvements is reasonably equivalent to that of a monetary contribution;
 - (9) Single family 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.
- (E) Final approval of equivalency options used for a particular site shall be made at the sole discretion of the director of T&ES.
- (F) The city hereby establishes a dedicated fund known as the Alexandria water quality improvement fund to be used in conjunction with this Article XIII, the water quality management supplement to the city master plan, and the city's municipal separate storm sewer system (MS4) general permit issued by the Virginia Department of Environmental Quality. The purpose of the fund is to reduce nonpoint source pollution and improve stream quality and habitat through appropriate activities including, but not limited to: new BMPs, retrofit of existing BMPs, riparian enhancements, stream bank stabilization and/or restoration, public education and outreach, demonstration projects, water quality monitoring and analysis, and other activities to meet TMDL requirements.

- (A) Any development, redevelopment, or use exceeding 2,500 square feet of land disturbance within the CBPA shall be subject to the development review process outlined in subsection (C) below prior to any clearing of the site, or the issuance of any building, land use, or land development permit. However, any land-disturbing activity less than one acre within the CBPA shall not be required to complete a registration statement for coverage under the general permit, but shall be subject to all aspects of the development review process, to include the water quality and quantity criteria in subsections 13-109(E) and (F). Further, any detached single-family home construction within or outside of a common plan of development or sale that is not otherwise exempt shall not be required to complete a registration statement, but shall adhere to all other requirements of the general permit and all applicable requirements of this article.
- (B) Notwithstanding subsection (A) above, all development, redevelopment, or use in the RPA, or in the vegetated area established under subsection 13-109(E)(11), regardless of the amount of land disturbance, shall be subject to the review criteria established in section 13-107 prior to any clearing of the site or the issuance of any building, land use, or land development permit.
- (C) The development review process application shall consist of the plans and studies identified below, such application forms as the director of T&ES shall require and the appropriate fees, which together shall constitute the plan of development. The plans and studies identified in this section may be coordinated or combined with other required submission materials, as deemed appropriate by the director of T&ES. The plan of development shall contain the following elements:
 - (1) A site plan in accordance with the provisions of section 11-400 of this ordinance or other applicable law and, if applicable, a subdivision plat in accordance with the provisions of Chapter 5, Title 7 of the City Code;
 - (2) An environmental site assessment as detailed in section 13-112
 - (3) A landscape plan in accordance with the provisions of section 113-117(D)(3) of this ordinance certified by qualified design professionals practicing within their areas of competence;
 - (4) A stormwater management plan as detailed in section 13-114 and approved in accordance with section 13-115
 - (5) An erosion and sediment control plan in accordance with the provisions of Chapter 4, Title 5 of the City Code;
 - (6) Completion of the stormwater pollution prevention plan checklist referring to standard plan language included in the final plan; and
 - (7) For all land disturbance, development, or redevelopment within an RPA, or within an environmentally sensitive area as determined by the director of T&ES pursuant to section 13-117(C) or section 13-117(D), or for an exception under section 13-119, a water quality impact assessment as detailed in section 13-117
- (D) No development, redevelopment, uses, or land disturbing activities may commence until the director of T&ES has approved the final site plan and a state construction general permit has been issued based on approval of a complete and accurate registration statement signed and submitted by the operator, if such registration statement is required. The following shall be required for final site plan approval:
 - (1) Evidence that a general VPDES permit for discharges of stormwater from construction activities has been issued, if such general permit is required;
 - (2) Approval by the director of T&ES of all requirements as outlined in subsection (C) above;
 - (3) Payment of all applicable fees in accordance with section 113-104(D);
 - (4) Demonstration to the satisfaction of the director of T&ES, through the review of the final site plan application and attendant materials and supporting documentation, that all land

clearing, construction, disturbance, land development, and drainage will be done in accordance with this Article XIII.

- (5) Review of a signed standard maintenance and monitoring agreement for the long term maintenance of stormwater BMPs, and proof of recordation per section 13-109(G).
- (E) As a condition of final plan approval, any development, redevelopment, or land-disturbing activity of one acre or greater must develop prior to the land-disturbing activity, implement, and keep at the site for inspection a stormwater pollution prevention plan that meets the requirements set forth in section 13-113, which includes a pollution prevention plan that meets the requirements set forth in section 13-116

13-112 - Environmental site assessment.

- (A) The environmental site assessment shall clearly delineate the individual components of the RPA as well as the total geographic extent of the RPA as defined in section 13-105(B) through a methodology approved by the director of T&ES under the authority of section 13-104(C).
- (B) The environmental site assessment shall also clearly describe, map, or explain the following:
 - (1) Intermittent streams contained within a natural channel through a methodology approved by the director of T&ES under the authority of section 13-104(C).
 - (2) Highly erodible and highly permeable soils if available from existing public documents or documents available to the applicant;
 - (3) Steep slopes greater than 15 percent in grade;
 - (4) Known areas of contamination;
 - (5) Springs, seeps, and related features; and
 - (6) A listing of all wetlands permits required by law (evidence that such permits have been obtained shall be presented to the director of T&ES before permits will be issued to allow commencement of grading or other on-site activity).
- (C) Wetlands delineations shall be performed consistent with current procedures promulgated by the U.S. Army Corps of Engineers and the Environmental Protection Agency.
- (D) Site-specific evaluations or delineations of RPA boundaries shall be certified by a professional engineer, land surveyor, landscape architect, soil scientist, or wetland delineator certified or licensed to practice in the Commonwealth of Virginia.
- (E) In the event that no part of the site plan area contains any elements described in subsection (A) or (B) above, the applicant and the party responsible for the evaluation may, in lieu of providing an environmental site assessment plan, so certify the finding, in writing and under oath, to the director of T&ES. Any permit issued in reliance upon such a certification where said certification is factually inaccurate or incorrect shall be void ab initio. Such invalidity shall be in addition to any other penalties which may be imposed upon the makers of such certification.
- (F) The environmental site assessment shall be drawn at the same scale as the preliminary site plan or subdivision plat, and shall be certified as complete and accurate by a professional engineer or a certified land surveyor. This requirement may be waived by the director of T&ES when the proposed use or development would result in less than 5,000 square feet of disturbed area.

13-113 - Stormwater pollution prevention plan.

- (A) The stormwater pollution prevention plan (SWPPP) shall include the content specified in 9VAC25-870-54, 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).

- (B) The SWPPP shall be amended by the operator whenever there is a change in design, construction, operation, or maintenance that has a significant effect on the discharge of pollutants to state waters that is not addressed in the existing SWPPP.
- (C) The SWPPP must be maintained by the operator at a central location on-site. If an on-site location is not available, notice of the SWPPP's location must be posted near the main entrance at the construction site. Operators shall make the SWPPP available for public review in accordance with Section II of the general permit, either electronically or in hard copy.

13-114 - Stormwater management plan.

- (A) The stormwater management plan must apply the stormwater technical requirements of section 13-109 to the entire site. Individual lots in a new residential, commercial, or industrial development or sale, including those developed under subsequent owners, shall not be considered separate land-disturbing activities. Instead, the common plan, as a whole, shall be considered to be a single land disturbing activity. The plan shall consider all sources of surface runoff and all sources of subsurface and groundwater flows converted to surface runoff. The plan shall contain maps, charts, graphs, tables, photographs, narrative descriptions, explanations, calculations, and citations to supporting references as appropriate to communicate the information required by this Article XIII. At a minimum, the stormwater management plan must contain the following:
 - (1) Information on the type and location of stormwater discharges; information on the features to which stormwater is being discharged including surface waters, and the pre-development and post-development drainage areas;
 - (2) Contact information including the name, address, and telephone number of the owner and the tax reference and parcel number of the property or properties affected;
 - (3) A narrative that includes a description of current site conditions and final site conditions;
 - (4) A general description of the proposed stormwater management facilities and a maintenance agreement and inspection schedule in accordance with section 13-109(G) to ensure that the facilities will be operated and maintained after construction is complete;
 - (5) Information on the proposed stormwater management facilities, including:
 - (a) The type of facilities;
 - (b) Location, including geographic coordinates;
 - (c) Acres treated; and
 - (d) The surface waters into which the facility will discharge.
 - (6) Hydrologic and hydraulic computations, including runoff characteristics.
 - (7) Documentation and calculations verifying compliance with the water quality and water quantity requirements of section 13-109
 - (8) A map or maps of the site that depicts the topography of the site and includes:
 - (a) All contributing drainage areas;
 - (b) Existing streams, ponds, culverts, ditches, wetlands, other water bodies, and floodplains;
 - (c) Soil types, relevant geological formations, forest cover, and other vegetative areas;
 - (d) Current land use including existing structures, roads, and locations of known utilities and easements;

- (e) Sufficient information on adjoining parcels to assess the impacts of stormwater from the site on these parcels;
 - (f) The limits of clearing and grading, and the proposed drainage patterns on the site;
 - (g) Proposed buildings, roads, parking areas, utilities, and stormwater management facilities; and
 - (h) Proposed land use with tabulation of the percentage of surface area to be adapted to various uses, including but not limited to planned locations of utilities, roads, and easements.
- (B) If an operator intends to meet the water quality requirements set forth in section 13-109(E) through the use of off-site credits in accordance with section 13-109(E)(8), then a letter of availability from the off-site provider must be included. Approved off-site options must achieve the necessary reductions prior to the commencement of the applicant's land-disturbing activity except as otherwise allowed by Section 62.1-44.15:35 of the Code of Virginia.
 - (C) If the operator intends to utilize the alternative stormwater management equivalency options in section 13-110 to meet the Alexandria water quality volume default in section 13-109(E)(6) or the additional water quality performance criteria of section 13-109(E)(8), then the operator must submit a narrative and any required calculations.
 - (D) Site specific facilities for phased projects shall be designed for the ultimate development of the contributing project watershed based on zoning, comprehensive plans, local public facility master plans, or other similar planning documents.
 - (E) Elements of stormwater management plans that include activities regulated under Chapter 4 of Title 54.1 of the Code of Virginia be appropriately sealed and signed by professional registered in the Commonwealth of Virginia and performed in accordance with procedures, consistent with good engineering practice, established by the director of T&ES pursuant to section 13-104(C).
 - (F) All stormwater designs that require analysis of pressure hydraulic systems and/or inclusion and design of flow control structures must be sealed by a professional engineer registered in the Commonwealth of Virginia.
 - (G) An as-built drawing for permanent stormwater management facilities shall be submitted to the director of T&ES in accordance with section 13-114. The as-built drawing shall be appropriately sealed and signed by a professional registered in the Commonwealth of Virginia certifying that the stormwater facilities have been constructed in accordance with the approved plan.
 - (H) The plan shall establish a long-term schedule for inspection and maintenance of stormwater management facilities that includes all maintenance requirements and persons responsible for performing maintenance. If the designated maintenance responsibility is with a party other than the City of Alexandria, then a maintenance agreement shall be executed between the responsible party and the city in accordance with section 13-109(G).

13-115 - Stormwater management plan review.

- (A) The director of T&ES shall review stormwater management plans and shall approve or disapprove a stormwater management plan in accordance with the following:
 - (1) The director of T&ES shall determine the completeness of the plan in accordance with section 13-114 and shall notify the applicant, in writing, of such determination within 15 calendar days of receipt. If the plan is deemed incomplete, the above written notification shall contain the reasons the plan is deemed incomplete.
 - (2) The director of T&ES shall have an additional 60 calendar days from the date of the communication of completeness to review the plan, except that if a determination of completeness is not made and communicated within 15 days, then the plan shall be deemed complete and the director of T&ES shall have 60 calendar days from the date of submission to review the plan.

- (3) The director of T&ES shall review any plan that has been previously disapproved within 45 calendar days of the date of re-submission.
- (4) During the review period, the plan shall be approved or disapproved and the decision communicated in writing to the person responsible for the land-disturbing activity or the designated agent. If the plan is not approved, the reasons for not approving the plan shall be provided in writing. Approval or denial shall be based on the plan's compliance with the requirements of this article.
- (5) If a plan meeting all requirements of this article is submitted and no action is taken within the time frame provided in this subsection, the plan will be deemed approved.
- (B) Approved stormwater management plans may be modified as follows:
 - (1) Modifications to an approved stormwater management plan shall be allowed only after review and written approval by the director of T&ES. The director of T&ES shall have 60 calendar days to respond in writing either approving or disapproving such request.
 - (2) The director of T&ES may require that an approved stormwater management plan be amended, within a time prescribed by the director of T&ES, to address any deficiencies noted during inspection.
- (C) The director of T&ES shall require the submission of an as-built drawing for permanent stormwater facilities. The director of T&ES may elect not to require as-built drawings for stormwater management facilities for which recorded maintenance agreements are not required.

13-116 - Pollution prevention plan.

- (A) The pollution prevention plan is required by 9VAC25-870-56 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.
- (B) The pollution prevention plan shall include effective best management practices to prohibit the following discharges:
 - (1) Wastewater from washout of concrete, unless managed by an appropriate control;
 - (2) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials;
 - (3) Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; and
 - (4) Soaps or solvents used in vehicle and equipment washing.
- (C) Discharges from dewatering activities, including discharges from dewatering of trenches or excavations, are prohibited unless managed by appropriate controls.

13-117 - Water quality impact assessment.

- (A) The purpose of the water quality impact assessment is to:
- (1) Identify the impacts of a proposed use, development, or redevelopment on water quality and lands within an RPA;
 - (2) Ensure that, where a use, development, or redevelopment does take place within an RPA, it will be located on those portions of the site and in a manner that will be least disruptive to the natural functions of the RPA;
 - (3) Identify the impacts of a proposed use, development, or redevelopment within an RMA where the director of T&ES has determined that the proximity to an RPA, the environmentally sensitive characteristics of the site, or the proposed scale and intensity has the potential to affect water quality;
 - (4) Specify mitigation that will address water quality protection under the foregoing circumstances or under an exception under section 13-116
- (B) A water quality impact assessment is required for any proposed development or redevelopment in the RPA, except that at the discretion of the director of T&ES a water quality impact assessment may not be required if the activity is addressed under section 13-107(A), section 13-107(B), or section 13-107(D). There are two types of water quality impact assessments: water quality minor impact assessments and water quality major impact assessments.
- (C) A water quality minor impact assessment is required for development or redevelopment within RPAs or under an exception which involves 5,000 or less square feet of land disturbance; or for any development or redevelopment within the RMA that involves 5,000 or less square feet of land disturbance adjacent to an RPA, if required by the director of T&ES due to the presence or proximity of wetlands, potential for harmful discharge of contaminants from the property, or slopes greater than 15 percent which are proposed to be disturbed. A minor assessment must demonstrate that the undisturbed buffer area, enhanced vegetative plantings, and any required BMPs will result in the removal of no less than 75 percent of sediments and 40 percent of nutrients from post-development stormwater runoff and that will retard runoff, prevent erosion, and filter nonpoint source pollution the equivalent of the full undisturbed buffer area. Such an assessment shall include a site plan that shows the following:
- (1) Location and description of the existing characteristics and conditions of the components of the RPA as identified in section 13-105(B) and delineated in the environmental site assessment required by section 13-112
 - (2) Location and nature of the proposed encroachment into the buffer area, including: type of paving material; areas of clearing or grading; location of any structures, drives, or other impervious cover; and sewage disposal systems or reserve drainfield sites;
 - (3) Type and location of enhanced vegetation and/or proposed BMPs to mitigate the proposed encroachment;
 - (4) Location of existing vegetation on-site, including the number and types of trees and other vegetation to be removed in the buffer to accommodate the encroachment or modification; and
 - (5) Revegetation plan that supplements the existing buffer vegetation in a manner that provides for pollutant removal, erosion, and runoff control. The revegetation plan will incorporate native vegetation to the extent practicable.
- (D) A water quality major impact assessment is required for development or redevelopment within RPAs or under an exception that involves more than 5,000 square feet of land disturbance; or for any development or redevelopment within the RMA which involves more than 5,000 square feet of land disturbance adjacent to an RPA, if required by the director of T&ES due to the presence or proximity of wetlands, potential for harmful discharge of contaminants from the property, or slopes greater than 15 percent which are proposed to be disturbed. The following elements shall be included in a water quality major impact assessment:

- (1) All of the information required in a water quality minor impact assessment as specified in subsection (C) above;
- (2) A hydrogeological element that:
 - (a) Describes the existing topography, soils, hydrology, and geology of the site;
 - (b) Describes the impacts of the proposed development or redevelopment on topography, soils, hydrology, and geology on the site;
 - (c) Indicates the following:
 - (i) Disturbance or reduction of wetlands and justification for such action;
 - (ii) Disruption or reductions in the supply of water to wetlands, streams, lakes, rivers, or other water bodies;
 - (iii) Disruptions to existing hydrology, including wetland and stream circulation patterns;
 - (iv) Source location and description of proposed fill material (may, at applicant's risk, be provided when the U.S. Army Corps of Engineers permit application is submitted);
 - (v) Location of dredge materials and location of dumping area for such materials (may, at applicant's risk, be provided when the U.S. Army Corps of Engineers permit application is submitted);
 - (vi) Locations of and impacts on adjacent shellfish beds, submerged aquatic vegetation, and fish spawning areas (may, at applicant's risk, be provided when the U.S. Army Corps of Engineers permit application is submitted);
 - (vii) The estimated pre- and post-development pollutant loads in runoff as delineated in the stormwater management plan required by section 13-113
 - (viii) Estimation of percent increase in impervious surface on the site and identification of the type(s) of surfacing materials to be used;
 - (ix) Percent of the site to be cleared for the project;
 - (x) Anticipated duration and phasing schedule of the construction period; and
 - (xi) Listing of all requisite permits from all applicable agencies necessary to develop the project;
 - (d) Describes the proposed mitigation measures for the potential hydrogeological impacts. Potential mitigation measures include:
 - (i) Proposed erosion and sediment control measures, which may include minimizing the extent of the cleared area, perimeter controls, reduction of runoff velocities, measures to stabilize disturbed areas, schedule and personnel for site inspection;
 - (ii) Proposed stormwater management system;
 - (iii) Creation of wetlands to replace those lost; and
 - (iv) Minimizing cut and fill.
- (3) A supplement to the landscape plan that:
 - (a) Identifies and delineates the location of all significant plant material, including all trees on site six inches or greater diameter breast height. Where there are groups of trees, stands shall be outlined.
 - (b) Describes the impacts the development or use will have on the existing vegetation. Information should include:

- (i) General limits of clearing based on all anticipated improvements, including buildings, drives, and utilities;
 - (ii) Clear delineation of all trees which will be removed; and
 - (iii) Description of plant species to be disturbed or removed.
- (c) Describes the potential measures for mitigation. Possible mitigation measures include:
 - (i) Replanting schedule for trees and other significant vegetation removed for construction, including a list of possible plants and trees to be used;
 - (ii) Demonstration that the proposed plan will preserve to the greatest extent possible any significant trees and vegetation on the site and will provide maximum erosion and overland flow benefits from such vegetation;
 - (iii) Demonstration that indigenous plants are to be used to the greatest extent possible; and
 - (iv) Identification of the natural processes and ecological relationships inherent at the site, and an assessment of the impact of the proposed use and development of the land, including mitigating measures proposed in the water quality impact assessment, on these processes and relationships.
- (E) A water quality minor impact assessment shall be certified as complete and accurate by a professional engineer or a certified land surveyor. The additional elements required in a water quality major impact assessment shall be certified as complete and accurate by a professional engineer and by a qualified environmental scientist.
- (F) For any water quality impact assessment to proceed, the director of T&ES must first approve it for completeness and compliance with this Article XIII. Upon receipt of any water quality major impact assessment application, the director of T&ES may determine if review by the department is warranted and may request the department to review the assessment and respond with written comments. Any comments by the department will be incorporated into the final review by the director of T&ES provided that such comments are provided by the department within 90 days of the request.
 - (1) For a water quality minor impact assessment, the director of T&ES shall base this finding on the following criteria:
 - (a) The necessity of the proposed encroachment and the ability to place improvements elsewhere on the site to avoid disturbance of the buffer area;
 - (b) Impervious surface is minimized;
 - (c) Proposed BMPs, where required achieve the requisite reductions in pollutant loadings;
 - (d) The development, as proposed, meets the purpose and intent of these regulations;
 - (e) The cumulative impact of the proposed development when considered in relation to other development within the RPA in the vicinity, both existing and proposed, will not result in a significant degradation of water quality.
 - (2) For a water quality major impact assessment, the director of T&ES shall base this finding on the following criteria:
 - (a) Within any RPA, the proposed development is water-dependent or constitutes redevelopment;
 - (b) The disturbance of wetlands shall comply with state and federal regulations;
 - (c) The development will not result in significant disruption of the hydrology of the site;

- (d) The development will not result in significant degradation of water quality that could adversely affect aquatic vegetation or life;
- (e) The development will not result in unnecessary destruction of plant material on site;
- (f) Proposed erosion and sediment control measures are adequate to achieve the required reductions in runoff, and prevent off-site transport of sediment during and after construction;
- (g) Proposed stormwater management measures are adequate to control the stormwater runoff to achieve the required standard for pollutant control; and
- (h) Proposed revegetation of disturbed areas will provide adequate erosion and sediment control benefits, as determined by the director of T&ES.

13-118 - Final plans.

- (A) Final site plans and subdivision plats subject to this Article XIII for all lands within the CBPA shall include the following additional information:
 - (1) A copy showing issuance of all wetlands permits required by law; and
 - (2) A BMP inspection schedule and maintenance agreement between the city and applicant as deemed necessary and appropriate by the director of T&ES to ensure proper maintenance of best management practices in order to assure their continued performance.
- (B) The following installation and bonding requirements shall be met.
 - (1) Where buffer areas, landscaping, stormwater management facilities or other specifications of an approved plan are required, no certificate of occupancy shall be issued until the installation of required plant materials or facilities is completed, in accordance with the approved site plan.
 - (2) When the occupancy of a structure is desired prior to the completion of the required landscaping, stormwater management facilities, or other specifications of an approved plan, a certificate of occupancy may be issued only if the applicant provides to the city a surety bond or equivalent satisfactory to the director of T&ES in amount equal to the remaining plant materials, related materials, and installation costs of the required landscaping or facilities and/or maintenance costs for any required stormwater management facilities during the construction period.
 - (3) Unless otherwise approved by the director of T&ES for a phased project, all required landscaping shall be installed and approved by the first planting season following issuance of a certificate of occupancy or the surety bond may be forfeited to the city.
 - (4) Unless otherwise approved by the director of T&ES for a phased project, all required stormwater management facilities or other specifications shall be installed and approved within 18 months of project commencement. Should the applicant fail, after proper notice, to initiate, complete or maintain appropriate actions required by the approved plan, the surety bond may be forfeited to the city. The city may collect from the applicant the amount by which the reasonable cost of required actions exceeds the amount of surety held.
 - (5) After all required actions of the approved site plan have been completed, the applicant must submit a written request for a final inspection. If the requirements of the approved plan have been completed to the satisfaction of the director of T&ES, such unexpended or unobligated portion of the surety bond held shall be refunded to the applicant or terminated within 60 days following the receipt of the applicant's request for final inspection. The director of T&ES may require a certificate of substantial completion from a professional engineer or licensed surveyor before making a final inspection.

13-119 - Exceptions.

- (A) Unless otherwise provided in this Article XIII, a request for an exception to the requirements of this Article XIII shall be made pursuant to this section in writing to the director of T&ES. The request shall identify the impacts of the proposed exception on water quality and on lands within the RMA and RPA through the performance of a water quality impact assessment that complies with the provisions of section 13-117 to the extent applicable.
- (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:
 - (1) Granting the exception will not confer upon the applicant any special privileges that are denied to other property owners in the CBPA overlay district;
 - (2) The exception is not based upon conditions or circumstances that are self-created or self-imposed, nor does the exception arise from conditions or circumstances either permitted or noncomplying that are related to adjacent parcels;
 - (3) The exception is the minimum necessary to afford relief;
 - (4) The exception will be consistent with the purpose and intent of the overlay district, and not injurious to water quality, the neighborhood or otherwise detrimental to the public welfare;
 - (5) Reasonable and appropriate conditions are imposed, as warranted, to prevent the allowed activity from causing degradation of water quality.
- (C) Economic hardship alone is not sufficient reason to grant an exception from the requirements of this Article XIII.
- (D) Under no circumstances shall the city allow an exception to the requirement that a qualified land-disturbing activity obtain the required construction general permit or other state permits.
- (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. 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 have been considered and found not available.
- (G) Exceptions to section 13-107 shall be heard and determined by the planning commission after hearing and notice pursuant to section 11-300. The schedule for reviewing the exception shall be made by the director of T&ES and the director of planning and zoning. The schedule shall provide, in a manner approved by the city manager, reasonable opportunity for review and action by the environmental policy commission prior to any formal action by the planning commission so that any recommendation of support, denial, or modification can be considered as part of the planning commission's deliberations.
- (H) A record of all exceptions granted shall be maintained by the director of T&ES.
- (I) Any person aggrieved by a decision of the director of T&ES or planning commission under this section may appeal as provided in section 13-120

13-120 - Appeals.

- (A) Any person aggrieved by a final case decision of the director of T&ES in the administration, interpretation or enforcement of this Article XIII or on any application hereunder may appeal such decision to the planning commission, by filing a notice of appeal, in writing, stating the grounds of appeal, with the secretary of the planning commission within 14 days of the issuance of such decision; provided, that any person aggrieved, who had no actual knowledge of the

issuance of such decision, may file an appeal within 14 days of the last day on which notice provided in section 11-300 or section 11-408 of this ordinance is given for any element of the plan of development. A notice of appeal shall be accompanied by a filing fee of \$100.00.

- (B) The planning commission shall conduct a public hearing on any appeal filed pursuant to section 13-120(A), notice for which shall be provided in accordance with the applicable provisions of section 11-300 of this ordinance. Following the conclusion of the hearing, the planning commission may affirm, reverse or modify the decision of the director of T&ES, or vacate the decision and remand the matter to the director of T&ES for further consideration.
- (C) Any person aggrieved by a decision of the planning commission issued pursuant to section 13-119(D) or section 13-120(B), or the city manager, may appeal the decision to the city council, by filing a notice of appeal, in writing, stating the grounds of appeal, with the city clerk within 14 days of the issuance of the decision.
- (D) The city council shall conduct a public hearing on any appeal filed pursuant to subsection (C), notice for which shall be provided in accordance with the applicable provisions of section 11-300 of this ordinance. Following the conclusion of the hearing, the council may affirm, reverse or modify the decision of the commission, or vacate the decision and remand the matter to the planning commission or the director of T&ES for further consideration.
- (E) Notwithstanding the provisions of subsections (A) through (D) above, an applicant or any aggrieved party who elects to appeal shall appeal the director of T&ES's decision of approval or disapproval of a stormwater management plan application by filing a notice of appeal with the director of T&ES within 30 days after service of such decision. The filing of such notice, and proceedings thereafter, shall be governed by Part 2A of the Rules of the Supreme Court of Virginia, and judicial review shall be had in the Circuit Court of the City of Alexandria on the record previously established, and shall otherwise be in accordance with the Administrative Process Act, Virginia Code Sections 9-6.14:1 et seq.

13-121 - Hearings.

- (A) Any applicant, permittee, or person subject to this article aggrieved by any action of the city taken without a formal hearing, or by inaction of the city, may demand in writing a formal hearing by the planning commission, provided a petition requesting such hearing is filed with the director of T&ES within 30 days after notice of such action is given by the director of T&ES.
- (B) The hearings held under this section shall be conducted by the planning commission at a regular or special meeting of the planning commission or by at least one member of the planning commission designated by the planning commission to conduct such hearings on behalf of the planning commission at any other time and place authorized by the planning commission.
- (C) A verbatim record of the proceedings of such hearing shall be taken and filed with the planning commission. Depositions may be taken and read as in actions at law.
- (D) The planning commission or its designated member, as the case may be, shall have power to issue subpoenas and subpoenas duces tecum, and at the request of any party shall issue such subpoenas. The failure of a witness without legal excuse to appear or testify or to produce documents shall be acted upon by the city whose action may include the procurement of an order of enforcement from the circuit court. Witnesses who are subpoenaed shall receive the same fees and reimbursements for mileage as in civil actions.

13-122 - Noncomplying land uses and structures.

- (A) Any land use or structure lawfully existing on January 28, 1992, or any land use or structure that exists at the time of any amendment to this Article XIII that does not comply as a result of the amendment, shall be deemed noncomplying.

- (B) Any proposed land use or structure for which an applicant has a an approved preliminary site plan, building permit, subdivision plan, plot plan, or special use permit on or before February 23, 2004 that would not comply under proposed amendments to Article XIII pursuant to the December 10, 2001 amendments to 9VAC10-20-10 et seq. may be constructed in accordance with the provisions of this Article XIII in effect at the time of submittal, except that the proposed land use or structure shall comply with any new requirements to the maximum extent practicable. Upon completion, the land use or structure shall be deemed noncomplying.
- (C) Any application for a proposed land use or structure that is not exempt pursuant to (A) or (B) above shall comply with amendments to Article XIII adopted pursuant to the December 10, 2001 amendments to 9VAC10-20-10 et seq.
- (D) Nothing in this Article XIII shall prevent the reconstruction of noncomplying structures destroyed by any casualty unless the reconstruction is otherwise restricted by this ordinance or other portions of the City Code. Such reconstruction shall occur within two years after the destruction or damage and there shall be no increase in the amount of impervious area and no further encroachment in the RPA, to the extent possible by sound engineering practices.
- (E) Any noncomplying land use or structure may continue and be maintained, including renovation, remodeling, and other cosmetic alterations provided that the activity does not result in land disturbance and that there is no net increase in nonpoint source pollutant load.
- (F) A request to enlarge or expand a principal noncomplying structure within an RPA buffer area may be approved by the director of T&ES through an administrative process provided that:
 - (a) The principal structure remains intact and the modification is compatible in bulk and scale to those in the surrounding neighborhood area, as determined by the director of planning and zoning. If these criteria are not met, the modification shall be subject to the exception request process requirements of section 13-119
 - (b) There will be no increase in nonpoint source pollution load.
 - (c) Any development or land disturbance exceeding and area of 2,500 square feet complies with section 5-4-1 et seq. of the City Code (erosion and sediment control).
 - (d) The director of T&ES finds that the request is consistent with the criteria provided in section 13-116(B).
- (G) A request to construct or modify a non-attached noncomplying accessory structure, or a request to modify or expand a noncomplying land use (e.g., a parking area, boat storage area, active recreation fields, etc.), shall only be approved through the exceptions process outlined in section 13-119

13-123 - Exemptions.

- (A) The following uses, which may involve structures, fill, flooding, draining, dredging, or excavating, shall be exempted from section 13-107, to the extent specifically enumerated in these regulations and not prohibited by any other provision of the City Code or applicable law and subject to the director of T&ES review and approval of design and construction plans for compliance with this Article XIII:
 - (1) Construction, installation, operation and maintenance of electric, natural gas, fiber-optic, and telephone lines, railroads and public roads constructed by VDOT or by or for the City of Alexandria in accordance with VDOT standards (built separately from development projects regulated under section 13-106), and their appurtenant structures. The exemption of public roads is further conditioned on the alignments being designed to prevent or otherwise minimize the encroachment in the RPA buffer and to minimize adverse effects on water quality.
 - (2) Construction, installation, and maintenance of water, sewer, natural gas, underground telecommunications and cable television lines owned or permitted by the City of Alexandria

or a service authority shall be exempt from the requirements of section 13-107 provided that:

- (a) To the degree possible, the location of such utilities and facilities shall be outside RPAs;
 - (b) No more land shall be disturbed than is necessary to provide for the proposed utility installation; and
 - (c) All such construction, installation, and maintenance of such utilities and facilities shall be in compliance with all applicable state and federal requirements and permits, and designed and conducted in a manner that protects water quality.
- (B) Notwithstanding any other provisions of this article, the following uses, which may involve structures, fill, flooding, draining, dredging, or excavating, shall be exempt from this article:
- (1) Land-disturbing activities less than 2,500 square feet not part of a larger common plan of development or sale, except as may be required in section 13-107 for CPBA;
 - (2) Land disturbances associated with permitted surface or deep mining operations and projects, or oil and gas operations and projects conducted under the provisions of Title 45.1 of the Code of Virginia;
 - (3) Routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original construction of a project. The paving of existing road with a compacted or impervious surface and re-establishment of existing ditches and shoulders is deemed routine maintenance if performed in accordance with this subsection;
 - (4) Conducting land-disturbing activities in response to a public emergency where the related work requires immediate authorization to avoid imminent endangerment to human health or the environment. In such situations, the director of T&ES shall be advised of the disturbance within seven days of commencing the land-disturbing activity and compliance with this Article XIII shall be required within 30 days of commencing the land-disturbing activity;
 - (5) Land clearing for agricultural or silvicultural purposes, and related activities, in accordance with Section 62.1-44.15:34.C.2 of the Code of Virginia; and
 - (6) Activities under a state or federal reclamation program to return an abandoned property to an agricultural or open land use.
- (C) Discharges to a sanitary sewer or a combined sewer shall be exempt from section 13-113 (stormwater pollution prevention plan), section 13-116 (pollution prevention plan), and the requirement to obtain a VSMP construction general permit unless otherwise required by City Code or state or federal law . All other applicable portions of this article shall continue to apply.
- (D) Single-family 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-family detached residential structures are exempt from the water quality requirements of sections 109(E)(3) and (E)(4) except the Alexandria water quality volume default requirement in section 13-109(E)(5) still applies.

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. 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.

- (2) Land-disturbing activities that obtain an initial state construction general permit on or after July 1, 2014 shall be conducted in accordance with the technical criteria in sections 13-109(E) and (F), except for as provided in subsection (B) below, and shall remain subject to this technical criteria for two additional state permit cycles. After such time, portions of the project not under construction shall become subject to any new technical criteria adopted by the board.
- (3) Nothing in this section shall preclude an operator from constructing to a more stringent standard at his/her discretion.
- (B) Grandfathering provisions established in 9VAC25-870-48 shall apply to this article as applicable. Any land-disturbing activity shall be considered grandfathered by the VSMP authority and shall be subject to the technical criteria of 9VAC25-870-93 through 9VAC25-870-99, 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, (iii) will comply with the technical criteria of 9VAC25-870-93 through 99, (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;
 - (2) A state permit has not been issued prior to July 1, 2014; and
 - (3) Land disturbance did not commence prior to July 1, 2014.
- (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 provided:
 - (1) There has been an obligation of locality, state or federal funding, in whole or in part, prior to July 1, 2012, or the department has approved a stormwater management plan prior to July 1, 2012;
 - (2) A state permit has not been issued prior to July 1, 2014; and
 - (3) Land disturbance did not commence prior to July 1, 2014.
- (D) Land-disturbing activities grandfathered under subsections (A) and (B) of this section shall remain subject to 9VAC25-870-93 through 99 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.
- (F) Nothing in this section shall preclude an operator from constructing to a more stringent standard at his discretion.
- (G) However, these applicable land-disturbing activities are also subject to more stringent City criteria effective prior to July 1, 2014. This includes the definition of "site," treating the entire Alexandria water quality volume in section 13-109(E), the pre/post-development peak flow rate requirement for the ten-year 24-hour storm event in section 13-109(F)(2), the requirements in section 13-109(F)(3), and the requirements in section 13-109(F)(7).

13-125 - Monitoring and inspections.

- (A) The director of T&ES shall inspect the land-disturbing activity during construction for compliance with this Article XIII, including but not limited to compliance with the approved erosion and sediment control plan, compliance with the approved stormwater management plan,

development, updating, and implementation of the pollution prevention plan, and development and implementation of any additional control measures necessary to address a TMDL.

- (B) The director of T&ES may, at reasonable times and under reasonable circumstances, enter any establishment or upon any property, public or private, for the purpose of obtaining information or conducting surveys or investigations necessary in the enforcement of the provisions of this Article XIII.
- (C) In accordance with a performance bond with surety, cash escrow, letter of credit, any combination thereof, or such other legal arrangement or instrument, the director of T&ES may also enter any establishment or upon any property, public or private, for the purpose of initiating or maintaining appropriate actions that are required by the permit conditions associated with a land-disturbing activity when a permittee, after proper notice, has failed to take acceptable action within a time specified.
- (D) Pursuant to Section 62.1-44.15:40 of the Code of Virginia, the director of T&ES may require every permit applicant or permittee, or any such person subject to the requirements of this Article XIII to furnish when requested such application materials, plans, specifications, and other pertinent information as may be necessary to determine the effect of the discharge on the quality of state waters, or such other information as may be necessary to accomplish the purpose of this Article XIII.
- (E) Post-construction inspections of stormwater management facilities required by the provisions of this Article XIII shall be conducted by the director of T&ES pursuant to section 13-109(G).

13-126 - Penalties.

- (A) Under the authority of 9VAC25-870-116 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) and its attendant regulations:
 - (1) If the director determines that there is a failure to comply with the VSMP 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.
 - (a) The notice shall specify the measures needed to comply with the permit conditions and shall specify the time within which such measures shall be completed. Upon failure to comply within the time specified, a stop work order may be issued in accordance with subsection (b) or the permit may be revoked by the director of T&ES.
 - (b) If a permittee fails to comply with a notice issued in accordance with this section within the time specified, the director of T&ES may issue an order requiring the owner, permittee, person responsible for carrying out an approved plan, or the person conducting the land-disturbing activities without an approved plan or required permit to cease all land-disturbing activities until the violation of the permit has ceased, or an approved plan and required permits are obtained, and specified corrective measures have been completed.

Such orders shall be issued in accordance with local procedures. Such orders shall become effective upon service on the person by certified mail, return receipt requested, sent to his address specified in the land records of the locality, or by personal delivery by an agent of the director of T&ES. However, if the director of T&ES finds that any such violation 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, it may issue, without advance notice or hearing, an emergency order directing such person to cease immediately all land-disturbing activities on the site and shall provide an opportunity for a hearing, after reasonable notice as to the time and place thereof, to such person, to affirm, modify, amend, or cancel such emergency order. If a person who has been issued an order is not complying with the terms thereof, the director of T&ES may institute a proceeding for an injunction, mandamus, or other appropriate remedy in accordance with subsection (3) below.

- (2) In addition to any other remedy provided by this article, if the director of T&ES or his designee determines that there is a failure to comply with the provisions of this article, they may initiate such informal and/or formal administrative enforcement procedures in a manner that is consistent with local public facilities/engineering manuals and/or specific policy.
- (3) Any person violating or failing, neglecting, or refusing to obey any rule, regulation, ordinance, order, approved standard or specification, or any permit condition issued by the director of T&ES may be compelled in a proceeding instituted in the appropriate local court by the locality to obey same and to comply therewith by injunction, mandamus or other appropriate remedy.
- (4) 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.
 - (b) The director of T&ES may issue a summons for collection of the civil penalty and the action may be prosecuted in the appropriate court.
 - (c) In imposing a civil penalty pursuant to this subsection, the court may consider the degree of harm caused by the violation and also the economic benefit to the violator from noncompliance.
 - (d) Any civil penalties assessed by a court as a result of a summons issued by the city shall be paid into the treasury of the city and specifically placed into the Alexandria water quality improvement fund established in section 13-110 and used for the purpose of minimizing, preventing, managing, or mitigating pollution of the waters of

the city and abating environmental pollution therein in such manner as the court may, by order, direct.

- (5) Notwithstanding any other civil or equitable remedy provided by this section or by law, any person who willfully or negligently violates any provision of this article, any order of the director of T&ES, any condition of a permit, or any order of a court shall, be guilty of a misdemeanor punishable by confinement in jail for not more than 12 months or a fine of not less than \$2,500.00 nor more than \$32,500.00, or both.
- (B) Under the authority of Section 62.1-44.15:74 of the Code of Virginia the director of T&ES shall have the following authority to enforce provisions of this Article XIII required or authorized under Section 62.1-44.15:73 of the Code of Virginia (the Chesapeake Bay Preservation Act) and its attendant regulations:
 - (1) Any person who: (i) violates any provision of this ordinance or (ii) violates or fails, neglects, or refuses to obey any final notice, order, rule, regulation, or variance or permit condition authorized under this ordinance shall, upon such finding by an appropriate circuit court, be assessed a civil penalty not to exceed \$5,000.00 for each day of violation. Such civil penalties may, at the discretion of the court assessing them, be directed to be paid into the Alexandria water quality improvement fund for the purpose of abating environmental damage to or restoring Chesapeake Bay Preservation Areas therein, in such a manner as the court may direct by order, except that where the violator is the city itself or its agent, the court shall direct the penalty to be paid into the state treasury.
 - (2) With the consent of any person who: (i) violates any provision of this ordinance related to the protection of water quality in Chesapeake Bay Preservation Areas or (ii) violates or fails, neglects, or refuses to obey any notice, order, rule, regulation, or variance or permit condition authorized under this ordinance, the city may provide for the issuance of an order against such person for the one-time payment of civil charges for each violation in specific sums, not to exceed \$10,000.00 for each violation. Such civil charges shall be paid into the city water quality improvement fund for the purpose of abating environmental damage to or restoring Chesapeake Bay Preservation Areas therein, except that where the violator is the city itself or its agent, the civil charges shall be paid into the state treasury. Civil charges shall be in lieu of any appropriate civil penalty that could be imposed under subsection (A) above. Civil charges may be in addition to the cost of any restoration required or ordered by the city.
- (C) In addition to subsections (A) and (B) above, the director of T&ES shall have the enforcement provisions available in section 11-200 of this ordinance.

(Ord. No. 4865, § 1, 3-15-14; Ord. No. 4903, § 1, 10-18-14)

Description of Significant Maintenance, Repair, or Retrofit Activities for Public SMFs (FY21)

SMF ID	Category	Address	Description of Maintenance, Repair, or Retrofit Activities
2002-0007-01	Austin Sand Filter	4251 Eisenhower Ave	The trash and debris to be removed from the BMP and behind the fence line of the recycling center. Scope of work is already established, and OT is under the process for this BMP.
1998-0016 02	Extended Detention Pond 1	2009 Braddock Ct.	To perform as designed, the extended detention pond is currently undergoing redesign to correct sediment buildup. Upon completion of redesign, a scope of work can be established, and resources identified for maintenance.
2001-0014-A 01	Wet Pond 1	2901 N. Hampton Dr.	To perform as designed, the wet pond requires significant maintenance to correct erosion, sediment accumulation, and repair the aquatic bench. A Contract Task Order is required for this work to be completed.
2005-0810 BLD 01	Vegetated Roof 1	4480 King St.	The vegetated roof located at 4480 King Street requires the replacement of sedums as well as waterproof matting to ensure full function as designed. A Contract Task Order is required for this work to be completed.
2006-0025 01	Extended Detention Pond 1	3000 Business Center Dr.	The extended detention pond is experiencing sediment build up which has created an issue with clogging requiring dredging to ensure proper function. The City is in the first stages of assessing pond's sediment build up. Once the assessment is completed, design work may be required. A scope of work then can be established, and resources identified for maintenance.
2007-0102 01	Vegetated Roof 1	213 E. Windsor	The vegetated roof located at W. Windsor Ave. requires the replacement of sedums as well as waterproof matting to ensure full function as designed. A Contract Task Order is required for this work to be completed.
2008-0018 PLT 01	Manufactured Treatment Device - Filtering	5261 Eisenhower Ave.	The MTD is not filtering as designed and is not attributed to the device's cartridge system. Prior to a Contract Task Order being developed, an assessment is required to assess the facility to determine what type of repairs are required to ensure full functionality.
2009-0101 01	Vegetated Roof 1	301 King St.	The vegetated roof located at City Hall requires the replacement of flora. A Contract Task Order is required for this work to be completed.
2009-0101 02	Vegetated Roof 1	301 King St.	The vegetated roof located at City Hall requires the replacement of flora. A Contract Task Order is required for this work to be completed.

Alexandria Public BMP Inspections - 2020 to 2021 MS4 Reporting Period

BMP_ID	VA SW Clearinghouse BMP Categories	Function	BMP_Address	Inspection Date	Maintenance Result
1996-0024 01	Bioretention 1	BMP	450 Andrews Ln.	11.5.20	Maintenance Needed
1997-0025 01	Bioretention 1	BMP	5005 Duke St.	9.2.20	Maintenance Needed
1997-0025 02	Bioretention 1	BMP	5005 Duke St.	9.2.20	Maintenance Needed
1997-0025 03	Bioretention 1	BMP	5005 Duke St.	9.2.20	Maintenance Needed
1997-0025 04	Bioretention 1	BMP	5005 Duke St.	9.2.20	Maintenance Needed
1997-0025 05	Bioretention 1	BMP	5005 Duke St.	9.2.20	Maintenance Needed
1997-0025 06	Bioretention 1	BMP	5005 Duke St.	11.23.20	Maintenance Needed
2002-0070 SUP 01	Bioretention 1	BMP	3540 Wheeler Ave.	9.2.20	Maintenance Needed
2007-0037 02	Bioretention 1	BMP	3534 Wheeler Ave.	11.4.20	Maintenance Needed
2007-0037 03	Bioretention 1	BMP	3534 Wheeler Ave.	11.4.20	Maintenance Needed
2007-0037 04	Bioretention 1	BMP	3534 Wheeler Ave.	11.4.20	Maintenance Needed
2007-0037 05	Bioretention 1	BMP	3534 Wheeler Ave.	11.4.20	Maintenance Needed
2007-0037 06	Bioretention 1	BMP	3534 Wheeler Ave.	11.4.20	Maintenance Needed
2008-0005 01	Bioretention 1	BMP	Potomac Yard Dog park	12.7.20	Maintenance Needed
2010-0018 GRD 01	Bioretention 1	BMP	1&7 E. Del Ray Ave.	11.5.20	Maintenance Needed
2012-0121 01	Bioretention 1	BMP	4109 Mt Vernon Ave	11.4.20	Maintenance Needed
2012-0121 02	Bioretention 1	BMP	4109 Mt. Vernon Ave	11.4.20	Maintenance Needed
2012-0383 PRJ 01	Bioretention 1	BMP	1001 Jefferson St.	9.2.20	Maintenance Needed
2016-0102 01 DPI	Bioretention 1	BMP	I-395 and Duke Street	12.7.20	Maintenance Needed
2017-0101 01 DPI	Bioretention 1	BMP	4109 Mt. Vernon Ave (Park Expansion II)	11.4.20	Maintenance Needed
2008-0012 05	CMP	Detention	133 S. Quaker Ln.	11.23.20	No Maintenance Needed
2011-0033 04	CMP	Detention	5261 Eisenhower Ave.	7.10.20	No Maintenance Needed
1998-0016 02	Extended Detention Pond 1	BMP	2009 Braddock Ct.	12.4.20	Significant maintenance
2006-0025 01	Extended Detention Pond 1	BMP	3000 Business Center Dr.	12.4.20	Significant maintenance
1995-0012 01	Filtering Practice 1	BMP	1108 Jefferson St.	11.12.20	Maintenance Needed
1998-0011 01	Filtering Practice 1	BMP	3130 Business Center Dr.	12.4.20	Maintenance Needed
2002-0007 01	Filtering Practice 1	BMP	4251 Eisenhower Ave.	8.13.20	Significant maintenance
2002-0024 01	Filtering Practice 1	BMP	1605 Cameron St.	7.16.20	No Maintenance Needed
2002-0037 01	Grass Channel	BMP	3704 Mt. Vernon Ave.	10.1.20	No Maintenance Needed
2002-0005 01	Manufactured Treatment Device - Filtering	BMP	5750 Sanger Ave.	12.7.20	Maintenance Needed
2003-0016 01	Manufactured Treatment Device - Filtering	BMP	2501 Mt. Vernon Ave.	12.7.20	Maintenance Needed
2005-0022 01	Manufactured Treatment Device - Filtering	BMP	901 Wythe St.	12.1.20	Maintenance Needed
2005-0022 02	Manufactured Treatment Device - Filtering	BMP	901 Wythe St.	12.1.20	No Maintenance Needed
2007-0014 01	Manufactured Treatment Device - Filtering	BMP	2700 Witter Dr.	7.1.20	No Maintenance Needed
2007-0014 02	Manufactured Treatment Device - Filtering	BMP	2700 Witter Dr.	12.7.20	No Maintenance Needed
2007-0016 PLT 01	Manufactured Treatment Device - Filtering	BMP	4421 W. Braddock Rd.	10.6.20	No Maintenance Needed
2008-0018 PLT 01	Manufactured Treatment Device - Filtering	BMP	5261 Eisenhower Ave.	7.10.20	Significant maintenance
2011-0033 01	Manufactured Treatment Device - Filtering	BMP	5261 Eisenhower Ave.	7.10.20	No Maintenance Needed
2011-0033 02	Manufactured Treatment Device - Filtering	BMP	5261 Eisenhower Ave.	12.7.20	No Maintenance Needed
2012-0103 01	Manufactured Treatment Device - Filtering	BMP Retrofit	4609 Seminary Rd.	7.7.20	No Maintenance Needed
2012-0103 02	Manufactured Treatment Device - Filtering	BMP Retrofit	4609 Seminary Rd.	12.2.20	No Maintenance Needed
1996-0019 02	Manufactured Treatment Device - Hydrodynamic	BMP	4800 Brenman Park Dr.	10.2.20	No Maintenance Needed
1997-0039 01	Manufactured Treatment Device - Hydrodynamic	BMP	900 Second St.	9.30.20	No Maintenance Needed
1998-0009 01	Manufactured Treatment Device - Hydrodynamic	BMP	5650 Sanger Ave.	9.30.20	No Maintenance Needed
2002-0005 02	Manufactured Treatment Device - Hydrodynamic	BMP	5750 Sanger Ave.	10.2.20	No Maintenance Needed
2002-0016 01	Manufactured Treatment Device - Hydrodynamic	BMP	2001 Mill Rd.	10.2.20	No maintenance Needed
2008-0012 01	Manufactured Treatment Device - Hydrodynamic	BMP	133 S. Quaker Ln.	11.23.20	No Maintenance Needed
2008-0012 02	Manufactured Treatment Device - Hydrodynamic	BMP	133 S. Quaker Ln.	10.2.20	No Maintenance Needed

Alexandria Public BMP Inspections - 2020 to 2021 MS4 Reporting Period

BMP_ID	VA SW Clearinghouse BMP Categories	Function	BMP_Address	Inspection Date	Maintenance Result
2008-0012 03	Manufactured Treatment Device - Hydrodynamic	BMP	133 S. Quaker Ln.	10.2.20	No Maintenance Needed
2008-0102 01	Manufactured Treatment Device - Hydrodynamic	BMP	2601 Cameron Mills Rd.	9.30.20	No Maintenance Needed
2011-0033 03	Manufactured Treatment Device - Hydrodynamic	BMP	5261 Eisenhower Ave.	7.10.20	No Maintenance Needed
2012-0102 01	Manufactured Treatment Device - Hydrodynamic	BMP	Intersection of Seminary Rd. & N. Beauregard St.	10.2.20	No Maintenance Needed
2012-0102 02	Manufactured Treatment Device - Hydrodynamic	BMP	Intersection of Seminary Rd. & Mark Center Ave.	10.6.20	No Maintenance Needed
2012-0102 03	Manufactured Treatment Device - Hydrodynamic	BMP	Intersection of Seminary Rd. & Mark Center Ave.	10.6.20	No Maintenance Needed
2016-0101 01 DPI	Permeable Pavement	BMP	Commonwealth Avenue Sidewalk	10.6.20	Maintenance Needed
2017-0102 01 DPI	Permeable Pavement	BMP	4109 Mt. Vernon Ave (Park Expansion I)	10.7.20	Maintenance Needed
2017-0002 PRK 01	Permeable Pavement 1	BMP	Simpson Playground + Passive Playground Renovation	10.8.20	Maintenance Needed
2007-0037 07	Rainwater Harvesting	BMP	3534 Wheeler Ave.	11.4.20	Maintenance Needed
2012-0103 03	Rainwater Harvesting	BMP Retrofit	4609 Seminary Rd.	12.2.20	Maintenance Needed
2012-0103 04	Rainwater Harvesting	BMP Retrofit	4609 Seminary Rd.	12.2.20	Maintenance Needed
2012-0103 05	Rainwater Harvesting	BMP Retrofit	4609 Seminary Rd.	12.2.20	Maintenance Needed
2009-0013 01	Sheetflow to Vegetated Filter or Conserved Open Space 1	BMP	1001 S. Washington St.	11.16.20	No Maintenance Needed
2010-0005 GRD 01	Sheetflow to Vegetated Filter or Conserved Open Space 1	BMP	3315 Landover St.	11.17.20	No Maintenance Needed
2010-0005 GRD 02	Sheetflow to Vegetated Filter or Conserved Open Space 1	BMP	3315 Landover St.	11.17.20	Maintenance Needed
2012-0383 PRJ 02	Sheetflow to Vegetated Filter or Conserved Open Space 1	BMP	1001 Jefferson St.	12.3.20	No Maintenance Needed
1989-0011 SIT 01	Underground Detention	Detention	2900 Business Center Dr.	12.7.20	Maintenance Needed
1995-0012 02	Underground Detention	Detention	1108 Jefferson St.	11.17.20	No Maintenance Needed
2002-0016 02	Urban Bioretention	BMP	2001 Mill Rd.	8.18.20	No Maintenance Needed
2002-0016 03	Urban Bioretention	BMP	2001 Mill Rd.	8.18.20	No Maintenance Needed
2002-0016 04	Urban Bioretention	BMP	2001 Mill Rd.	7.15.20	No Maintenance Needed
2002-0016 05	Urban Bioretention	BMP	2001 Mill Rd.	7.15.20	No Maintenance Needed
2002-0016 06	Urban Bioretention	BMP	2001 Mill Rd.	7.15.20	No Maintenance Needed
2002-0016 07	Urban Bioretention	BMP	2001 Mill Rd.	12.7.20	No Maintenance Needed
2002-0016 08	Urban Bioretention	BMP	2001 Mill Rd.	8.18.20	No Maintenance Needed
2005-0022 03	Urban Bioretention	BMP	901 Wythe St.	12.1.20	Maintenance Needed
2006-0101 01	Urban Bioretention	BMP	4801 Duke St.	7.10.20	No Maintenance Needed
2006-0101 02	Urban Bioretention	BMP	4801 Duke St.	7.10.20	No Maintenance Needed
2006-0101 03	Urban Bioretention	BMP	4801 Duke St.	7.10.20	No Maintenance Needed
2007-0101 01	Urban Bioretention	BMP	3554 Valley Dr.	7.9.20	No Maintenance Needed
2007-0101 02	Urban Bioretention	BMP	3500 Valley Dr.	8.20.20	No Maintenance Needed
2008-0101 01	Urban Bioretention	BMP	4550 N. Pegram St.	7.9.20	No Maintenance Needed
2008-0101 02	Urban Bioretention	BMP	4550 N. Pegram St.	7.9.20	No Maintenance Needed
2012-0013 01 GRD	Urban Bioretention	BMP	2209 Ivor Lane	7.9.20	Maintenance Needed
2012-0101 01	Urban Bioretention	BMP	101 Cedar St.	7.10.20	No Maintenance Needed
2013-0101 01 DPI	Urban Bioretention	BMP	800 Block of S. Washington St	8.6.20	No Maintenance Needed
2013-0101 02 DPI	Urban Bioretention	BMP	800 Block of S. Washington St	8.6.20	No Maintenance Needed
2013-0101 03 DPI	Urban Bioretention	BMP	800 Block of S. Washington St	8.6.20	No Maintenance Needed
2013-0101 04 DPI	Urban Bioretention	BMP	800 Block of S. Washington St	8.6.20	No Maintenance Needed
2013-0101 05 DPI	Urban Bioretention	BMP	800 Block of S. Washington St	8.6.20	No Maintenance Needed
2013-0101 06 DPI	Urban Bioretention	BMP	800 Block of S. Washington St	8.6.20	No Maintenance Needed
2013-0101 07 DPI	Urban Bioretention	BMP	800 Block of S. Washington St	8.6.20	No Maintenance Needed
2013-0101 08 DPI	Urban Bioretention	BMP	800 Block of S. Washington St	8.6.20	No Maintenance Needed
2014-0101 01	Urban Bioretention	BMP	Jefferson Davis Highway Rapid Bus Transit	9.17.20	No Maintenance Needed
2014-0101 02	Urban Bioretention	BMP	Jefferson Davis Highway Rapid Bus Transit	9.17.20	No Maintenance Needed
2014-0101 03	Urban Bioretention	BMP	Jefferson Davis Highway Rapid Bus Transit	9.17.20	No Maintenance Needed
2014-0101 04	Urban Bioretention	BMP	Jefferson Davis Highway Rapid Bus Transit	9.17.20	No Maintenance Needed

Alexandria Public BMP Inspections - 2020 to 2021 MS4 Reporting Period

BMP_ID	VA SW Clearinghouse BMP Categories	Function	BMP_Address	Inspection Date	Maintenance Result
2014-0101 05	Urban Bioretention	BMP	Jefferson Davis Highway Rapid Bus Transit	9.17.20	No Maintenance Needed
2014-0101 06	Urban Bioretention	BMP	Jefferson Davis Highway Rapid Bus Transit	9.17.20	No Maintenance Needed
2014-0101 07	Urban Bioretention	BMP	Jefferson Davis Highway Rapid Bus Transit	9.17.20	No Maintenance Needed
2003-0016 02	Vegetated Roof 1	BMP	2501 Mt. Vernon Ave.	11.3.20	Maintenance Needed
2005-0022 04	Vegetated Roof 1	BMP	901 Wythe St.	12.1.20	Maintenance Needed
2005-0810 BLD 01	Vegetated Roof 1	BMP	4480 King St.	11.23.20	Significant maintenance
2007-0102 01	Vegetated Roof 1	BMP	E Windsor	12.4.20	Significant maintenance
2009-0101 01	Vegetated Roof 1	BMP	301 King St.	8.19.20	Significant maintenance
2009-0101 02	Vegetated Roof 1	BMP	301 King St.	8.19.20	Significant maintenance
1996-0019 01	Wet Pond 1	BMP	4800 Brenman Park Dr.	10.1.20	No Maintenance Needed
2001-0014-A 01	Wet Pond 1	BMP	2901 N. Hampton Dr.	12.3.20	Significant maintenance
2003-0027 01	Wet Pond 1	BMP	4001 Eisenhower Ave.	7.10.20	No Maintenance Needed
2016-0103 01 DPI	Wetland/Stream Restoration	BMP	Four Mile Run Restoration	12.3.20	No Maintenance Needed

FY21 Private Stormwater Facility Inspections

BMP_ID	BMP_Type_Full	BMP_Address	PY1_18-23_Inspection	18-23 Inspection_result	Maintenance Completion	Corrective Action	Notice to Comply Cert
0000-1397 SUP 01	Vegetated Filter Strip	1200 N. Quaker Ln.	4/27/2021	Not needed			
0000-2028 SUP 01	Regional Wet Pond	1098 & 1119 Dartmouth Rd.	4/23/2021	Not needed			
1996-0002 01	Stormceptor® Stormwater Treatment System	99 Franklin St.	3/5/2021	Not needed			
1996-0016 01	Dry Vault Sand Filter	2706 Monacan St.	3/23/2021	Needed	scheduled		
1996-0016 02	Dry Vault Sand Filter	2700 Williamsburg St. (Main Entrance)	3/10/2021	Not needed			
1996-0016 03	Dry Vault Sand Filter	2643 Cabin Creek Rd.	3/10/2021	Needed	scheduled		
1996-0016 04	Stormceptor® Stormwater Treatment System	2615 Cabin Creek Rd.	2/25/2021	Not needed			
1996-0016 05	Stormceptor® Stormwater Treatment System	2700 Williamsburg St. (Behind)	2/25/2021	Not needed			
1997-0002 01	Bioretention Filter	5480 Bradford Ct.	4/23/2021	Needed	(waiting on docs)		
1997-0021 SIT 01	Isolater™ Stormwater Treatment System	5311 Duke St.	3/23/2021	Needed	6/16/2021		
2000-0009 01	Bioretention Filter	3811-3825 Mt. Vernon Ave.	4/26/2021	Needed	6/30/2021		
2000-0039 01	CDS® Stormwater Treatment System	4700 Eisenhower Ave.	3/4/2021	Not needed			
2001-0020 03	Stormceptor® Stormwater Treatment System	4320 Seminary Rd.	2/26/2021	Needed	8/23/2021		
2001-0020 04	Stormceptor® Stormwater Treatment System	4320 Seminary Rd.	2/26/2021	Not needed			
2001-0020 05	Stormceptor® Stormwater Treatment System	4320 Seminary Rd.	2/26/2021	Not needed			
2002-0006 01	Bioretention Filter	323 S. Fairfax St.	4/26/2021	Not Needed			
2002-0006 02	Bioretention Filter	323 S. Fairfax St.	4/26/2021	Not Needed			
2004-0032 01	Stormceptor® Stormwater Treatment System	557 S. Van Dorn St.	3/3/2021	Needed	7/26/2021		
2004-0032 02	Tree Box Filter	557 S. Van Dorn St.	4/23/2021	Needed	7/26/2021		
2004-0032 03	Tree Box Filter	557 S. Van Dorn St.	4/23/2021	Needed	7/26/2021		
2004-0041 01	Aqua-Swirl® Stormwater Hydrodynamic Separator	2321 Mill Rd.	3/2/2021	Needed	6/8/2021	6/23/2021	
2005-0003 01	Stormceptor® Stormwater Treatment System	4320 Seminary Rd.	3/3/2021	Not needed			
2005-0003 02	Stormceptor® Stormwater Treatment System	4320 Seminary Rd.	3/3/2021	Not needed			
2005-0011 01	StormFilter™ Stormwater Treatment System	2345 Mill Rd.	3/1/2021	Needed	8/20/2021		
2005-0011 02	StormFilter™ Stormwater Treatment System	2345 Mill Rd.	3/1/2021	Needed	8/20/2021		
2005-0015 01	Alexandria Compound Sand Filter	2050 Ballenger Ave.	3/11/2021	Not needed			
2002-0048 01	Aqua-Swirl® Stormwater Hydrodynamic Separator	3516 Goddard Way	2/26/2021	Needed	6/28/2021		
2002-0048 02	Aqua-Swirl® Stormwater Hydrodynamic Separator	3510 Goddard Way	2/26/2021	Needed	6/28/2021		
2003-0007 01	CDS® Stormwater Treatment System	104, 106 & 206 N. Quaker Ln.	2/26/2021	Not needed			
2003-0010 01	Alexandria Compound Sand Filter	1900 Jamieson Ave.	3/10/2021	Needed	6/18/2021		
2003-0035 01	StormFilter™ Stormwater Treatment System	4380 King St.	3/9/2021	Needed	scheduled		
2003-0039 01	Dry Vault Sand Filter	2930 Eisenhower Ave.	2/25/2021	Needed	8/27/2021		
2003-0041 01	Alexandria Compound Sand Filter	2050 Jamieson Ave.	3/10/2021	Needed	6/10/2021		
2003-0042 01	Aqua-Swirl® Stormwater Hydrodynamic Separator	85 & 89 Arell Ct.	2/26/2021	Needed	scheduled		
2003-0042 02	Aqua-Swirl® Stormwater Hydrodynamic Separator	34 & 38 Arell Ct.	2/26/2021	Not Needed			
2004-0001 01	Aqua-Swirl® Stormwater Hydrodynamic Separator	1115 Cameron St.	3/2/2021	Needed			
2004-0010 01	StormFilter™ Stormwater Treatment System	6100 Lincoln Rd.	3/30/2021	Not Needed			
2004-0013 01	CDS® Stormwater Treatment System	555 S. Washington St.	3/2/2021	Needed			
2004-0014 01	StormFilter™ Stormwater Treatment System	1393 N. Van Dorn St.	3/3/2021	Needed	8/11/2021	6/24/2021	
2004-0014 02	StormFilter™ Stormwater Treatment System	1413 N. Van Dorn St.	3/3/2021	Needed	8/11/2021	6/24/2021	
2004-0018 01	StormFilter™ Stormwater Treatment System	530 Triadelphia Way	3/15/2021	Not Needed			
2004-0018 02	StormFilter™ Stormwater Treatment System	514 Triadelphia Way	3/15/2021	Not Needed			
2004-0019 01	D.C. Sand Filter	1001 Bernard St.	3/16/2021	Not needed			
2004-0020 01	Delaware Sand Filter	1718 W. Braddock Rd.	3/15/2021	Needed	ARHA (Juwahn)		
2004-0021 01	Delaware Sand Filter	423 S. Reynolds St.	3/16/2021	Needed	ARHA (Juwahn)		
2004-0022 01	D.C. Sand Filter	325 S. Whiting St.	3/16/2021	Needed	ARHA (Juwahn)		
2004-0025 01	D.C. Sand Filter	4513 Duke St.	3/10/2021	Needed	8/12/2021		
2004-0025 02	CDS® Stormwater Treatment System	4513 Duke St.	3/3/2021	Needed	8/12/2021		
2004-0025 03	CDS® Stormwater Treatment System	4513 Duke St.	3/3/2021	Needed	8/12/2021		
2005-0016 01	CDS® Stormwater Treatment System	1300 Duke St.	3/11/2021	Not needed			
2005-0024 01	Stormceptor® Stormwater Treatment System	900 N. Washington St.	2/26/2021	Not needed			
2005-0028 01	Alexandria Compound Sand Filter	1920 Ballenger Ave.	3/11/2021	Needed	6/15/2021		
2005-0041 01	StormFilter™ Stormwater Treatment System	3051 Mt. Vernon Ave.	3/19/2021	Needed	7/27/2021	6/24/2021	
2006-0009 PLT 01	Infiltration System	1200 N. Quaker Ln.	4/27/2021	Not needed			
2006-0009 PLT 02	Infiltration System	1200 N. Quaker Ln.	4/27/2021	Not needed			

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2006-0012 01	Aqua-Swirl® Stormwater Hydrodynamic Separator	800 John Carlyle St.	3/1/2021	Needed		6/23/2021	
2006-0012 02	Aqua-Swirl® Stormwater Hydrodynamic Separator	800 John Carlyle St.	3/1/2021	Needed		6/23/2021	
2006-0023 01	CDS® Stormwater Treatment System	1701 Duke St.	3/30/2021	Not needed			
2006-0023 02	Green Roof	1701 Duke St.	4/26/2021	Not needed			
2007-0004 PLT 01	Aqua-Swirl® Stormwater Hydrodynamic Separator	2000 Eisenhower Ave.	3/1/2021	Needed		4/20/2021	
2007-0004 PLT 02	Aqua-Swirl® Stormwater Hydrodynamic Separator	2000 Eisenhower Ave.	3/1/2021	Needed		4/20/2021	
2007-0004 PLT 03	Aqua-Swirl® Stormwater Hydrodynamic Separator	2000 Eisenhower Ave.	3/3/2021	Needed		4/20/2021	
2007-0008 01	Stormceptor® Stormwater Treatment System	1901 Jamieson Ave.	3/1/2021	Needed		6/29/2021	
2007-0010 PLT 01	Vegetated Filter Strip	1200 N. Quaker Ln.	4/27/2021	Not needed			
2007-0011 01	StormFilter™ Stormwater Treatment System	532 N. Washington St.	3/1/2021	Not needed			
2007-0011 02	Permeable Pavement	532 N. Washington St.	4/26/2021	Needed		7/8/2021	
2007-0013 01	BaySeparator™ Stormwater Treatment System	2400 Russell Rd.	3/30/2021	Not needed			
2007-0025 01	StormFilter™ Stormwater Treatment System	2950 Eisenhower Ave.	2/25/2021	Not needed			
2007-0025 02	Permeable Pavement	2950 Eisenhower Ave.	4/26/2021	Needed		6/8/2021	
2007-0025 03	Permeable Pavement	2950 Eisenhower Ave.	4/26/2021	Needed		6/8/2021	
2009-0008 01	Flow Thru Planter Box	701 N. Columbus St.	4/26/2021	Not needed			
2009-0008 02	Flow Thru Planter Box	701 N. Columbus St.	4/26/2021	Not needed			
2011-0029 01	CDS® Stormwater Treatment System	3737 Seminary Rd	3/19/2021	Not needed			
2011-0029 02	Flow Thru Planter Box	3737 Seminary Rd	4/29/2021	Not needed			
2011-0030 01	StormFilter™ Stormwater Treatment System	650 S. Pickett St.	3/23/2021	Needed		7/19/2021	
2011-0003 01	StormFilter™ Stormwater Treatment System	898 N. Alfred St.	3/19/2021	Needed		ARHA (Juwahn)	
2011-0020 GRD 01	Stormceptor® Stormwater Treatment System	3510 Duke St.	3/23/2021	Needed		8/23/2021	6/24/2021
2011-0021 01	BayFilter™ Stormwater Filtration System	615 Swann Ave	3/30/2021	Needed		8/26/2021	7/15/2021
2011-0024 01	StormFilter™ Stormwater Treatment System	1261 Madison St.	3/19/2021	Not Needed			
2012-0022 01	StormFilter™ Stormwater Treatment System	101 N Ripley St	3/23/2021	Not needed			
2012-0022 02	Permeable Pavement	101 N Ripley St	3/23/2021	Needed		6/3/2021	7/15/2021
2012-0024 01	Flow Thru Planter Box	317 N Columbus	4/28/2021	Not needed			
2012-0024 02	Flow Thru Planter Box	319 N Columbus	4/28/2021	Not needed			
2012-0024 03	Flow Thru Planter Box	321 N Columbus	4/28/2021	Needed		6/8/2021	
2012-0024 04	Flow Thru Planter Box	323 N Columbus	4/28/2021	Needed		6/22/2021	
2012-0024 05	Flow Thru Planter Box	325 N Columbus	4/28/2021	Needed		5/26/2021	
2012-0029 01	Flow Thru Planter Box	330 N. Royal St.	4/27/2021	Not needed			
2012-0029 02	Flow Thru Planter Box	330 N. Royal St.	4/27/2021	Not needed			
2012-0029 03	Flow Thru Planter Box	330 N. Royal St.	4/27/2021	Not needed			
2012-0029 04	Flow Thru Planter Box	330 N. Royal St.	4/27/2021	Not needed			
2012-0029 05	Permeable Pavement	330 N. Royal St.	4/27/2021	Not needed			
2013-0005 01	StormFilter™ Stormwater Treatment System	650 S. Pickett St.	3/23/2021	Not needed			
2013-0023 02	StormFilter™ Stormwater Treatment System	513 & 515 N Washington St	3/30/2021	Not needed			
2014-0004 02	CDS® Stormwater Treatment System	100 S. Pickett Street	3/16/2021	Needed		9/2/2021	7/26/2021
2014-0011 01	Bioretention Filter	3737 Seminary Rd	4/28/2021	Needed		7/14/2021	
2014-0011 02	Bioretention Filter	3737 Seminary Rd	4/28/2021	Needed		7/14/2021	
2014-0011 03	Bioretention Filter	3737 Seminary Rd	4/28/2021	Not needed			
2014-0011 04	Bioretention Filter	3737 Seminary Rd	4/28/2021	Not needed			
2014-0011 05	Bioretention Filter	3737 Seminary Rd	4/28/2021	Not needed			
2014-0011 06	Bioretention Filter	3737 Seminary Rd	4/28/2021	Not needed			
2014-0011 07	Bioretention Filter	3737 Seminary Rd	4/28/2021	Not needed			
2014-0011 08	Bioretention Filter	3737 Seminary Rd	4/28/2021	Not needed			
2014-0011 09	Bioretention Filter	3737 Seminary Rd	4/28/2021	Not needed			
2014-0011 10	Bioretention Filter	3737 Seminary Rd	4/28/2021	Not needed			
2014-0011 11	Bioretention Filter	3737 Seminary Rd	4/28/2021	Not needed			
2014-0011 12	Permeable Pavement	3737 Seminary Rd	4/28/2021	Not needed			
2014-0011 13	Permeable Pavement	3737 Seminary Rd	4/28/2021	Not needed			
2014-0011 14	Permeable Pavement	3737 Seminary Rd	4/28/2021	Not needed			
2014-0011 15	Permeable Pavement	3737 Seminary Rd	4/28/2021	Not needed			
2014-0011 16	Permeable Pavement	3737 Seminary Rd	4/28/2021	Not needed			
2014-0011 17	Permeable Pavement	3737 Seminary Rd	4/28/2021	Needed		7/14/2021	
2014-0011 18	Permeable Pavement	3737 Seminary Rd	4/28/2021	Needed		7/14/2021	

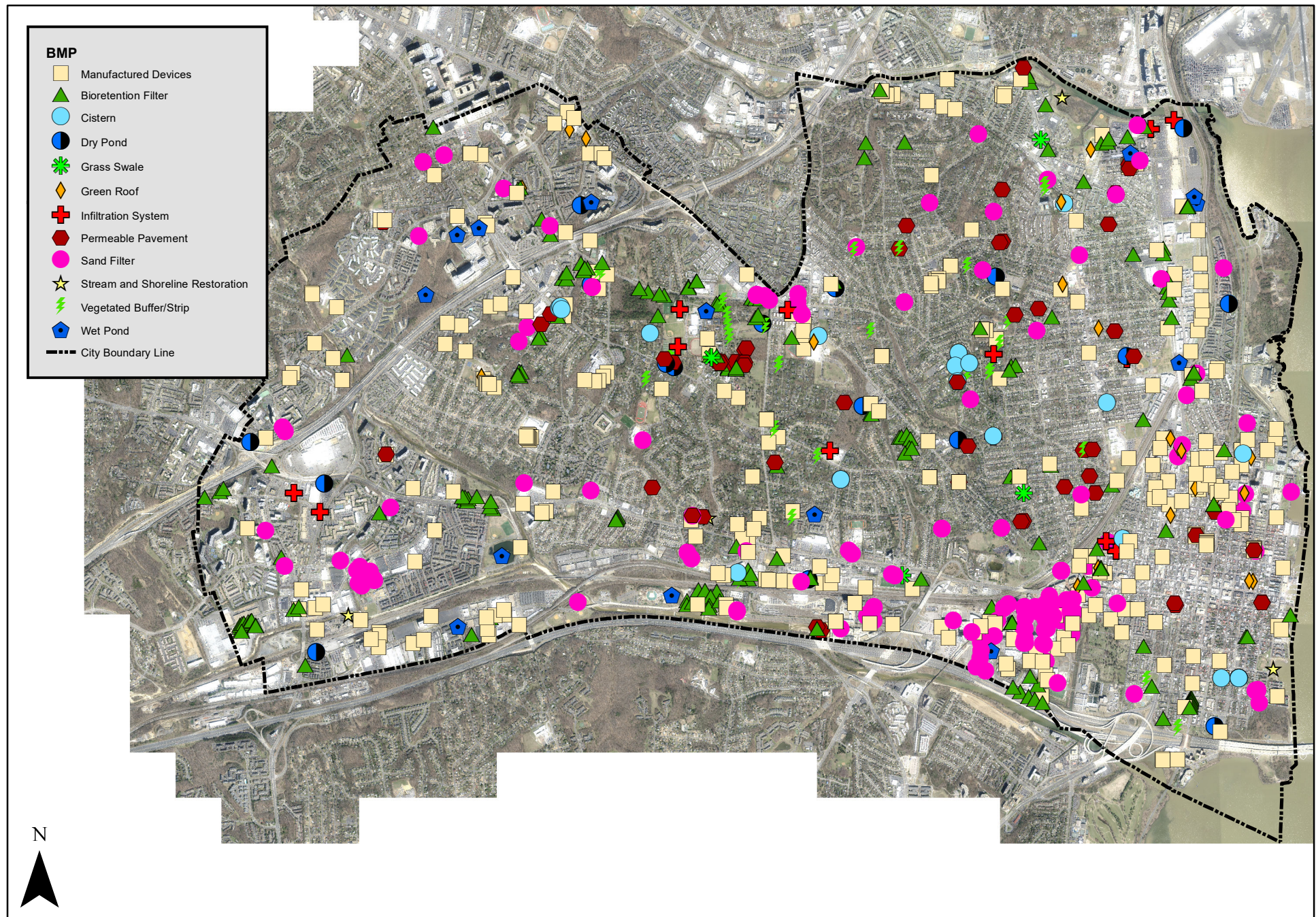
2014-0011 19	Permeable Pavement	3737 Seminary Rd	4/28/2021	Not needed			
2014-0011 20	Bioretention Filter	3737 Seminary Rd	4/28/2021	Not needed			
2014-0011 21	Bioretention Filter	3737 Seminary Rd	4/28/2021	Not needed			
2014-0011 22	Bioretention Filter	3737 Seminary Rd	4/28/2021	Not needed			
2014-0041 01	Bioretention Filter	1801 Russell Road	4/27/2021	Not needed			
2015-0005 02	JellyFish Filter	3601 Jefferson Davis Highway	3/29/2021	Needed	6/18/2021		
2016-0023 01	BayFilter™ Stormwater Filtration System	4607 Eisenhower Ave	3/4/2021	Needed	7/13/2021	6/30/2021	

55 facilities
11 Corrective
0 Notices to

FY21 New Stormwater Management Facilities (As Built)

BMP_ID	VA SW Clearinghouse BMP Categories	Plan_Name	BMP_Address	TOT_AREA_TREATED	IMP_AREA_TREATED	Perv_Area_Treated	Date Installed	DischargingWaterbody	VAHUC6	Ownership	BMP Agreement
2014-0012 01	Vegetated Roof 1	Goodwin House	4800 Fillmore Avenue	0.14	0.14	0	1/15/2021	Four Mile Run	PL25	Private	Yes
2014-0012 02	Bioretention 1	Goodwin House	4800 Fillmore Avenue	0.11	0.11	0	1/15/2021	Four Mile Run	PL25	Private	Yes
2014-0012 03	Bioretention 1	Goodwin House	4800 Fillmore Avenue	0.11	0.11	0	1/15/2021	Four Mile Run	PL25	Private	Yes
2014-0012 04	Filtering Practice 1	Goodwin House	4800 Fillmore Avenue	1.37	0.89	0.48	1/15/2021	Four Mile Run	PL25	Private	Yes
2014-0040 02	Manufactured Treatment Device - Filtering	Cameron Park Townhomes	430 & 450 S. Pickett St	3.16	3.15	0.01	7/1/2020	Cameron Run	PL26	Private	Yes
2014-0040 04	Manufactured Treatment Device - Filtering	Cameron Park Townhomes	430 & 450 S. Pickett St	1.79	1.69	0.1	7/1/2020	Cameron Run	PL26	Private	Yes
2015-0022 04	Detention	First Baptist Church	2932 King Street	0.67	0.4	0.27	10/8/2020	Taylor Run	PL26	Private	Yes
2016-0008 01	Vegetated Roof 1	930 North Henry St AKA Carpenter's Shelter	930 N Henry St	0.07	0.07	0	6/22/2021	Timber Branch	PL26	Private	Yes
2016-0008 02	Vegetated Roof 2	930 North Henry St AKA Carpenter's Shelter	930 N Henry St	0.09	0.09	0	6/22/2021	Timber Branch	PL26	Private	Yes
2016-0008 03	Manufactured Treatment Device - Filtering	930 North Henry St AKA Carpenter's Shelter	930 N Henry St	0.62	0.54	0.08	6/22/2021	Timber Branch	PL26	Private	Yes
2016-0024 01	Vegetated Roof 1	King Street Hotel FSP4	1611 King St	0.18	0.18	0	10/9/2020	Hooffs Run	PL26	Private	Yes
2016-0024 02	Urban Bioretention	King Street Hotel FSP4	1611 King St	0.07	0.07	0	10/9/2020	Hooffs Run	PL26	Private	Yes
2016-0024 03	Urban Bioretention	King Street Hotel FSP4	1611 King St	0.07	0.07	0	10/9/2020	Hooffs Run	PL26	Private	Yes
2016-0024 04	Urban Bioretention	King Street Hotel FSP4	1611 King St	0.1	0.1	0	10/9/2020	Hooffs Run	PL26	Private	Yes
2016-0036 18	Manufactured Treatment Device - Filtering	Cameron Park Building "A"	450 S Pickett St	2.14	2.14	0	10/15/2020	Backlick Run	PL26	Private	Yes
2018-0019 01	Bioretention 1	Episcopal High School Hoxton Field	1200 N Quaker Ln	1.21	0.57	0.64	1/5/2021	Taylor Run	PL26	Private	Yes
2018-0019 02	Bioretention 1	Episcopal High School Hoxton Field	1200 N Quaker Ln	1.53	0.62	0.91	1/5/2021	Taylor Run	PL26	Private	Yes
2018-0019 03	Bioretention 1	Episcopal High School Hoxton Field	1200 N Quaker Ln	1.3	0.46	0.84	1/5/2021	Taylor Run	PL26	Private	Yes
2018-0019 04	Bioretention 1	Episcopal High School Hoxton Field	1200 N Quaker Ln	1.87	0.37	1.5	1/5/2021	Taylor Run	PL26	Private	Yes
2018-0019 05	Bioretention 1	Episcopal High School Hoxton Field	1200 N Quaker Ln	2.62	0.46	2.16	1/5/2021	Taylor Run	PL26	Private	Yes
2016-0003 01	Vegetated Roof I	The Strand	211 Strand St	0.14	0.14	0	11/17/2021	Potomac River	PL28	Private	Yes
2016-0003 02	Urban Bioretention	The Strand	211 Strand St	0.03	0.03	0	11/17/2021	Potomac River	PL28	Private	Yes
2017-0017 01	Urban Bioretention	American Physical Therapy Association	3030 Potomac Ave	0.22	0.22	0	10/30/2020	Four Mile Run	PL25	Public	MOU
2017-0017 02	Urban Bioretention	American Physical Therapy Association	3030 Potomac Ave	0.22	0.22	0	10/30/2020	Four Mile Run	PL25	Public	MOU
2017-0017 03	Urban Bioretention	American Physical Therapy Association	3030 Potomac Ave	0.01	0.01	0	10/30/2020	Four Mile Run	PL25	Public	MOU

City of Alexandria Stormwater BMP Locations MS4 Reporting Year 2020-2021





STORMWATER MANAGEMENT / BMP FACILITIES OPERATION AND MAINTENANCE AGREEMENT

THIS AGREEMENT, made and entered into this 30 day of Sep, 2020, by and between, Stovall Owner, LLC 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 #072.04, block # 03, parcel(s) # 35 as acquired by deed in the land records of the City of Alexandria, Virginia, Deed book _____ Page # _____ (Instrument # 072.04), hereinafter called the "Property".

WHEREAS, the Landowner is proceeding to build on and develop the property; and

WHEREAS, Hoffman Block 6, DSUP #2000-00028, hereinafter called the "Plan", which is expressly made a part hereof, as approved or to be approved by the City, provides for detention and/or 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 or assigns, and provide information about the inspection findings and evaluations.

4. The Landowner shall develop and attach to this "STORMWATER MANAGEMENT / BMP FACILITIES OPERATION AND MAINTENANCE AGREEMENT" a "BMP MAINTENANCE SCHEDULE AND GUIDELINE" that has been reviewed and approved by the City or its designee. This BMP Maintenance Schedule and Guideline shall describe the maintenance practices to be performed for the facilities and include a maintenance schedule for implementation of these practices.

5. 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.

6. The Landowner, its successors and assigns, will perform maintenance in accordance with the maintenance schedule and guidelines 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):

SciCLONE Hydrodynamic Separator

shall conform to the requirements contained in the Virginia Stormwater BMP Clearinghouse, the attached maintenance schedule and guidelines, and/or specific maintenance requirements established by the BMP 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 proprietary BMPs will be submitted to the City of Alexandria, T&ES.

7. 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.

8. 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.

9. 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.

10. 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 the Virginia Stormwater BMP Clearinghouse and/or in the manufacturer's manual for the BMP.

11. 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.

12. 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:

Robert L. Cohen

Landowner Signature

Robert L. Cohen

Print or Type Name

Managing Member / Authorized Signatory

Title

ATTEST:

Stephen J. Schuchman

COMMONWEALTH OF District of Columbia

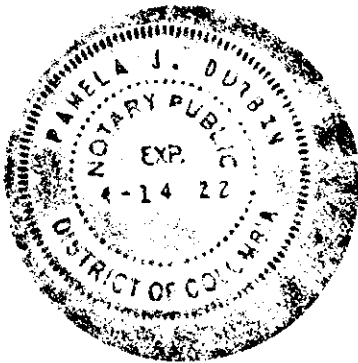
CITY OF _____

I, Pamela J. Durbin, a Notary Public in and for the City and Commonwealth aforesaid, whose commission expires on the 14 day of April, 2022, do hereby certify that Robert L. Cohen, whose name(s) is/are signed to the foregoing Agreement bearing date of the 17th day of September 2020 has acknowledged the same before me in my said City and State.

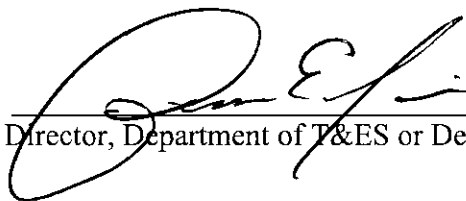
GIVEN UNDER MY HAND THIS 17th day of September, 2020.

PAMELA J. DURBIN
NOTARY PUBLIC DISTRICT OF COLUMBIA
My Commission Expires April 14, 2022

Pamela J. Durbin
NOTARY PUBLIC



WITNESS the following signatures and seals.



Director, Department of T&ES or Designee
Jesse E. Maines

Print or Type Name

ATTEST:

COMMONWEALTH OF Virginia
CITY OF Alexandria

I, Latoia P. Barbour, a Notary Public in the City of Alexandria
and for the Commonwealth of Virginia, whose commission expires on the 31st day of
July, 2024, do hereby certify that Jesse Maines, representative for
the City of Alexandria, whose name is signed to the foregoing Agreement bearing the
date of the 7th day of October, 2020 has acknowledged the same before me in the
City and Commonwealth aforesaid.

GIVEN UNDER MY HAND THIS 7th day of October, 2020.





NOTARY PUBLIC

INSTRUMENT SUBMITTED
RECORDED IN THE CLERK'S OFFICE OF
ALEXANDRIA CIRCUIT COURT ON
OCTOBER 22, 2020 AT 12:54 PM
GREG PARKS, CLERK
RECORDED BY: RAM



City of Alexandria, Virginia

Department of Transportation & Environmental Services
Stormwater and Sanitary Infrastructure Division
2900-B Business Center Drive
Alexandria, VA 22314
www.alexandriava.gov

11/13/2020

Dear Facility Owner:

Your property contains a stormwater Best Management Practice (BMP) that functions to treat stormwater runoff and improve the quality of the water in and around the City of Alexandria. This letter serves as an annual reminder that routine inspection and maintenance is an essential part of the ownership of any BMP. Regular maintenance ensures that BMPs do not generate additional pollutants, become nuisances, or pose safety issues, and that they function properly. When maintenance problems do exist, they are most often less costly to correct when they are caught early. BMP maintenance is not only an integral part of BMP ownership, but is also a requirement of the City's local stormwater program. City ordinance {13-109(G)} states that all stormwater BMPs must be adequately maintained by their owners to ensure that the BMPs function as designed.

Please contact me at 703-746-4071 or by email at Gavin.pellitteri@alexandriava.gov if you have any questions regarding your BMP. 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.

Sincerely,

A handwritten signature in blue ink that reads "Gavin Pellitteri".

Gavin Pellitteri
Water Quality Compliance Specialist



Rain Barrel BMP Fact Sheet

DID YOU KNOW...polluted stormwater runoff is the number one cause of water pollution in Northern Virginia? That's right; the very same rain that runs over streets, yards, and parking lots can send chemicals, dirt, and trash down the storm drains and into our local water bodies like the Potomac River and Chesapeake Bay!

Did you know your property is designed to improve water quality? Your property has a Best Management Practice (BMP) onsite that is used to treat stormwater runoff before it enters our local waterways.

What is a BMP? Stormwater runoff is water that flows over land, through drainage systems, and into our local waterways during and after rain storms or snow melts. Untreated stormwater can carry excess nutrients, sediment, and other contaminants into our waters. BMPs are structural practices that treat, store, or infiltrate runoff onsite before it can affect water bodies downstream. BMPs include structures such as ponds, sand filters, and bioretention areas to name a few. The use of stormwater BMPs helps to manage stormwater and to protect our City's lands and streams from erosion, flooding, and pollutants. When BMPs are maintained and function properly, they can help to improve water quality. When BMPs fail or cease to function, they can actually make water quality worse!



Example Rainwater Harvesting

Rain Barrels

Rain barrels intercept and store rainfall for future use. Rain barrels typically consist of a gutter system and storage tank that can be located on a land surface or underground. Water in the storage tank can be used for non-potable uses such as irrigation or exterior washing.

Maintenance of your BMP is a VITAL to keep it functioning properly and it is required by City Ordinance!

Common maintenance issues associated with rainwater harvesting:

- Leaves and debris in gutters and downspouts
- Clogging of screens
- Not using the stored water resulting in the rain barrel being unable to store additional runoff during storms

A BMP maintenance guideline is included with this document. Performing these routine maintenance tasks helps to ensure the function and performance of your BMP.

If you have any questions regarding your inspection and maintenance responsibilities, please call the City of Alexandria, Virginia Department of Transportation and Environmental Services, Stormwater and Sanitary Infrastructure Division at 703.746.4071.

Rain Barrel Maintenance Guidelines

Routine Maintenance Guidelines

Rain barrels 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 immediately addressed.

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 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
Replace damaged or defective system components	As needed



Permeable Pavement BMP Fact Sheet

DID YOU KNOW...polluted stormwater runoff is the number one cause of water pollution in Northern Virginia? That's right; the very same rain that runs over streets, yards, and parking lots can send chemicals, dirt, and trash down the storm drains and into our local water bodies like the Potomac River and Chesapeake Bay!

Did you know your property is designed to improve water quality? Your property has a Best Management Practice (BMP) onsite that is used to treat stormwater runoff before it enters our local waterways.

What is a BMP? Stormwater runoff is water that flows over land, through drainage systems, and into our local waterways during and after rain storms or snow melts. Untreated stormwater can carry excess nutrients, sediment, and other contaminants into our waters. BMPs are structural practices that treat, store, or infiltrate runoff onsite before it can affect water bodies downstream. BMPs include structures such as ponds, sand filters, and bioretention areas to name a few. The use of stormwater BMPs helps to manage stormwater and to protect our City's lands and streams from erosion, flooding, and pollutants. When BMPs are maintained and function properly, they can help to improve water quality. When BMPs fail or cease to function, they can actually make water quality worse!



Example Permeable Pavement

Permeable Pavement

Permeable pavement is an alternative type of paving that allows stormwater to filter through voids to a stone reservoir.

Water is temporarily stored in the reservoir and may be infiltrated into the ground. Permeable pavement can consist of pervious concrete, porous asphalt, or interlocking pavers. Permeable pavement works to reduce the amount of runoff and to remove nutrients during rain events.

Maintenance of your BMP is a VITAL to keep it functioning properly and it is required by City Ordinance!

Common maintenance issues associated with permeable pavement:

- Clogging of the pavement
- Organic debris and sediment accumulation on the pavement
- Structural cracking or breaking

A BMP maintenance guideline is included with this document. Performing these routine maintenance tasks helps to ensure the function and performance of your BMP.

If you have any questions regarding your inspection and maintenance responsibilities, please call the City of Alexandria, Virginia Department of Transportation and Environmental Services, Stormwater and Sanitary Infrastructure Division at 703.746.4071.

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 immediately addressed.

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



Bioretention BMP Fact Sheet

DID YOU KNOW...polluted stormwater runoff is the number one cause of water pollution in Northern Virginia? That's right; the very same rain that runs over streets, yards, and parking lots can send chemicals, dirt, and trash down storm the drains and into our local water bodies like the Potomac River and Chesapeake Bay!

Did you know your property is designed to improve water quality? Your property has a Best Management Practice (BMP) onsite that is used to treat stormwater runoff before it enters our local waterways.

What is a BMP? Stormwater runoff is water that flows over land, through drainage systems, and into our local waterways during and after rain storms or snow melts. Untreated stormwater can carry excess nutrients, sediment, and other contaminants into our waters. BMPs are structural practices that treat, store, or infiltrate runoff onsite before it can affect water bodies downstream. BMPs include structures such as ponds, sand filters, and bioretention areas to name a few. The use of stormwater BMPs helps to manage stormwater and to protect our City's lands and streams from erosion, flooding, and pollutants. When BMPs are maintained and function properly, they can help to improve water quality. When BMPs fail or cease to function, they can actually make water quality worse!



Example Bioretention

Bioretention

A bioretention area is a shallow landscaped depression that captures runoff. During rain events, water ponds six to twelve inches above the bottom of the depression, then filters through special media installed underground called the filter bed. A typical bioretention area consists of a filter bed, landscaping, a mulch or turf layer, an underdrain, and an outlet. Bioretention areas remove pollutants through filtration, biological uptake, and microbial activity.

Maintenance of your BMP is a VITAL to keep it functioning properly and it is required by City Ordinance!

Common maintenance issues associated with bioretention areas:

- Loss of plants
- Trash and debris accumulation
- Sediment accumulation
- Mulch layer less than 3 inches deep or over 3 years old
- Clogging
- Erosion

A BMP maintenance guideline is included with this document. Performing these routine maintenance tasks helps to ensure the function and performance of your BMP.

If you have any questions regarding your inspection and maintenance responsibilities, please call the City of Alexandria, Virginia Department of Transportation and Environmental Services, Stormwater and Sanitary Infrastructure Division at 703.746.4071.

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 immediately addressed.

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
Remulch 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



COVID-19 Information & Updates

Updated 5:04 p.m. Fri, July 2

Applications & Forms

Compilation of important forms and documentations required by Code Administration.

Page updated on Aug 25, 2021 at 3:39 PM










ON THIS PAGE

- [Applications](#)
- [Checklists](#)
- [Other Documents](#)





RELATED CONTENT

- [Daily Inspection Viewer](#)











Applications

- [Appeals Application](#) 
- [Certificate of Occupancy Application](#) 
- [Demolition Permit Application](#) 
- [Elevator Installation Application Permit](#) 
- [Fire Prevention Permit Application](#) 
- [Fire Prevention Permit Application](#)  - Residential Family Child Care
- [Framing Permit](#) 

- [Building Codes](#)
- [Fee Schedule & Payment Methods](#)
- [Fire Protection Systems Inspections](#)
- [Inspection Request System](#)
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- [Monthly Activity Reports](#)
- [New Construction Inspection Unit](#)
- [News and Media](#)
- [Permit Center \(Processing\)](#)
- [Permit Tracker](#)
- [Plan Review Services Division](#)
- [Policies & Procedures](#)











- [Modification Application](#) 
 - [Permit Extension Application](#) 
 - [Revision Application](#) 
 - [Stocking Permit Application](#) 
-

Checklists

- [Completeness Checklist - Residential 1 & 2 Family New and Additions](#) 
- [Completeness Checklist - Commercial New and Tenant Improvements](#) 
- [Decks Detail](#) 
- [Demolition Checklist](#) 
- [Finishing A Basement Checklist](#) 
- [Industrialized Buildings \(Modular Homes\) Checklist](#) 
- [Retaining Walls Checklist](#) 
- [Sample Gas Riser Schematic](#) 
- [Photovoltaic System Guidelines](#) 
- [Solar Energy Panel Permit Checklist](#) 

- [Related Links](#)
- [Site Plan Review Unit](#)
- [Small Business & Residential Project Facilitation Office](#)
- [Code Administration - Staff Directory & Organization Chart](#)

Other Documents

- [Alteration Cost of Accessibility Certificate](#) 
- [Asbestos Certification](#) 
- [Boiler Permit Letter](#) 
- [Commercial Project Data Form](#) 
- [Common Virginia Residential Code Requirements](#) 
- [Demolition Procedures and Bonds](#) 
- [Noise Ordinance Affidavit](#) 
- [Owner's Written Statement](#) 
- [Solar Energy Equipment Tax Exemption Form](#) 
- [Vent and Chimney Certification](#) 

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City of Alexandria, VA

Department of Transportation and Environmental Services

Oronoco Outfall Remediation Project Update

July 2020 through June 2021

Recent stormwater sampling and monitoring results continue to indicate that 2019 repairs to the Oronoco Street stormwater pipe have been successful in reducing or eliminating coal tar infiltration. Site investigations to locate and install new coal tar recovery wells completed in March and April 2021 were highly successful in significantly increasing rates of coal tar recovery around and beneath the stormwater pipe.

The groundwater treatment system installed in 2013 continued to perform well and semi-annual groundwater sampling campaigns were conducted and reported to the VDEQ.

The City is developing a long-term maintenance and monitoring plan that will include regular inspection of the Oronoco outfall pipe. The City continues to operate and maintain the boom system to prevent unexpected sources of coal tar from contaminating the Potomac River. In early 2021, the City installed a debris guard at the end of the outfall pipe to prevent tidal related ingress of tree and other debris from the Potomac. This is anticipated to facilitate future camera surveys of the pipe and reduce the potential for pipe damage.

**General VPDES Permit for
Small Municipal Separate Storm Sewer Systems
Permit No. VAR040057**

Year 3 Annual Report
July 1, 2020 – June 30, 2021
City of Alexandria, Virginia

**Appendix F – Minimum Control Measure #6, Pollution Prevention and Good Housekeeping for
Facilities Owned or Operated by the Permittee within the MS4 Service Area**

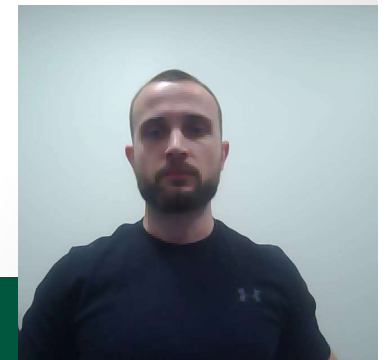
1. Staff Training Documentation
2. Report a Problem Internal System capture
3. Water Quality Work Group Presentation (Feb. 2020)



**DEPARTMENT OF TRANSPORTATION AND
ENVIRONMENTAL SERVICES**

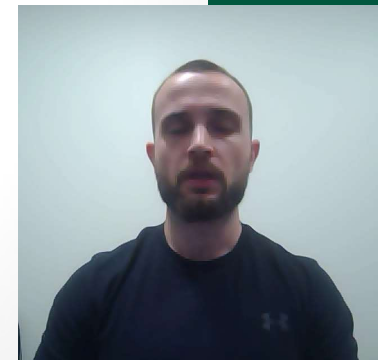
Illicit Discharges, the Stormwater System, and Pollution Prevention

2021 Training



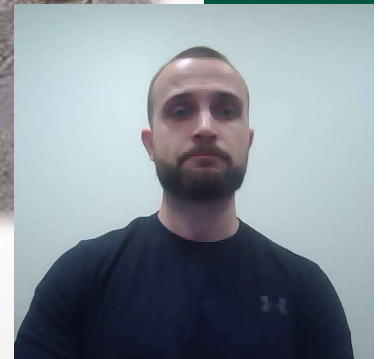
What we'll cover today:

- Definitions
 - Stormwater, the Stormwater System, Illicit Discharges, Pollution Prevention "Good Housekeeping"
- Why care about pollution?
- Examples
- Prevention
- Who to call and what to do

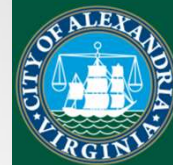


What is Stormwater?

- Rain or snow melt that doesn't soak into the ground or evaporate.
- Stormwater is not treated; storm drains flow directly into local streams.
- Stormwater picks up pollutants as it enters the stormwater system, contributing to pollution in local streams.

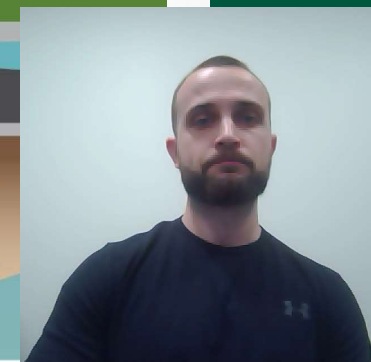


What is Stormwater?



ECO-CITY ALEXANDRIA

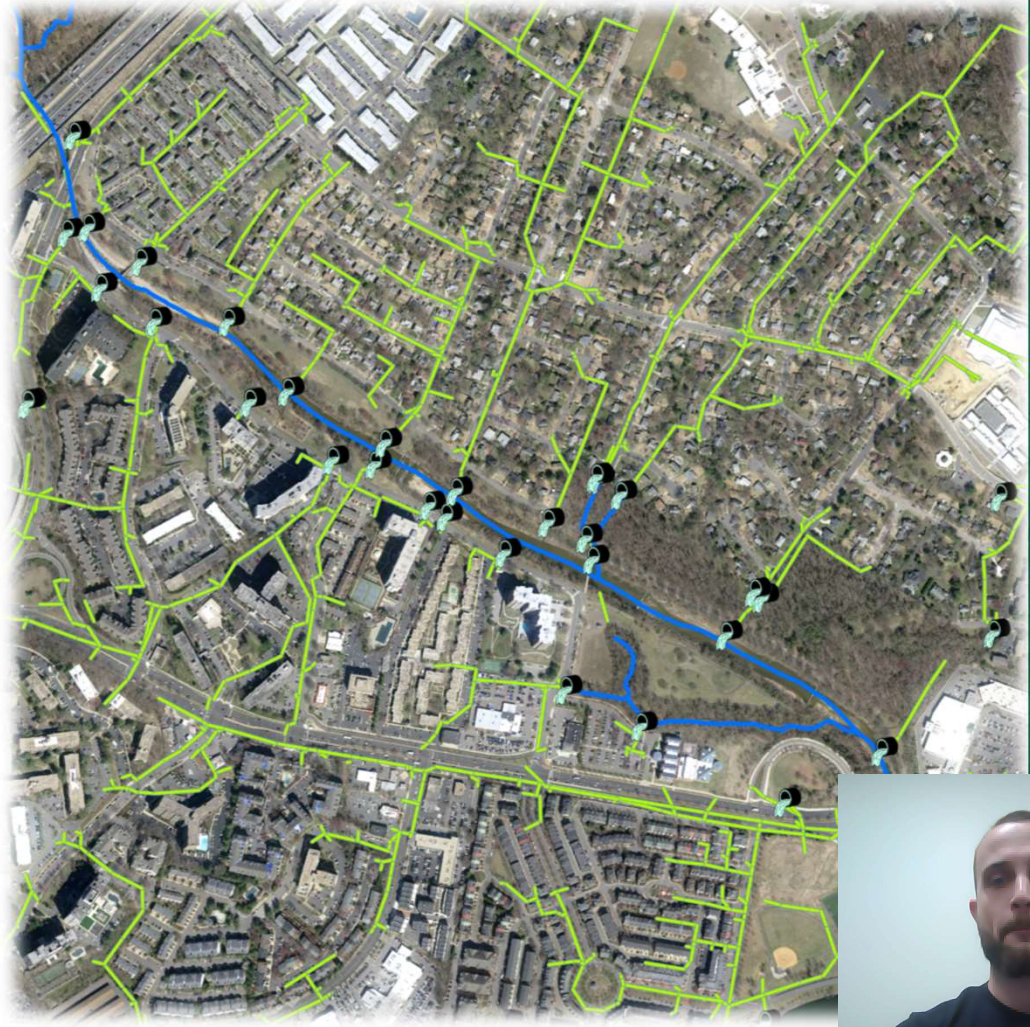
Only **Rain** Down the Storm Drain!



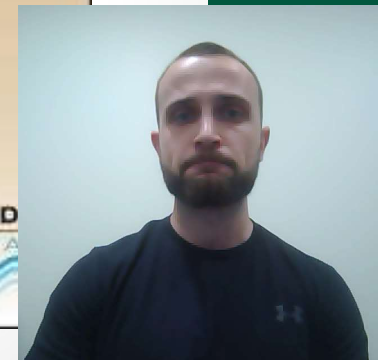
What is the Stormwater System?



- A network of manmade pipes, ditches, and other structures that take in stormwater and discharges it into the nearest body of water.
- Designed with gravity in mind. "Path of least resistance"
- Not to be confused with the sanitary system.



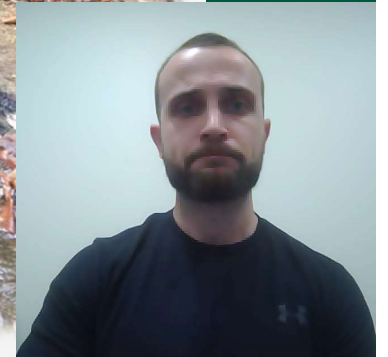
Storm System and Sanitary System



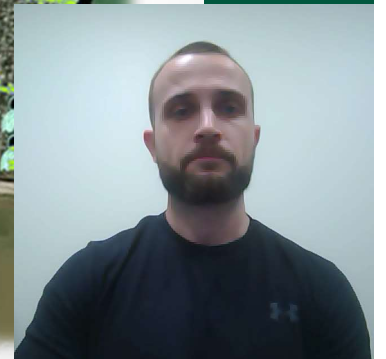
What goes in here.



Exits here.

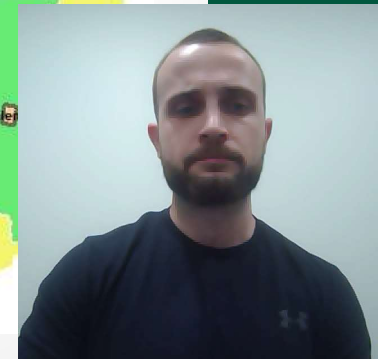


What is the Stormwater System? (cont.)





Alexandria Watersheds





Why Care About Pollution?

- It's harmful to our health

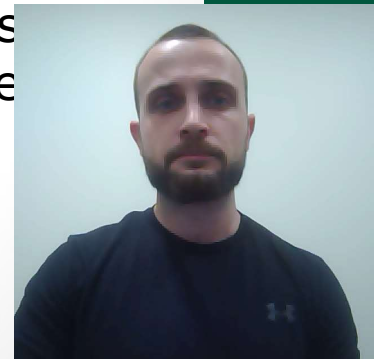
- A study from 2018 found that 90 million Americans contract waterborne illnesses from surface water activities, every year.

- It's harmful to our environment

- Many aquatic organisms are intolerant of pollution, even in small amounts.
- Just 1 quart of oil can cause an oil sheen covering 2 acres of surface water.

- It's harmful to our economy

- Ex: Water pollution negatively effects fish, crab, and oys populations in the Chesapeake Bay, hurting yearly harve impacting revenues for businesses and localities.



Main Sources of Pollution



Nutrients



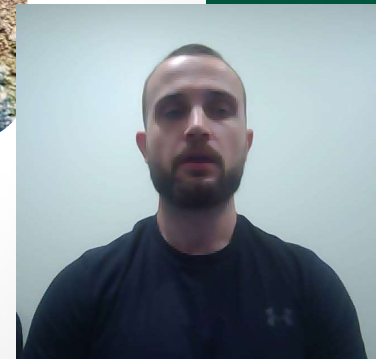
Sediment



Chemicals



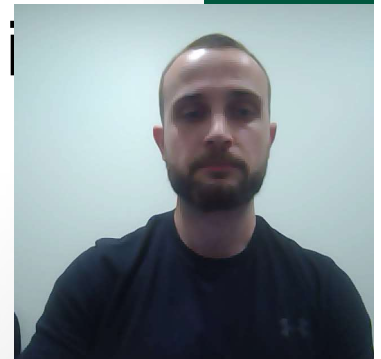
Oil





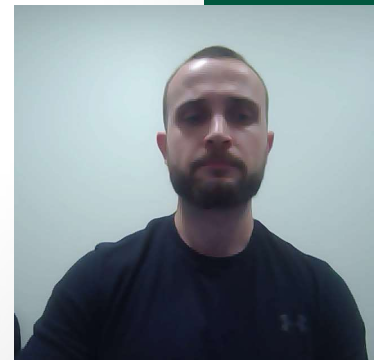
What is an Illicit Discharge?

- ✓ Any discharge to the storm sewer system that is not composed entirely of stormwater.
- ✓ If it's not stormwater, it shouldn't be going into the storm drain.
- ✓ Remember—if it goes to the street, it goes to the creek!



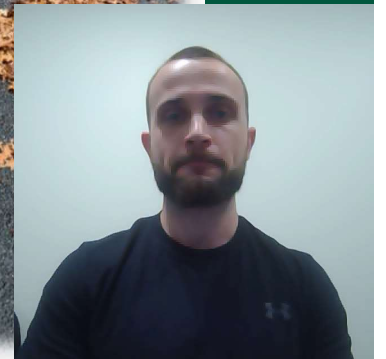
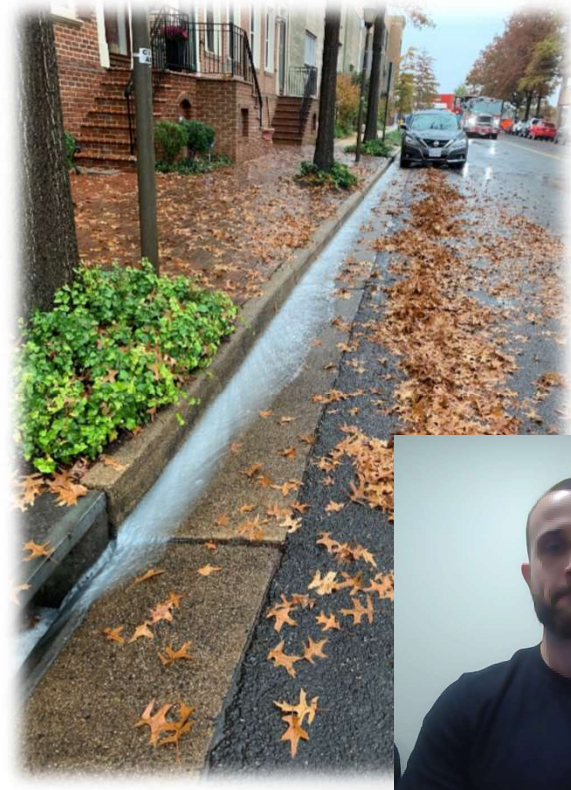


Video: Illicit Discharge Detection & Elimination A Grate Concern



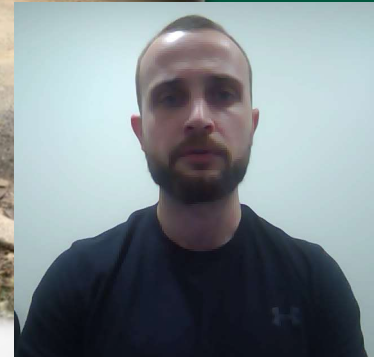
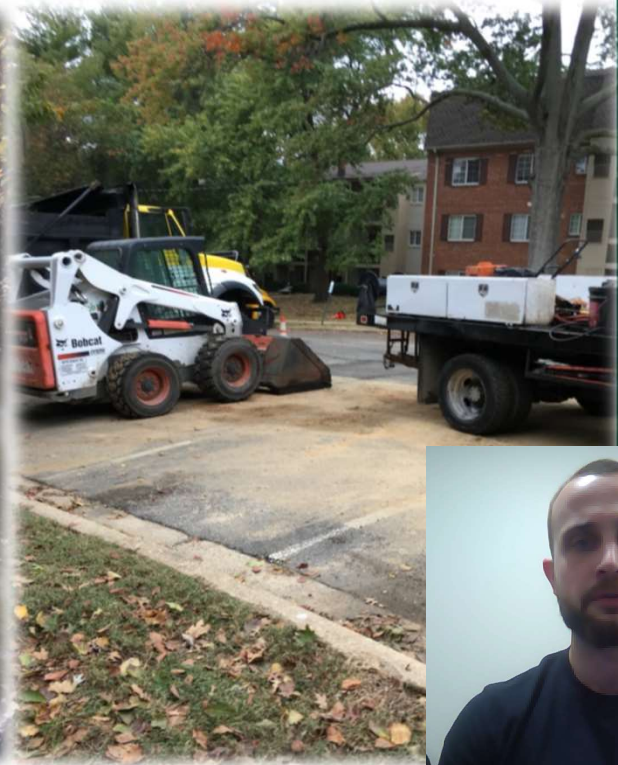
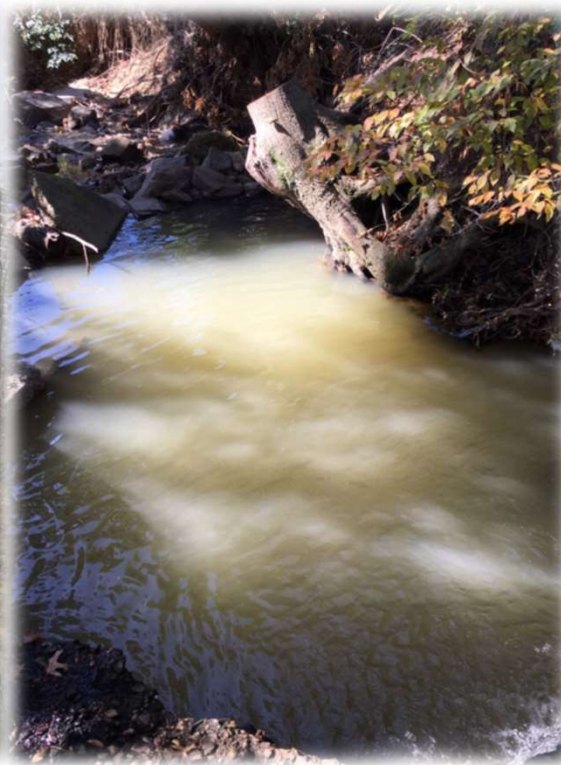
Examples of IDDE

- Roof contractors applying roof sealant prior to a rainstorm



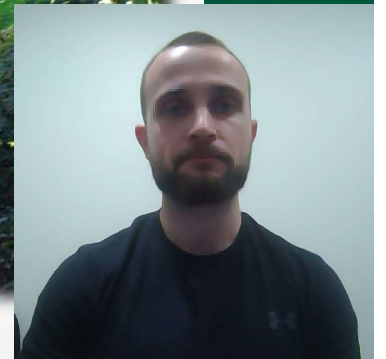
Illicit Discharge Example

- Sediment laden water from road work and a broken watermain.



Illicit Discharge Example

- Fluorescent dye dumped into an inlet.



Illicit Discharge Example

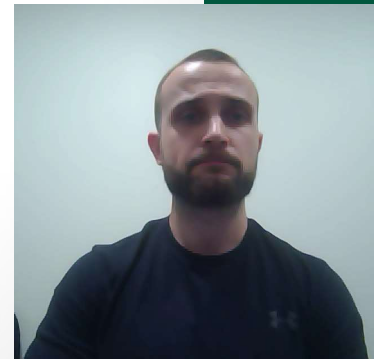
- Floor wax residue allowed to enter parking lot inlet.





What to do?

- Call 311 or 703.740.4311
- Contact Gavin Pellitteri at 703.746.4071 or Gavin.Pellitteri@alexandriava.gov
- Alex311 is the City's customer service center, a customer service representative will notify the appropriate City Staff.
- Remember, accidents happen! It is important that you notify us, even if it was you!





Alex311



Connecting You to City Services

Alex311 is the City of Alexandria's customer service initiative to connect our customers to more than 175 City services in a variety of convenient ways. Connect with Alex311 online, through the mobile app, on Facebook and Twitter, by phone, or in person.

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For Immediate police, fire or emergency medical assistance, call or text 911.

For non-emergency requests requiring police response (such as animal control, motor vehicle crashes without injuries, parking and noise complaints, lost or found property, or crimes that occurred in the past), call [703.746.4444](tel:703.746.4444). Additional crisis hotlines are listed below.



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Use the Alex311 website to submit and track requests. For information about an open online service request ticket, call 311 or 703.746.4311.



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Install the Alex311 mobile app to submit and track requests on the go.



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Submit requests by tweeting or direct messaging us at [@AlexandriaVA311](https://twitter.com/AlexandriaVA311).



[Facebook](#)

Submit requests by commenting or sending a Facebook message at [@AlexandriaVA311](https://www.facebook.com/AlexandriaVA311).



[By Phone](#)

Call 311 or [703.746.4311](tel:703.746.4311)

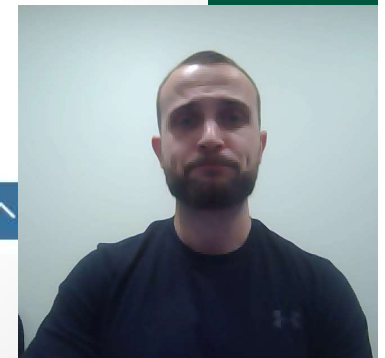
Weekdays: 7 a.m.-7 p.m.; Saturdays: 8 a.m.-noon
(Except City holidays)

Voicemail available after hours



[In Person](#)

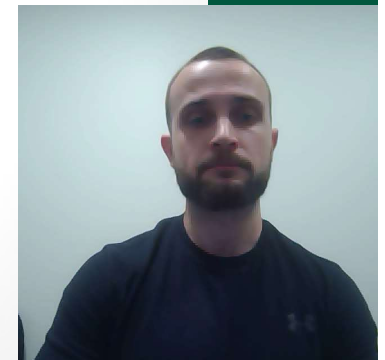
Submit requests in person at any City government location.



Pollution Prevention/Good Housekeeping



- Pollution Prevention and Good Housekeeping is the effort by an organization's operations to reduce the amount of pollution entering the environment. This is necessary because:
- If practices are not in place to contain spills and manage trash, your facility can be a source of stormwater pollution!



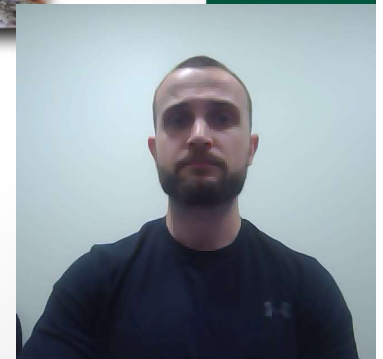
Spilled Grease Trap

- Irresponsible handling of food grease.



Improper Vehicle Washing

Dirt, grit, and soap from improper car washing enters stormwater system, contributing to pollution.

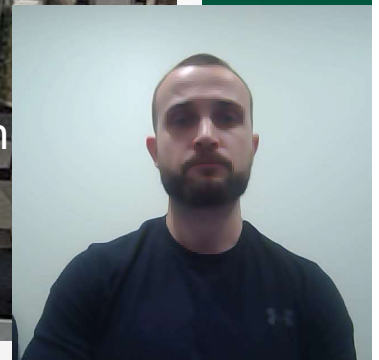


Vehicle Washing



Large vehicle / equipment wash

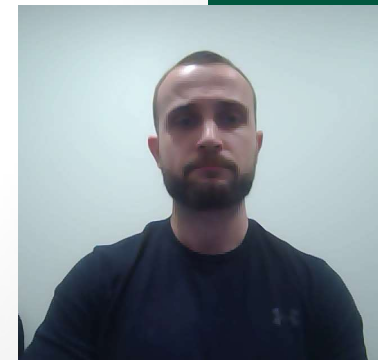
- ✓ Use wash rack at 133 S. Quaker Ln.
- ✓ No washing allowed at any other City facility!



Preventing Pollution

Motor oil, hydraulic fluid, other leaks from vehicles and equipment.

- ✓ Pre-trip inspections
- ✓ Fix leaks immediately
- ✓ Drip pans, dry absorb, and sweep to recover



Preventing Pollution

If left uncovered and exposed, salt and similar materials become sources of pollution.

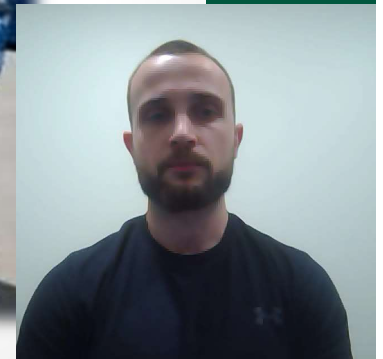
- ✓ Cover it up
- ✓ Keep it entirely contained and protected from rain and wind.



Preventing Pollution

Storing materials
(including trash)
without lids or covers
leads to polluted water
leaking from the
dumpster, container,
etc.

- ✓ Cover materials
when stored outside
- ✓ Keep storage areas
orderly and neat
- ✓ Trash included!



Preventing Pollution

Oil, gas, and other solvents.

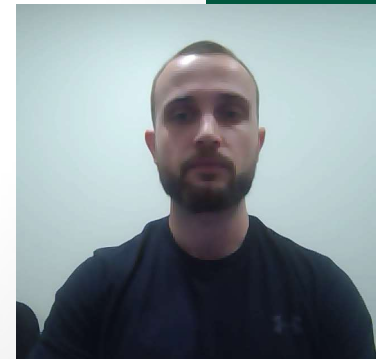
- ✓ Cover it
- ✓ Make sure it won't tip over
- ✓ Secondary containment.



Preventing Pollution

Open paint cans fill up with rain, overflow, or simply spill when improperly stored.

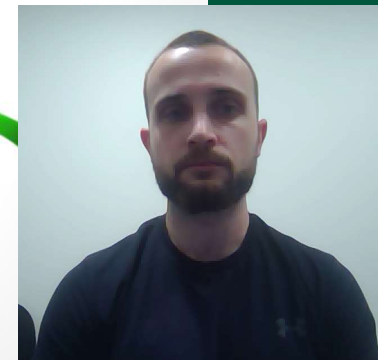
- ✓ Cover it
- ✓ Keep out of the elements



Preventing Pollution

Responsible disposal of grass clippings and landscaping waste.

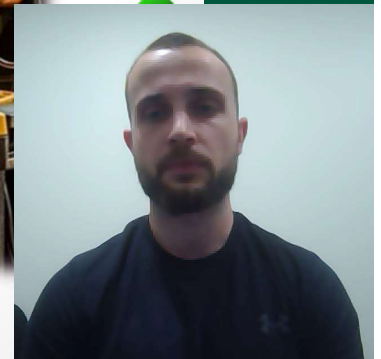
- ✓ Bag it and throw it away



Preventing Pollution

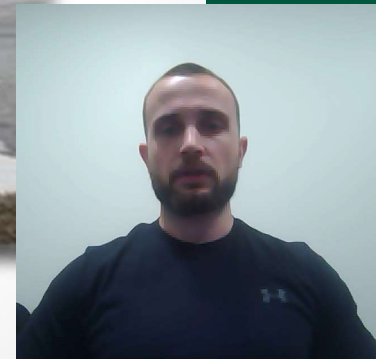
Clean floor mats with a vacuum, not a hose!

- ✓ Dispose of refuse in a trash can.



Fueling Vehicles

- ✓ No "topping off"
- ✓ Remain with vehicle
- ✓ Use dry absorb for spills and clean it up
- ✓ Minimize refueling during rain events

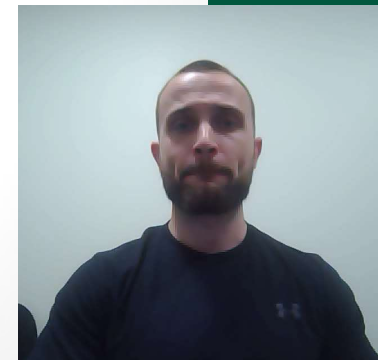


End

- Q & A
- Thank you for your time!

Gavin Pellitteri

Water Quality Compliance Specialist
Stormwater Management
Transportation & Environmental Services
City of Alexandria, VA
Office Phone (direct): 703.746.4071
Email: gavin.pellitteri@alexandria.gov



Jessica Lassetter

From: Bob Williams
Sent: Thursday, June 10, 2021 5:05 PM
To: Christopher Watson; William Douglas; Jack Browand; Michael Reid; MJ Jarrar; Tarryn Lee; John Marlin; Rod Simmons; Mary Farrah; Bradley Alger
Cc: Oscar Mendoza; Renata Narciso; Jessica Lassetter
Subject: Stormwater Pollution Prevention Training

Categories: MS4 Work

[P2GH and IDDE Training FY2021.mp4](#)

Each year we are asked by T&ES/Stormwater to participate in a Stormwater Pollution Prevention Training. This training helps remind us of what the Stormwater system is, and how we can lessen our impact on it during the course of our operations. The Stormwater Management Division is pleased to provide the required 30-minute Pollution Prevention and Good Housekeeping to you via VIDEO for 2021 narrated by Gavin Pellitteri. **Training must be completed by June 30, 2021**, per our stormwater permit requirements.

Please share this with your teams and report back to me when it has been shared with everyone. The file is large and may take a minute or two to load. You can start the presentation by pressing the play icon if it doesn't automatically start. I appreciate your support in spreading the word on how we can do our part to prevent pollution.

If you have any problems with the video, please reach out to me for assistance.

Bob Williams, CPRP

Division Chief | Park Operations & Natural Resources
Recreation, Parks and Cultural Activities (RPCA) | City of Alexandria
2900-A Business Center Drive, Alexandria, VA 22314

Office: 703.746.4688

Mobile: 571.289.9429

Email: Bob.Williams@alexandriava.gov



MS4 Permit PPGH Training 6/3/2021

CIP: Sewers

Print Name

Signature

Guillermo Paz

G. P

Danny Rivera

D. Rivera

T. R. Dunn

Melvin Entwistle Jr

Melvin Entwistle Jr

Raymond Monk

Raymond Monk

Gregory Dunn Jr.

Gregory Dunn Jr.

Charles Laporte

Charles Laporte

Richard Jones

Richard Jones

Christopher Allen

Christopher Allen

John Taylor

John Taylor

Mary Alice Winston

Mary Alice Winston

Carl Long

Carl Long

Terry Stanley

Terry Stanley

Dante Parker

Dante Parker

Zouhair Amarchi

Zouhair Amarchi

ABDUL TAHIR

ABDUL TAHIR

Dale Norman

Dale Norman

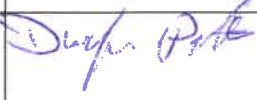

Transportation & Environmental Services – City of Alexandria, VA Roster and Lesson Plan





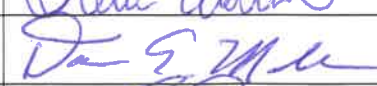

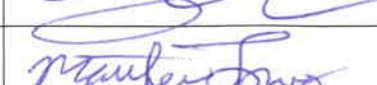
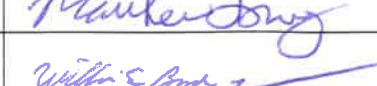


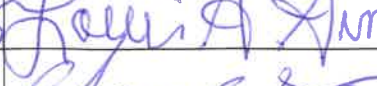

Toolbox Talk___ Training___ Muster Meeting___

Page 1 of 2

Delivery Hours _____

Total Delivery Hours _____

TOPIC	Pollution Prevention and Good Housekeeping	DATE OF DELIVERY	June 4, 2021
NAME OF LEAD PERSON	Dwaine Parks	NAME OF ASSISTING PERSON	C. Hawkins
SIGNATURE OF LEAD PERSON		SIGNATURE OF ASSISTING PERSON	
TITLE OF LEAD PERSON	Asst. Safety Coordinator	TITLE OF ASSISTING PERSON	Asst. Supervisor
LESSON PLAN ELEMENTS	Training Video		

ATTENDEE "PRINTED" NAME	ATTENDEE "SIGNATURE"	DIVISION NAME
Charles Hughes		TES
John Tyrone		TES
Steve Kowalik		TES
Steve Waller		T+ES
DAVON Melson		TES
Marlon Serapio		TES
Matthew Lowery		TES
Bill Benson Jr		TES
Jerome Greene		TES
LOUIS A. SIMM		T.E.S
RAHSAAN West		T&ES
ANDREW smith		maintenance

Page 2 of 2[illegible]



Municipal Separate Storm Sewer System (MS4) General Permit Overview

Water Quality Workgroup

February 11, 2020



Background

- Federal Clean Water Act
 - National Pollutant Discharge Elimination (NPDES)
 - Virginia Pollutant Discharge Elimination (VPDES)
 - MS4 General Permit for Municipal Stormwater Discharges
 - TMDL Special Conditions
 - 6 Minimum Control Measures (MCM)
 - MS4 Program Plan



Permit Special Conditions

- Chesapeake Bay TMDL Action Plan
 - Reduce Nitrogen, Phosphorous, and Sediment
 - Identifies Primary Strategies
 - 2018 – 2023 = 40% Reduction Plan
- Local TMDL Action Plans
 - Comprehensive Bacteria TMDL Action Plan
 - Tidal Potomac PCB TMDL Action Plan

Chesapeake Bay TMDL Action Plan



6 Minimum Control Measures



MCM #1:
Public Education and
Outreach



MCM #2:
Public Involvement and
Participation



MCM #3:
Illicit Discharge Detection
and Elimination



MCM #4:
Construction Site
Stormwater Runoff Control



MCM #5:
Post-Construction
Stormwater Management
for Development and
Redevelopment



MCM #6:
Pollution Prevention/Good
Housekeeping for Municipal
Operations



MS4 Program Plan

Identify roles and responsibilities

Description of BMPs or strategies to demonstrate compliance

Standard Operating Procedures (SOPs) or Policies

Measurable goals

Persons, positions, or departments responsible for implementation

List of documents incorporated by reference



MCM #1

Public Education & Outreach

- Increase public knowledge
- Diverse and targeted approach
- High priority issues/rationale
- Tools
 - Written materials
 - Media: Social, eNews, website
 - Signage
 - Speaking engagements



MCM #2

Public Involvement and Participation

- Stream monitoring workshops
- Stream cleanups
- Educational Events
- T&ES Ops Spring Cleanup
- Pollution Prevention
- Public Input



MCM #3

Illicit Discharge Detection and Elimination (IDDE)

- Storm sewer outfall map
 - GIS shapefile
- Physical interconnections
- Prohibition on illicit discharge
 - Updated February 2018 w/civil penalties
- HHW Program
- Complaint Response
- Outfall Screening
- Oronoco Outfall



MCM #4

Construction Site Stormwater Runoff Control

- Implementation of VESCP
- Construction Site Inspections and Enforcement Actions
- Update Written Procedures
- Implementation of Stormwater Controls
- Tracking of Land Disturbing Activities
- Construction GP Coverage



MCM #5

Post-Construction Stormwater Management

- Implement VSMP Regs
- Inspection and Enforcement for Private BMPs
- Inspection and Maintenance of Public BMPs
- Manage BMP Database
- Update Policies and Procedures



MCM #6

P2 & Good Housekeeping

- Written procedures for public facilities
- SWPPPs for high-priority public facilities
- Turf and landscape nutrient management plans
- Contractor oversight
- Field personnel training



MS4 Audit General Info

- VDEQ performs desktop audit first
- VDEQ will request documents
- VDEQ/City participate in conference call prior to onsite audit
- 2-day onsite audit: May 4 & 5
 - Office discussion and further document review
 - Inspections
 - Discussions



MS4 Audit Preparation

- ✓ Identify Areas and Leads
 - Facilities
 - Program Ops
- ✓ Meetings
- ✓ Facility Inspections
- ✓ Table Top Exercise



Discussion

 [Print](#) [Text Size](#) [Resources](#)

WELCOME, Jessica

- [My Department](#)
- [My Mail & Calendar](#)
- [My Pay, Leave & Info](#)
- [My Time & Attendance](#)
- [Forums](#)
- [Report a Problem | AlexIT](#)

RESOURCES

- ▶ [Administrative Regulations](#)
- ▶ [Benefits](#)
- ▶ [City Employment Opportunities \(Open to All\)](#)
- ▶ [Communications & Public Information](#)
- ▶ [Community](#)
- ▶ [Departments & Offices](#)
- ▶ [Emergency Preparedness](#)
- ▶ [Employee Enrichment Programs](#)
- ▶ [Forms](#)
- ▶ [GIS & Maps](#)
- ▶ [How Do I?](#)
- ▶ [Meeting Dockets & Video](#)
- ▶ [Phones & Phone Numbers](#)
- ▶ [Promotional Opportunities](#)
- ▶ [Conference Room Reservations](#)
- ▶ [Learning & Development](#)

Report a Problem

Use this page to report problems you see with your work environment, or in the community. To report suspicious activity or a police, fire, or medical emergency, always call 911.

[AlexIT](#)

Create and check the status of information technology service requests for **computers, printers, phones, applications, etc.** and browse City IT-related knowledge base articles on [AlexIT](#). You can also submit requests via email to techsupport@alexandriava.gov and by phone; DCHS customers please call 703.746.6090 and ITS customers please call 703.746.3060.

[Public Works & Buildings](#)

Report problems with streets, sidewalks, signs, lights, signals, parking meters, building code issues, etc. through [Alex311](#).

[Public Websites](#)

For problems with City websites, web applications, etc., email web.team@alexandriava.gov or call 703.746.3966.

[Suggestion Box](#)

Share suggestions about efficiency, best practices, appropriate use of City resources, etc., through our [Suggestion Box](#).



**General VPDES Permit for
Small Municipal Separate Storm Sewer Systems
Permit No. VAR040057**

Year 3 Annual Report
July 1, 2020 – June 30, 2021
City of Alexandria, Virginia

Appendix G – TMDL Special Conditions

1. Phase 2 Chesapeake Bay TMDL Action Plan
2. Bacteria TMDL Action Plan
3. Tidal Potomac PCB TMDL Action Plan

Phase 2 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan for 40% Compliance

September 24, 2019



**For compliance with 9VAC25-890 et. seq., “General VPDES Permit
for Discharges of Stormwater from Small Municipal Separate
Storm Sewer Systems, Permit No. VAR040057**



City of Alexandria, Virginia

Prepared by:

City of Alexandria, Virginia
Department of Transportation and Environmental Services
Stormwater Management Division



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City of Alexandria, Virginia

Phase 2 Chesapeake Bay TMDL Action Plan for 40% Compliance

September 24, 2019

Executive Summary

The purpose of this Phase 2 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan is to comply with Part II A “Chesapeake Bay TMDL special condition” of the 2018 – 2023 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) on November 1, 2018. The City’s Phase 1 Chesapeake Bay TMDL Action Plan documenting the City’s proposed strategies to achieve 44%, 39% and 39% of the City’s total nitrogen, total phosphorus, and total suspended solids (sediment) goals, respectively, by June 30, 2018, was approved by the Virginia Department of Environmental Quality (DEQ) on January 12, 2016.

This Phase 2 Action Plan has been developed to document that sufficient measures have been implemented to meet the 5% compliance targets identified in the 2013-2018 permit and to demonstrate the City’s ability to comply with the required additional 35% reductions for existing sources as of June 30, 2009, increased loads from 2009-2019 New Sources, and increased loads from Grandfathered projects (9VAC25-870-48). The focus of the 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 40% cumulative Chesapeake Bay TMDL reduction targets in the MS4 permit for phosphorus, nitrogen, and sediment developed by the United States Environmental Protection Agency (EPA) in December 2010. Consistent with the approach in the Phase 1 Action Plan, the City’s Phase 2 planned internal goals includes progress to achieve reductions prior to the required permit end dates in order to lessen the burden during the third permit cycle (July 2023 to June 2028).

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 builds on the previous work completed in the Phase 1 Action Plan. However, as required in the permit, the Phase 2 Action Plan addresses pollutant reductions of 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 the second permit cycle.

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 Reductions¹
TN	3,038.8	13.0	-30.6	3,021.3
TP	401.8	2.3	-8.7	395.4
TSS	344,775	1911	-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 8 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
- Street Sweeping and Catch Basin Cleaning
- Tree Planting
- Urban Stream Restoration
- Public-Private Partnerships (P3s)
- Urban Nutrient Management
- Land Use Change
- Forest Buffers
- Nutrient Trading
- Bi-Lateral Trading

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 is currently under construction 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 will allow the City to take credit for the variation in the pollutant removal. Note that progress is also being made on the Lucky Run, Strawberry Run and Taylor Run urban stream restoration projects which will potentially restore approximately 3,600 linear feet of stream. However, these stream restoration projects are included in the Action Plan for reference purposes only since the *Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects* that contains the pollutant removal computation methodologies accepted by the Chesapeake Program to address Bay TMDL has been revised numerous times and is slated for further revisions and approval. Yet, the Phase 2 reductions will be met through the projects listed in Table E2, which includes associated pollutant reductions and estimated costs.

Table E2: Phase 2 Estimated Pollutant Reductions and Costs

Reduction Strategy	TN (lbs/yr)	TP (lbs/yr)	TSS (lbs/yr)	Estimated Cost¹
Lake Cook Retrofit	1,587	163.3	131,334	\$4.5M
Ben Brenman Pond Retrofit	946.4	151.3	87,734	\$3.75M
Total	2,533.4	314.6	219,068	\$8.25M

¹Includes funds from SLAF grants

Table E3 summarizes the expected progress at the end of the Phase 2 permit cycle once the above potential strategies have been implemented. Based on progress made in the first cycle and strategies to be implemented in the second permit cycle, the City will far exceed the 40% pollutant reduction requirement and will have 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: Phase 2 Expected Progress

Pollutant of Concern	City Phase 1 Reductions (lb/yr)	City Phase 2 Planned Reductions (lb/yr)	L2 Total Required Reductions (lb/yr)	Percent of L2 Total Required Reductions Met
TN	2,689.8	2,533.4	7,597.0	69%
TP	402.4	314.6	1,004.4	71%
TSS	361,990	219,068	861,937	67%

Introduction

The purpose of this Phase 2 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan is to comply with Part II A “Chesapeake Bay TMDL special condition” of the 2018 – 2023 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) on November 1, 2018. The City’s initial Draft Action Plan was submitted with the MS4 Permit registration statement in May 2018. The City’s Phase 1 Chesapeake Bay TMDL Action Plan documenting the City’s strategies to achieve 44%, 39% and 39% of the City’s total nitrogen, total phosphorus, and total suspended solids (sediment) goals, respectively, by June 30, 2018, was approved by the Virginia Department of Environmental Quality (DEQ) on January 12, 2016 and exceeded the required 5% reductions.

This Phase 2 Action Plan has been developed to document that sufficient measures have been implemented to meet the compliance targets identified in the 2013-2018 MS4 permit and to demonstrate the City’s ability to comply with the required additional 35% reductions for existing sources as of June 30, 2009, increased loads from 2009-2019 New Sources, and increased loads from Grandfathered projects (9VAC25-870-48) pursuant to the requirements of the 2018 – 2023 MS4 General Permit. The Action Plan includes the requisite planning items found in the 2018-2023 Permit Part II A and was developed according to the procedures provided in the Virginia Department of Environmental Quality (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 the Action Plan guidance is currently being updated and that the most current guidance document is still Guidance Memo No. 15-2005.

The focus of the 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 40% Chesapeake Bay TMDL reduction targets in the MS4 permit for phosphorus, nitrogen, and sediment developed by the United States Environmental Protection Agency (EPA) in December 2010. Consistent with the approach in the Phase 1 Action Plan, the City’s Phase 2 planned internal goals include progress to achieve permit targets prior to the required end dates in order to lessen the burden during the third permit cycle.

The TMDL contains aggregate wasteload allocations (WLAs) for regulated stormwater and no specific WLAs for the City’s MS4. The Virginia Chesapeake Bay TMDL Phase I Watershed Implementation Plan (WIP I) submitted to EPA on November 29, 2010 contains general requirements for permittees. The Phase II WIP (WIP II) that was 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 WIP (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 as the tool for compliance by requiring target reductions for the TMDL.

The MS4 general permit reissued by DEQ and 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 following excerpt from the WIP II provides more information on the L2 scoping:

The Commonwealth will utilize MS4 permits to assure BMP implementation on existing developed lands to achieve nutrient and sediment reductions equivalent to Level 2 (L2) scoping run reductions by 2025 for state and local MS4 operators. Level 2 implementation equates to an average reduction of 9 percent of nitrogen loads, 16 percent of phosphorus loads and 20% of sediment loads from impervious regulated acres and 6 percent of nitrogen loads, 7.25 percent of phosphorus loads and 8.75 percent sediment loads beyond 2009 progress loads and beyond urban nutrient management reductions for pervious regulated acreage.

According to the WIP II, WIP III, and MS4 general permit, the City will have three full MS4 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 will need 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 Action Plan is required to address the additional 35%, or Phase 2, 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 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 will be 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). The Action Plan builds on the previous technical and planning-level work, to include the previous action plan, 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. While this report focuses on potential strategies to meet the 40% reduction goals that must be implemented by June 30, 2023, reduction requirements are even higher for the third and final permit cycle. Therefore, like the first permit cycle, the City has set an internal goal for the second permit cycle that extends beyond the required 40% target, to achieve the escalating total reductions in the required timeframe towards meeting the overall total. Concrete strategies to achieve the 40% are presented, with the flexibility to choose from a menu of options as contingency measures and/or to begin addressing the future requirements. 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 best management practices (BMPs), towards meeting the target pollutant reductions. The first official planning-level exercise 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.

This Phase 2 Action Plan builds upon the means and methods found in the Phase 1 Action Plan and refines the City’s efforts to date. This plan focuses on meeting the 40% requirements in the 2018-2023 MS4 Permit. The Phase 2 Action Plan:

1. Documents the progress made during the first permit cycle 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 2018-2023 permit cycle.

This 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
- 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’ 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' 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 ½" of runoff from all onsite impervious surfaces, known as the water quality volume default, which provides reductions beyond those mandated. More recently, 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' 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 permit. Since the Phase 1 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

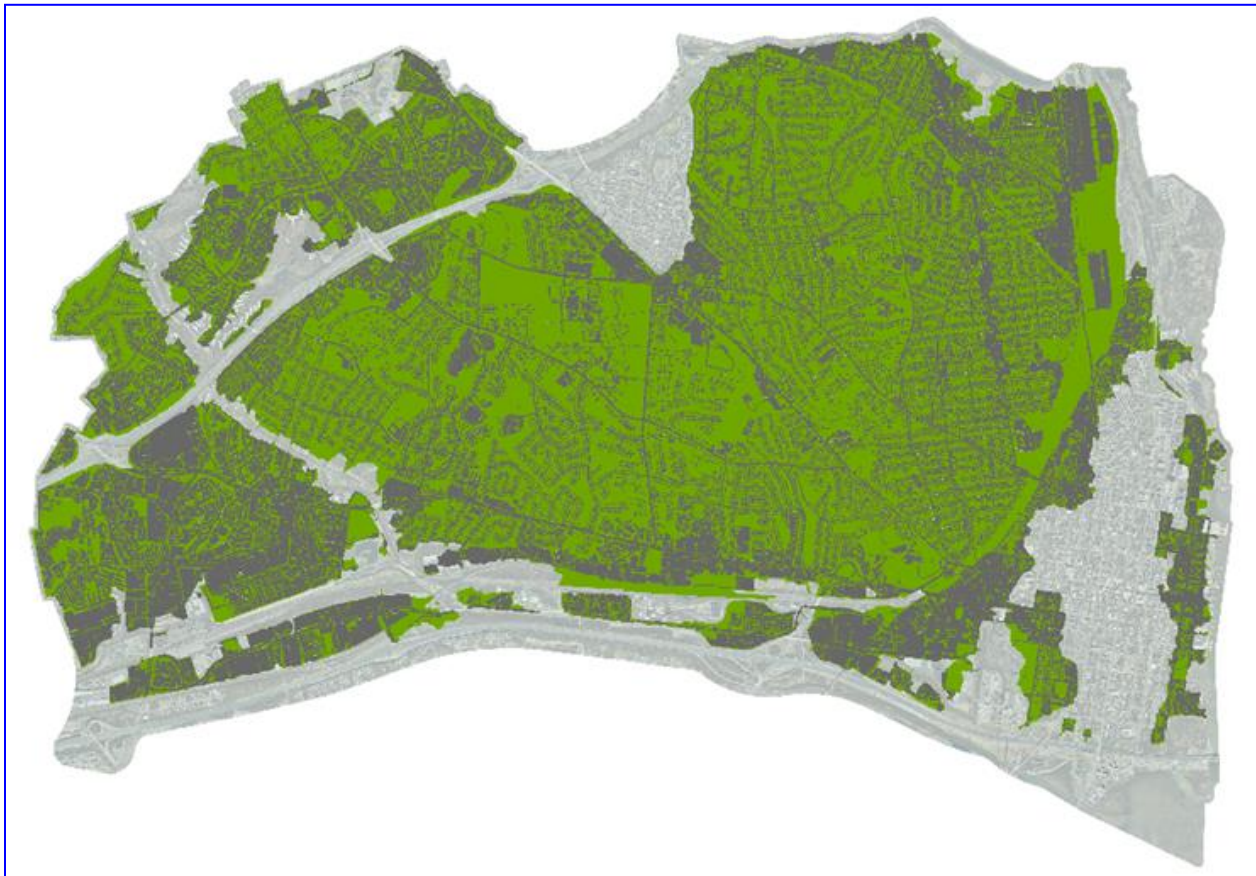
Based on the above analysis, the estimated land areas draining to the Alexandria MS4 service area, non-Alexandria MS4, and CSS is presented in Table 2. Figure 1 shows the size and extent of the delineated pervious and impervious land uses for the MS4 service area in green.

Table 2 – Alexandria MS4, Non-Alexandria MS4, and CSS Land Area¹

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	576.6
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 40% Compliance Reductions

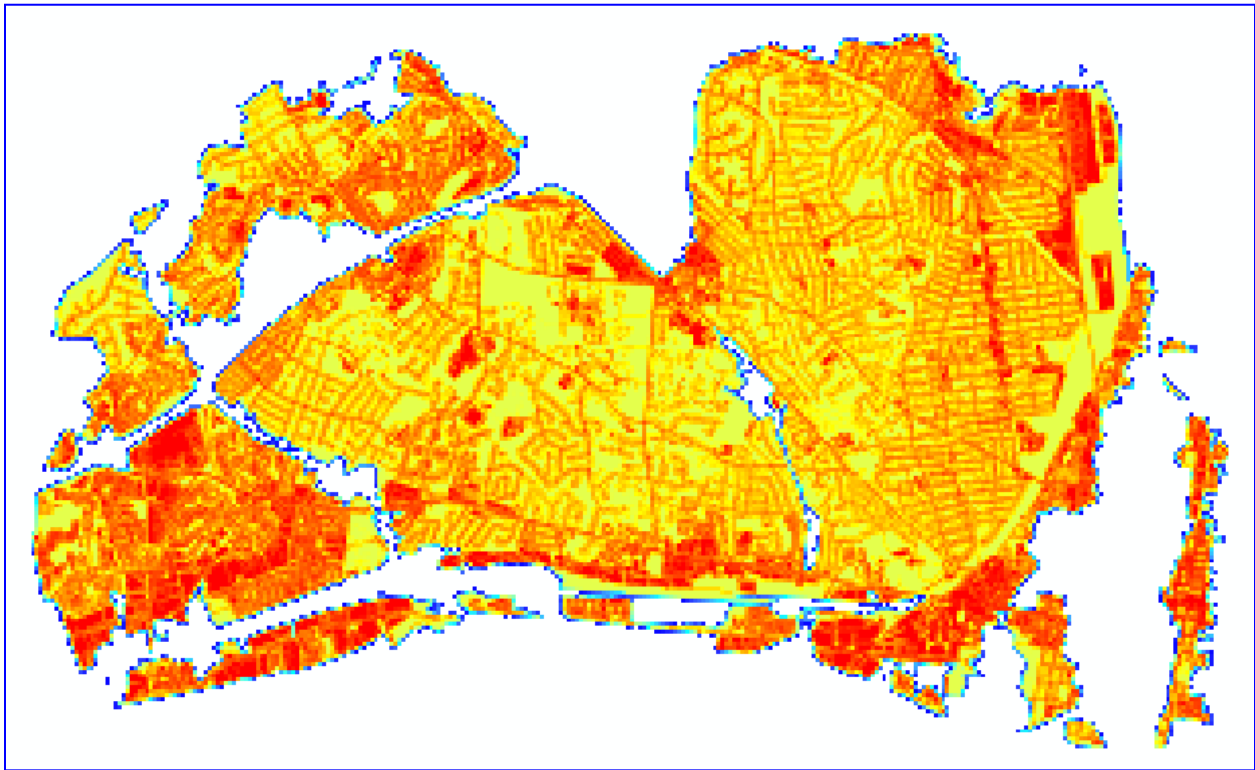
Baseline loads for nitrogen, phosphorus, and sediment were established using the City's impervious surface GIS data that represent the best available data for total existing acres served by the MS4 as of June 30, 2009, along with loading rate data for each pollutant of concern found in Table 2b (Potomac River Basin) of the 2013-2018 MS4 general permit. In working with our 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 below 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.

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 Exiting 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 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 these 40%, or Phase II, reductions; however, potential strategies considered may achieve reductions beyond the 40%, given the need to comply with increasing reduction requirements in the final permit cycle (remaining 60%). 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 Reductions¹

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 Cycle¹

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
TOTAL REDUCTION (100%)	7,597.03	1,004.40	861,936.64

1. These estimates are based on percentages of the L2 requirements.

The 2018-2023 MS4 General Permit requires the City to use permit Table 3b for the Potomac River Basin to determine the 40% 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 Census urbanized area.

Table 6b: Second Permit Cycle Pollutant Reductions Calculated per the MS4 Permit^l

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

²To 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.

³Column C = Column A x Column B

⁴Column F = Column C x (Column D /100) x (Column E /100)

⁵Column G = The sum of the subsource cumulative reduction required by 6/30/23 (lbs/yr) as calculated in Column F.

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 the City. Requiring development to go back to 16% impervious cover would be overly restrictive 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 ½” depth of stormwater runoff over the site’s entire impervious surface – or first flush – for post-construction stormwater design. This more stringent requirement reduced pollution beyond the 41% impervious land cover condition. The City has 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 (9VAC25-870). 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 lb/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 lb/ac/yr or less, which is more conservative than the 0.45 lb/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. 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 this phase, the current 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. Req'd. 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%	1911

**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) provide 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 ½” of runoff associated with impervious surfaces – the water quality volume default. The permit requires that the City to 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 fairly certain to initiate construction during this MS4 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 (lb/ac/yr) was subtracted from the post site loading rate (lb/ac/yr), and the difference was multiplied by the post site area (ac) to yield the increased load (lb/yr). As instructed in the 2018-2023 MS4 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 9. 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 this update, the City reviewed the list of these grandfathered projects and potential grandfathered projects for Phase 2 and updated and refined the project list and corresponding pollutant calculations. There have only been two grandfathered projects that have been constructed thus far. As often seen with development projects, many were aborted 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*	51.0	11.6	5,066
Total Load Remaining**	-30.6	-8.7	-3,676

**These BMP reductions are not included in Post-2009 BMP credits.*

***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 6 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 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) is to be implemented no later than the end of the permit cycle.

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 Reductions¹
TN	3,038.8	13.0	-30.6	3,021.3
TP	401.8	2.3	-8.7	395.4
TSS	344,775	1911	-3,676	343,010

¹ Total reductions to be addressed by the end of the second permit cycle.

8. 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 Draft 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 permit based on the City’s regulated land contained in the MS4 service area. This Action Plan is only required to focus specifically on means and methods to meet the 40% 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 Phase 2 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

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 any and 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 Phase 2 permit cycle; while additionally working towards meeting anticipated reductions required for 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. To further the feasibility and understanding of implementing GI broadly as a city-wide approach, the City plans to conduct a GI study in 2020 and will incorporate applicable elements into the next Action Plan.

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.
- ***Street Sweeping and Catch Basin Cleaning.*** Removing nutrients and sediment from roadways by mechanical means before pollutants may be transported offsite in stormwater flows.
- ***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 of urban streams.
- ***Public Private Partnerships (P3).*** May consist of (1) 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) Agreement between the City and a private owner to construct a BMP on private property.

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 2 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.
- ***Bi-Lateral Trading.*** Applying credits generated through the implementation of combined sewer overflow and wet-weather treatment controls implemented by Alexandria Renew Enterprises to address the City's VPDES Combined Sewer System (CSS) permit required bacteria reductions to address MS4 requirements.

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 has set an internal goal for the second permit cycle that extends 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. The mix of potential strategies presented above are discussed in further detail in the following sections.

8.1 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 the new stormwater management regulations will have to meet nitrogen, phosphorus and sediment loading rates associated with pervious area, or a 0.41 lbs/ac/yr TP loading rate. This equates to no net 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 ½" 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.

While future redevelopment projects will provide nutrient and sediment credits, given the highly speculative nature of potential credits generated from projected development from now until 2023, there is no guarantee that these projects will occur to be credited towards the 40% reductions required at the end of the second permit cycle. For this reason, credits associated with projected redevelopment are not presented here. However, the City will include reductions from development and redevelopment projects in the required reporting on progress towards achieving the overall targets.

8.2 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. Two of these projects, Lake Cook and Eisenhower Block 19 Pond, are

complete and are further described in Section 8. Construction of one additional project, Ben Brenman Pond (previously referred to as Cameron Station Pond), expects to be completed in winter 2019/2020 and further details are below.

Ben Brenman Pond (referred to as Cameron Station Pond in the Phase 1 Action Plan)

This City-owned and maintained facility drains approximately 255 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. It is anticipated that construction of the project will be complete in winter 2019/2020.

The project received a SLAF 50% matching grant in December 2014. Table 10 presents the estimation of pollutant removal and the approximate total CIP cost. For the Ben Brenman Pond Retrofit Pollutant Removal Calculations Technical Memorandum dated August 17, 2017 documenting the procedures for computing these pollutant removals, see Appendix B. The pollutant removals have been refined since they were reported for reference purposes in the Phase 1 Action Plan.

Table 10: Ben Brenman Pond Retrofit – Anticipated Pollutant Reductions

Total Acres Treated	Impervious Acres Treated	TN Removed (lbs/yr)	TP Removed (lbs/yr)	TSS Removed (lbs/yr)	Approx. Cost¹
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.

8.3 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 1 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 on City properties projects that would build on the analyses already completed. The study would assess, evaluate, and rank potential project sites for implementation of green infrastructure. Section 9 includes a list of completed retrofits on City properties and corresponding pollutant removals.

8.4 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, a large number of 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 limits 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 ½" 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.

8.5 Street Sweeping and Catch Basin Cleaning

Street sweeping is an effective strategy of removing nutrient and sediment loads prior to them being transported in stormwater runoff. The Chesapeake Bay BMP Expert Panel approved this credit in March 2011; however, the Final Recommendations of the Expert Panel to Define Removal Rates for Street and Storm Drain Cleaning Practices was issued in May 2016 and revised the credit methods. According to the 2016 Expert Panel Report, the pollutant credits is dependent on the frequency that the sweeping occurs and the type of technology that is used (advanced sweeping technology or mechanical broom technology). The City is currently administering a street sweeping program with both advanced sweeping technology (AST) equipment and mechanical broom technology (MBT) equipment. Staff is working to develop a tracking mechanisms to determine the frequency that the MS4 is cleaned by ASTs and MBTs.

The same expert panel report also outlines how to define pollutant removal rates for storm drain cleaning. To perform the calculation, the mass of the matter captured and the composition of the material (sediment or organic) is required. Similar to street sweeping, the City is currently administering a catch basin cleaning program and staff is working to develop a means to determine the mass of the material removed from the MS4 catch basins and the percentage of sediment versus organic material. The City would like to reserve the right to determine the composition (sediment and organic matter) of a few representative samples and then apply this percentage to the material removed across the entire City.

8.6 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 as part of the Stormwater Utility. At some point during the Phase 2 permit cycle, the City plans to track the number of trees planted and compute the corresponding pollutant removals using the expert panel guidance for the Urban Tree Canopy Expansion BMP.

8.7 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 permit. The Expert Panel Report has been revised numerous times and is slated for further revisions and approval. Because of this, the pollutant removal computation methodologies in the current version of the expert panel report may change prior to the completion of the Lucky Run, Strawberry Run, and Taylor Run projects, and therefore affect the anticipated pollutant removal rates projected for these projects that are currently in the design phase. Given that the required pollutant removals for this Phase 2 Action Plan are being achieved without inclusion of these projects that are currently in various stages of design, these projects are not included in the anticipated Phase 2 reductions to meet a cumulative 40%.

The Four Mile Run Stream Restoration project was substantially completed in the summer of 2016 and brought online in the PY4 reporting period. Additional details can be found in Section 8 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 SLAF grant in May 2017 for the Lucky Run Stream Restoration 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 will reestablish a stable pattern and profile in the stream as well as addressing areas of severe erosion near a sanitary line and nature trail. Currently, construction is anticipated to be completed in late summer/early fall of 2020 and by the end of the Phase 2 permit cycle. Table 11 presents the pollutant removals for the project based on the 2014 Stream Restoration Expert Panel Report using protocols 1 and 2. The City is currently considering performing a post construction BANCS assessment to determine if increased pollutant removal efficiencies are more representative of the post construction condition.

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 (1800

feet). These projects will 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 SLAF grants for these two projects. Table 11 presents the approximate pollutant removals using protocol 1.

Table 11: Urban Stream Restoration – Anticipated Pollutant Reductions

Project	TN Removed (lbs/yr)	TP Removed (lbs/yr)	TSS Removed (lbs/yr)	Approx. Cost
Lucky Run	658	257	489,818	\$1.7M
Strawberry Run	745	343	118,347	\$1.6M
Taylor Run	641	295	34,303	\$4.5M

8.8 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 as a means 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.

8.9 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 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 permit required NMPs. If additional NMPs are developed, they will be included in the City's annual report.

8.10 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.

8.11 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.

8.12 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 permits while working to implement the required reductions.

Likewise, urban stormwater pollutant reduction practices functioning beyond the pollutant reductions required in each MS4 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 allows for annual trading, and provide sediment credits for trading.

8.13 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 response to the 2017 CSO Law, the City and Alexandria Renew Enterprises (AlexRenew) developed a revised 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 of Alexandria and parts of Fairfax County. The LTCPU, now branded as “RiverRenew” proposes the construction of 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, 2025 per the 2017 CSO Law.

AlexRenew and the City of Alexandria are working together to leverage the WRRF to achieve CSO control requirements by the 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, and permitting of the CSO outfalls to comply with the 2017 CSO Law. Additionally, the Outfall Transfer Agreement outlined "Secondary Benefits" following the implementation of CSO controls with respect to the Chesapeake Bay TMDL.

As of July 1 2018, the City has transferred ownership of these outfalls to Alexandria Renew Enterprises (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 CSO controls are constructed and functional. 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 permit.

The LTCPU estimated capital costs are \$370 - \$555M, while infrastructure investments for compliance with the MS4 permit are estimated at \$100 - \$200M. Note that the same ratepayers in the City are being asked to fund the LTCPU capital costs to mitigate the CSO discharges 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, which bear sanitary sewer costs to implement the LTCPU as well as funding for the Stormwater Utility fee that was adopted to fund costly stormwater infrastructure retrofits to meet MS4 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).

9. 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 or is expected to be substantially completed by the end of the 2017-2018 permit year. Section 9.9 summarizes the pollutant reductions for the Phase 1 permit cycle.

9.1 Credits for 2006 – 2009 Unreported 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. The summary of the 2006 – 2009 BMP reductions for nitrogen, phosphorus and sediment are presented in Table 12.

Table 12: 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.

9.2 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 1, 2006 are included in the baseline existing conditions in the Bay Model and not given credit towards treatment. (Credit for BMPs installed on or after January 1, 2006 and before July 1, 2009 are discussed in Section 8.1.) 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 13 with pollutant reductions associated with BMPs installed between 2009 and June 30, 2014; and

- Table 14 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 C.

Please note that there was a summation error in the pollutant reduction table for the July 1, 2009 to June 30, 2014 BMPs (Attachment 1B) which was submitted to DEQ on December 14, 2015 and the values found in Table 13 have been updated.

Table 13: 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

¹Developer bears the cost of installation and long-term operation and maintenance for private facilities.

Table 14: Reductions Achieved for July 1, 2014 – June 30, 2019 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

¹Developer bears the cost of installation and long-term operation and maintenance for private facilities.

9.3 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.

Note that the project wasn't substantially complete until September 2018, so the associated reductions are not included in Table 20 but are included in Table 21 with the Phase 2 pollutant reductions. Table

15 provides a summary of acres treated, pollutant reductions, and costs for this retrofit project. The total cost of the project was \$4.5M.

Table 15: 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

¹Value 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.

9.4 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 16 presents the pollutant removal data for this regional facility. The Eisenhower Block 19 Pond was brought online in June 2015.

Table 16: 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

¹Developer 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.

9.5 Retrofits on City Properties

The City has completed several BMP retrofit projects on City properties. Table 17 presents the retrofits that have been implemented on City properties after June 30, 2009 and the related pollutant reductions.

Table 17: 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.

9.6 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 Four Mile Run main 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. 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 18 presents the reductions for each pollutant of concern and the approximate project cost. This project was brought online in July 2016.

Table 18: 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

¹Estimate from the total costs of multiple projects in one package; construction only.

9.7 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 19.

Table 19: Windmill Hill Living Shoreline Pollutant Reductions

TN (lbs/yr)	TP (lbs/yr)	TSS (lbs/yr)	Approximate City Cost¹
131.3	8.0	9,951	\$3.6M

¹Total cost of project; construction only.

9.8 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).

9.9 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 20: 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

¹Developer bears installation and long-term operation and maintenance costs for private facilities.

²Calculation 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)

³Was not included in Phase 1 Action Plan

⁴Values have changed from the Phase 1 Action Plan based on the as-built survey

10. Anticipated Phase 2 Reductions and Corresponding Costs

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 in this study 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 in order 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. With regard to 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.

The approximate cost to implement the potential means and methods to meet the total nitrogen, phosphorus and sediment reductions through FY2023 may range as high as \$50M and depends of the type and mix of technologies implemented, whereas total compliance may reach as high as \$100M. Table 5 presents the means and methods, the pounds of each pollutant of concern, percentage of the total L2 scoping targets and the estimated costs.

To meet these increased costs, the City has 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. 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.

Table 21 presents a summary of potential Phase 2 strategies and their potential pollutant reductions in pounds per year for the two projects that the City plans to install during the next permit cycle. Additional strategies may also be evaluated for implementation.

The anticipated pollutant reductions associated with the Ben Brenman Pond Retrofit have increased based on additional details regarding the design and routing additional untreated area to the pond. Note that this pond retrofit was included in the Phase 1 Action Plan for reference purposes only and the pollutant removals were not incorporated into the total pollutant removals documented in the Phase 1 Action Plan. The associated pollutant calculations can be found in the Ben Brenman Technical Memorandum found in Appendix B.

Table 21: Phase 2 Estimated Pollutant Reductions and Costs

Reduction Strategy	TN (lbs/yr)	TP (lbs/yr)	TSS (lbs/yr)	Estimated City Cost¹
Lake Cook Retrofit	1,587	163.3	131,334	\$4.5M
Ben Brenman Pond Retrofit	946.4	151.3	87,734	\$3.75M
Total	2,533.4	314.6	219,068	\$8.25M

¹Includes funds from SLAF grants

²Projects are in the design phase and part of the City's internal goal to achieve permit targets prior to the required end dates

Table 22 presents a summary of the expected progress at the end of the Phase 2 permit cycle once the potential strategies have been implemented. 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 will have substantial progress to meeting the 100% reduction goals.

Table 22: Phase 2 Expected Progress

Pollutant of Concern	City Phase 1 Reductions (lb/yr)	City Phase 2 Planned Reductions (lb/yr)	L2 Total Required Reductions (lb/yr)	Percent of L2 Total Required Reductions Met
TN	2,689.8	2,533.4	7,597.0	69%
TP	402.4	314.6	1,004.4	71%
TSS	361,990	219,068	861,937	67%

11. Public Comment

The 2018-2023 MS4 General Permit states that the permittee must provide an opportunity for public comment on the additional BMPs proposed in the Phase 2 Action Plan to meet the reductions not previously approved by DEQ in the Phase 1 Action Plan for no less than 15 days. The Phase 2 Chesapeake Bay TMDL Action Plan was put on the City's website on July 16, 2019 for public review and comment. The comment period remained open until August 15, 2019 or for 30 calendar days. An eNews announcement was sent out on July 18, 2019 inviting public comment on the Draft Action Plan. In addition, notices were published in both the Alexandria Gazette and Alexandria Times on July 19th and July 25th, respectfully. No public meetings were held; however, the Action Plan was presented to the City's Environmental Policy Commission on September 23, 2019.

The City received 1 comment, which is summarized below:

1. AlexRenew proposed various updates to the text for Section 8.13 Bilateral Trading.

Based on these comments, the City made the following update to the Phase 2 Action Plan:

2. Updated Section 8.13 Bilateral Trading to incorporate the updated text from AlexRenew.

12. 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 from EPA Regional Administrators to Acting Assistant Administrator for the Office of Water, Integrated Municipal Stormwater and Wastewater Planning Approach Framework

Appendix A

Future Grandfathered Projects

Future Grandfathered Projects		
Project Name	Address	Approx. Project Site Area (ac)
Potomac Yard Landbay G - Block D (Institute for Defense Analyses at Potomac Yard)	DSP2012-00008	19.08
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
Eisenhower Block 20	DSP2015-00008 (DSUP2007-00017)	2.81
	Total	41.71

Appendix B

Ben Brenman Technical Memorandum



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 existing 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 of 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.

<i>Design Deficiency</i>	<i>Downward Modification</i>
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

²Lower 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 C

July 1, 2009 to June 30, 2014 BMP Calculation Table

July 1, 2014 to June 30, 2018 BMP Calculation Table

City of Alexandria
July 1, 2009 - June 30, 2014 BMPs

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
1995-0021 01	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	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 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	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	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	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	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 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 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 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 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 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 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 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 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	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	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	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	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	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	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 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	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

City of Alexandria July 1, 2009 - June 30, 2014 BMPs

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
2002-0044 08	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 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	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	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
2003-0013 02	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	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	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 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 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 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	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 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	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	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	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	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	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 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 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	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	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	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	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	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	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

City of Alexandria
July 1, 2009 - June 30, 2014 BMPs

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
2005-0013 03	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	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	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	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	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	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	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	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
2005-0038 05	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	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	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	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	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	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	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	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	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 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 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	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	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	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	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	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	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

City of Alexandria July 1, 2009 - June 30, 2014 BMPs

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
2006-0031 03	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	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	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 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	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	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	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	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	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	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	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	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
2007-0024 PLT 01	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	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	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	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	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		Oil / Grit Separator	12/28/2009	0.1	0.1	0.16	1.69	117							Chesapeake Bay Program
2007-0030 01	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	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 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 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 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 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

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2007-0037 05	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 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	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	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	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	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	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	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	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	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	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 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 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 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/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
2008-0035 PLT 02	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	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	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	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	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	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 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	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

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2009-0008 02	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	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	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 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 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 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 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 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 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 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 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 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	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	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	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	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	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	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	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	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	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
2010-0005 09	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 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 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	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	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

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2010-0009 03	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	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	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	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	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	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	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	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	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	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	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	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	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 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	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	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	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	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 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 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 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 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 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 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	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 06	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

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2011-0015 07	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	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	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	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 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	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	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	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 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	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	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	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 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	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	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	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	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	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	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	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 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	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	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	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 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

City of Alexandria July 1, 2009 - June 30, 2014 BMPs

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
2012-0383 PRJ 02	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				230.73	165.19	294.48	3,445	205,012	Totals			117.86	610.86	125,640.17	

City of Alexandria July 1, 2014 - June 30, 2018 BMPs

BMP ID	Reporting PY	Chesapeake Bay Program BMP Type	BMP Name (Full)	Efficiency Method	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]
2012-0011 01	2014/2015	Infiltration Practices w/o Sand, Veg.	Infiltration System	Chesapeake Bay Program	9/1/2015	2.84	2.25	3.89	43.88	2,739	85%	80%	95%	3.30	35.10	2602.23
2012-0011 02	2014/2015	Infiltration Practices w/o Sand, Veg.	Infiltration System	Chesapeake Bay Program	9/1/2015	0.83	0.66	1.14	12.84	803	85%	80%	95%	0.97	10.27	762.81
2012-0011 03	2014/2015	Bioretention C/D soils, underdrain	Bioretention Filter	Chesapeake Bay Program	9/1/2015	0.85	0.48	0.93	11.82	627	45%	25%	55%	0.42	2.95	345.00
2012-0011 04	2014/2015	Already included in aggregate method for determining increase in impervious areas	Cistern		9/1/2015	2.1	1.73	2.95	32.89	2,091						
2012-0011 05	2014/2015	Dry Detention Ponds and Hydrodynamic Structures	CDS® Stormwater Treatment System	VA BMP Clearinghouse - MTD	9/1/2015	2.1	1.73	2.95	32.89	2,091	20%	13%	50%	0.59	4.19	1045.71
2012-0011 06	2014/2015	Dry Detention Ponds and Hydrodynamic Structures	CDS® Stormwater Treatment System	VA BMP Clearinghouse - MTD	9/1/2015	0.38	0.32	0.54	6.00	385	20%	13%	50%	0.11	0.76	192.69
2010-0023 01	2014/2015	Filtering Practices	StormFilter™ Stormwater Treatment System	VA BMP Clearinghouse - MTD	1/2/2015	0.8539	0.8539	1.38	14.40	1,000	45%	29%	80%	0.62	4.12	800.15
2004-0005 01	2014/2015	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	VA BMP Clearinghouse - MTD	1/21/2015	2.13	0.9	1.96	27.56	1,270	20%	13%	50%	0.39	3.51	635.21
2004-0005 02	2014/2015	Dry Detention Ponds and Hydrodynamic Structures	Aqua-Swirl® Stormwater Hydrodynamic Separator	VA BMP Clearinghouse - MTD	1/21/2015	1.4	0.56	1.25	17.90	804	20%	13%	50%	0.25	2.28	401.81
2010-0028 01	2014/2015	Filtering Practices	Dry Vault Sand Filter	Chesapeake Bay Program	1/28/2015	2.23	2.2	3.58	37.39	2,582	60%	40%	80%	2.15	14.96	2065.74
2014-0101 01	2014/2015	Bioretention C/D soils, underdrain	Tree Box Filter	Chesapeake Bay Program	7/7/2014	0.17	0.11	0.20	2.46	139	45%	25%	55%	0.09	0.61	76.67
2014-0101 02	2014/2015	Bioretention C/D soils, underdrain	Tree Box Filter	Chesapeake Bay Program	7/7/2014	0.16	0.12	0.21	2.43	148	45%	25%	55%	0.09	0.61	81.17
2014-0101 03	2014/2015	Bioretention C/D soils, underdrain	Tree Box Filter	Chesapeake Bay Program	7/7/2014	0.16	0.08	0.16	2.15	108	45%	25%	55%	0.07	0.54	59.27
2014-0101 04	2014/2015	Bioretention C/D soils, underdrain	Tree Box Filter	Chesapeake Bay Program	7/7/2014	0.18	0.12	0.22	2.63	151	45%	25%	55%	0.10	0.66	83.11
2014-0101 05	2014/2015	Bioretention C/D soils, underdrain	Tree Box Filter	Chesapeake Bay Program	7/7/2014	0.19	0.11	0.21	2.66	143	45%	25%	55%	0.09	0.67	78.60
2014-0101 06	2014/2015	Bioretention C/D soils, underdrain	Tree Box Filter	Chesapeake Bay Program	7/7/2014	0.15	0.13	0.22	2.39	156	45%	25%	55%	0.10	0.60	85.68
2014-0101 07	2014/2015	Bioretention C/D soils, underdrain	Tree Box Filter	Chesapeake Bay Program	7/7/2014	0.18	0.14	0.24	2.76	171	45%	25%	55%	0.11	0.69	94.06
2012-0001 01	2014/2015	Filtering Practices	StormFilter™ Stormwater Treatment System	VA BMP Clearinghouse - MTD	9/19/2014	1.555	1.269	2.17	24.28	1,537	45%	29%	80%	0.98	6.95	1229.35
2011-0022 01	2014/2015	Filtering Practices	StormFilter™ Stormwater Treatment System	VA BMP Clearinghouse - MTD	9/19/2014	1.868	1.548	2.64	29.32	1,869	45%	29%	80%	1.19	8.40	1495.57
2003-0007 01	2014/2015	Dry Detention Ponds and Hydrodynamic Structures	CDS® Stormwater Treatment System	VA BMP Clearinghouse - MTD	2/19/2015	1.6	0.4	1.14	18.83	679	20%	13%	50%	0.23	2.40	339.74
2010-0012	2015/2016	Wet Ponds and Wetlands	Wet Pond	Chesapeake Bay Program	6/30/2015	18.84	15.1	26.00	292.25	18,344	45%	20%	60%	11.70	58.45	11006.65
2011-0030 01	2015/2016	Filtering Practices	StormFilter™ Stormwater Treatment System	VA BMP Clearinghouse - MTD	8/3/2015	3.94	3.58	5.95	63.98	4,257	45%	29%	80%	2.68	18.33	3405.29
2012-0010	2015/2016	Dry Detention Ponds & Hydrodynamic Structures	CDS® Stormwater Treatment System	VA BMP Clearinghouse - MTD	2/24/2016	1.56	1.56	2.53	26.30	1,827	20%	13%	50%	0.51	3.35	913.63
2012-0022 01	2015/2016	Filtering Practices	StormFilter™ Stormwater Treatment System	VA BMP Clearinghouse - MTD	7/27/2015	1.48	0.79	1.56	20.27	1,047	45%	29%	80%	0.70	5.81	837.32
2012-0028	2015/2016	Wet Pond	Wet Pond	Chesapeake Bay Program	6/30/2015	67.1	53.68	92.46	1040.18	65,236						
2013-0005 01	2015/2016	Filtering Practices	StormFilter™ Stormwater Treatment System	VA BMP Clearinghouse - MTD	8/3/2015	0.83	0.73	1.22	13.31	873	45%	29%	80%	0.55	3.81	698.11
2013-0010 01	2015/2016	Dry Detention Ponds & Hydrodynamic Structures	CDS® Stormwater Treatment System	VA BMP Clearinghouse - MTD	6/14/2016	0.2	0.16	0.28	3.10	194	20%	13%	50%	0.06	0.39	97.22

City of Alexandria July 1, 2014 - June 30, 2018 BMPs

BMP ID	Reporting PY	Chesapeake Bay Program BMP Type	BMP Name (Full)	Efficiency Method	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]
2011-0014 01	2016/2017	Dry Detention Ponds & Hydrodynamic Structures	StormChamber Stormwater Treatment System	VA BMP Clearinghouse - MTD	8/8/2016											
2011-0014 02	2016/2017	Filtering Practices	Flow Thru Planter Box	Chesapeake Bay Program	8/8/2016	0.0091	0.0091	0.01	0.15	11	60%	40%	80%	0.01	0.06	8.53
2011-0014 03	2016/2017	Filtering Practices	Flow Thru Planter Box	Chesapeake Bay Program	8/8/2016	0.0091	0.0091	0.01	0.15	11	60%	40%	80%	0.01	0.06	8.53
2011-0014 04	2016/2017	Filtering Practices	Flow Thru Planter Box	Chesapeake Bay Program	8/8/2016	0.0091	0.0091	0.01	0.15	11	60%	40%	80%	0.01	0.06	8.53
2011-0014 05	2016/2017	Filtering Practices	Flow Thru Planter Box	Chesapeake Bay Program	8/8/2016	0.0091	0.0091	0.01	0.15	11	60%	40%	80%	0.01	0.06	8.53
2011-0014 06	2016/2017	Filtering Practices	Flow Thru Planter Box	Chesapeake Bay Program	8/8/2016	0.0091	0.0091	0.01	0.15	11	60%	40%	80%	0.01	0.06	8.53
2011-0014 07	2016/2017	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	Chesapeake Bay Program	8/8/2016	0.012	0.012	0.02	0.20	14	20%	10%	55%	0.00	0.02	7.73
2011-0014 08	2016/2017	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	Chesapeake Bay Program	8/8/2016	0.01	0.01	0.02	0.17	12	20%	10%	55%	0.00	0.02	6.44
2011-0028 01	2016/2017	Filtering Practices	StormFilter™ Stormwater Treatment System	VA BMP Clearinghouse - MTD	10/24/2016	0.55	0.44	0.76	8.53	535	45%	29%	80%	0.34	2.44	427.78
2012-0030 01	2016/2017	Dry Detention Ponds & Hydrodynamic Structures	CDS® Stormwater Treatment System	VA BMP Clearinghouse - MTD	11/8/2016	0.56	0.5	0.83	9.03	596	20%	13%	50%	0.17	1.15	298.10
2013-0019 02	2016/2017	Filtering Practices	StormFilter™ Stormwater Treatment System	VA BMP Clearinghouse - MTD	10/20/2016	1.09	0.58	1.15	14.91	769	45%	29%	80%	0.52	4.27	615.22
2016-0102 01 DPI	2016/2017	Bioretention C/D soils, underdrain	Bioretention Filter	Chesapeake Bay Program	12/2/2016	0.63	0.46	0.81	9.47	569	45%	25%	55%	0.37	2.37	312.78
2016-0103 01 DPI	2016/2017	Stream Restoration Urban	Stream Restoration FP Reconnection	NA	7/2/2016											
2017-0101 01 DPI	2016/2017	Bioretention C/D soils, underdrain	Bioretention Filter	Chesapeake Bay Program	4/18/2017	0.5	0.1	0.33	5.71	187	45%	25%	55%	0.15	1.43	103.10
2017-0102 01 DPI	2016/2017	Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	Permeable Pavement	Chesapeake Bay Program	8/12/2016	0.05	0.05	0.08	0.84	59	20%	10%	55%	0.02	0.08	32.21
2014-0004 02	2017/2018		CDS® Stormwater Treatment System	VA BMP Clearinghouse - MTD	4/20/2018	2.08	1.78	3.01	33.03	2,138	20%	13%	50%	0.60	4.20	1068.84
2014-0011 01	2017/2018		Bioretention 2	VA BMP Clearinghouse	3/7/2018	0.11	0.06	0.12	1.52	79	90%	90%	0%	0.11	1.36	0.00
2014-0011 02	2017/2018		Bioretention 2	VA BMP Clearinghouse	3/7/2018	0.44	0.10	0.30	5.11	177	90%	90%	0%	0.27	4.60	0.00
2014-0011 03	2017/2018		Bioretention 1	VA BMP Clearinghouse	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00
2014-0011 04	2017/2018		Bioretention 1	VA BMP Clearinghouse	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00
2014-0011 05	2017/2018		Bioretention 1	VA BMP Clearinghouse	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00
2014-0011 06	2017/2018		Bioretention 1	VA BMP Clearinghouse	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00
2014-0011 07	2017/2018		Bioretention 1	VA BMP Clearinghouse	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00
2014-0011 08	2017/2018		Bioretention 1	VA BMP Clearinghouse	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00
2014-0011 09	2017/2018		Bioretention 1	VA BMP Clearinghouse	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00
2014-0011 10	2017/2018		Bioretention 1	VA BMP Clearinghouse	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00

City of Alexandria July 1, 2014 - June 30, 2018 BMPs

BMP ID	Reporting PY	Chesapeake Bay Program BMP Type	BMP Name (Full)	Efficiency Method	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]
2014-0011 11	2017/2018		Bioretention 1	VA BMP Clearinghouse	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00
2014-0011 12	2017/2018		Permeable Pavement 1	VA BMP Clearinghouse	3/7/2018	0.01	0.01	0.02	0.17	12	59%	59%	0%	0.01	0.10	0.00
2014-0011 13	2017/2018		Permeable Pavement 1	VA BMP Clearinghouse	3/7/2018	0.01	0.01	0.02	0.17	12	59%	59%	0%	0.01	0.10	0.00
2014-0011 14	2017/2018		Permeable Pavement 1	VA BMP Clearinghouse	3/7/2018	0.01	0.01	0.02	0.17	12	59%	59%	0%	0.01	0.10	0.00
2014-0011 15	2017/2018		Permeable Pavement 1	VA BMP Clearinghouse	3/7/2018	0.05	0.05	0.07	0.76	53	59%	59%	0%	0.04	0.45	0.00
2014-0011 16	2017/2018		Permeable Pavement 1	VA BMP Clearinghouse	3/7/2018	0.05	0.05	0.07	0.76	53	59%	59%	0%	0.04	0.45	0.00
2014-0011 17	2017/2018		Permeable Pavement 1	VA BMP Clearinghouse	3/7/2018	0.05	0.05	0.08	0.84	59	59%	59%	0%	0.05	0.50	0.00
2014-0011 18	2017/2018		Permeable Pavement 1	VA BMP Clearinghouse	3/7/2018	0.05	0.05	0.08	0.84	59	59%	59%	0%	0.05	0.50	0.00
2014-0011 19	2017/2018		Permeable Pavement 1	VA BMP Clearinghouse	3/7/2018	0.05	0.05	0.08	0.84	59	59%	59%	0%	0.05	0.50	0.00
2014-0011 20	2017/2018		Bioretention 1	VA BMP Clearinghouse	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00
2014-0011 21	2017/2018		Bioretention 1	VA BMP Clearinghouse	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00
2014-0011 22	2017/2018		Bioretention 1	VA BMP Clearinghouse	3/7/2018	0.04	0.04	0.07	0.71	49	55%	64%	0%	0.04	0.45	0.00
2014-0026 02	2017/2018		Urban Bioretention	VA BMP Clearinghouse	5/11/2018	0.08	0.08	0.13	1.35	94	55%	64%	0%	0.07	0.86	0.00
2014-0046 01	2017/2018		Bioretention 2	VA BMP Clearinghouse	1/24/2018	0.27	0.22	0.38	4.21	266	90%	90%	0%	0.34	3.79	0.00
2014-0046 02	2017/2018		Bioretention 2	VA BMP Clearinghouse	1/24/2018	0.35	0.30	0.51	5.56	360	90%	90%	0%	0.46	5.01	0.00
2014-0046 03	2017/2018		JellyFish Filter	VA BMP Clearinghouse - MTD	1/24/2018	0.22	0.19	0.32	3.51	228	50%	32%	0%	0.16	1.12	0.00
2014-0046 04	2017/2018		JellyFish Filter	VA BMP Clearinghouse - MTD	1/24/2018	0.43	0.43	0.70	7.25	504	50%	32%	0%	0.35	2.31	0.00
2015-0002 02	2017/2018		CDS® Stormwater Treatment System	VA BMP Clearinghouse - MTD	5/10/2018	1.29	1.10	1.86	20.46	1,322	20%	13%	50%	0.37	2.60	660.93
2015-0005 02	2017/2018		JellyFish Filter	VA BMP Clearinghouse - MTD	9/18/2017	0.42	0.42	0.68	7.08	492	50%	32%	0%	0.34	2.25	0.00
2015-0020 01	2017/2018		StormFilter™ Stormwater Treatment System, Phosphosorb	VA BMP Clearinghouse - MTD	9/25/2017	2.34	1.85	3.20	36.13	2,253	50%	32%	0%	1.60	11.50	0.00
2015-0020 02	2017/2018		Urban Bioretention	VA BMP Clearinghouse	9/25/2017	0.41	0.30	0.53	6.17	371	55%	64%	0%	0.29	3.95	0.00
2016-0023 01	2017/2018		BayFilter™ Stormwater Filtration System	VA BMP Clearinghouse - MTD	10/17/2017	1.74	1.67	2.73	28.86	1,968	50%	32%	80%	1.37	9.19	1574.73
2018-0101 01 DPI	2017/2018	Already broken out an included in Phase 1 BMPs	Urban Shoreline Vegetated	Chesapeake Bay Program	6/30/2018											
Totals						130.28	102.78	177.78	2,009.80	125,224.88				36.68	263.36	34,583.31

Appendix D

DEQ Correspondence and Action Plan Approval

DEQ Additional Data Request 11/30/2015

City Response to Additional Data Request 12/14/2015

DEQ Provisionally Approval Letter and Data Request 12/29/2015

City Response to Provisionally Approved Letter 1/7/2016

DEQ Action Plan Approval Letter 1/12/2016

City Response to Approval Letter 2/11/2016

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 900m² 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**

**P.O. Box 178 - City Hall
Alexandria, Virginia 22313
703-746-4025
www.alexandriava.gov**

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 900m² 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 $RD = (1.81 \text{ ac-ft.})(12) / 53.68 \text{ Ia}$, 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 acres)
- 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
<i>Total Required Reductions (3 permit cycles)</i>	<i>7,597.00</i>	<i>100%</i>	<i>1,004.40</i>	<i>100%</i>	<i>861,936.64</i>	<i>100%</i>

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

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

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

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.

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

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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

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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

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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

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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

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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

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.

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.

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. Req'd. 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 - 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 - 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

www.deq.virginia.gov

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,

A handwritten signature in dark ink, reading "Allan Brockenbrough II" with a stylized flourish at the end.

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@deg.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 900m² 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.

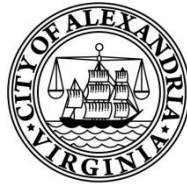
11. **Grandfathered Projects** – Please provide the list of grandfathered projects summarized in Table 8. Also, please provide the same information as requested in comment 3 for the BMPs that were included in Table 8.
12. **Public Comment Period** – This process should have been completed prior to the 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**

**P.O. Box 178 - City Hall
Alexandria, Virginia 22313
703-746-4025
www.alexandriava.gov**

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 is attached 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.

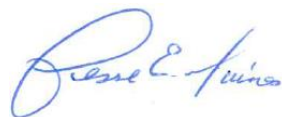
Reduction Strategies	N (lbs)	100% Goal²	P (lbs)	100% Goal²	TSS (lbs/yr)	100% Goal²
2006-2009 BMPs	1305.10	17.2	158.00	15.48	150,452.00	8.69
Post-2009 BMPs	110.24	1.5	14.88	4.44	17,051.59	4.59
Regional Facilities – Lake Cook	1586.97	20.9	163.25	15.79	131,334.00	15.2
Regional Facilities – Pond 19	168.90	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
<i>Total Required Reductions (3 permit cycles)</i>	<i>7,597.00</i>	<i>100%</i>	<i>1,004.40</i>	<i>100%</i>	<i>861,936.64</i>	<i>100%</i>

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

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

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%

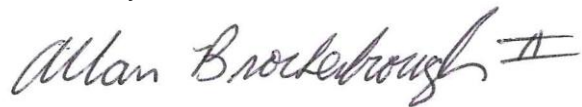
The Chesapeake Bay TMDL Action Plan is hereby approved and is an enforceable part of the MS4 Program Plan. The approved action plan is based on the 2000 Urbanized Area as designated by the U.S. Census Bureau; and reductions were calculated based on land use data from 2009. Please note that additional 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,

A handwritten signature in dark ink, reading "Allan Brockenbrough II". The signature is fluid and cursive, with a stylized "II" at the end.

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
www.alexandriava.gov**

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

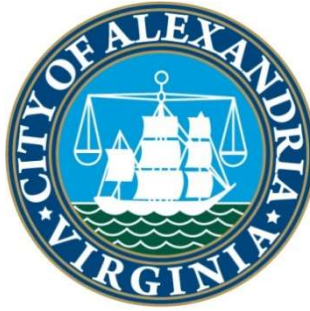
Grandfathered Projects

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
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*Negative values indicate a pollutant credit



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**

Prepared by:

City of Alexandria, Virginia
Department of Transportation and Environmental Services
Stormwater Management Division

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1. Introduction

The 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 of Alexandria (City) from the Virginia Department of Environmental Quality (VDEQ) effective November 1, 2018 (2018 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. 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, 2013, no later than 18-months after the permit effective date. This action plan was first developed and submitted by the City in 2015 in response to the Special Conditions included in the City's General VPDES MS4 Permit, effective July 1, 2013 (2013 MS4 permit). 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 most recently updated June 30, 2016 and is found as an appendix to the most recent *MS4 Program Plan* (2019). 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. In accordance with Table 1 in the 2013 MS4 permit, the City was required to develop this *Bacteria TMDL Action Plan* 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. This action plan was developed initially based on the requirements in the 2013 MS4 permit, as well as the local TMDL Guidance memo dated issued by 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*.

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
<p><i>Fecal Coliform TMDL Development for Four Mile Run, Virginia (Non-Tidal)</i></p> <ul style="list-style-type: none"> • Bacteria – fecal coliform • First listed – 1998 • EPA approval – 5/31/2002 • SWCB approval – 6/17/2004
<p><i>Bacteria TMDL for the Tidal Four Mile Run Watershed</i></p> <ul style="list-style-type: none"> • Bacteria – <i>E. coli</i> • First listed – 1996 • EPA approval – 6/14/2010 • SWCB approval – 9/30/2010
<p><i>Bacteria TMDLs for the Hunting Creek, Cameron Run, and Holmes Run Watersheds</i></p> <ul style="list-style-type: none"> • Bacteria – <i>E. coli</i> • 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 identified during the 2013 – 2018 MS4 permit cycle and continue to be implemented during the 2018 – 2023 MS4 permit cycle. New or modified requirements will be considered and incorporated, as applicable.

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 its 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 *2019 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* (NVRRC, 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 to the City, however, the non-tidal section of Four Mile Run being included in this action plan is part of the City's ongoing proactive approach to protecting water resources. 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. 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, this stream segment is listed as impaired in the *Final 2018 305(b)/303(d) Water Quality Assessment Integrated Report*.

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

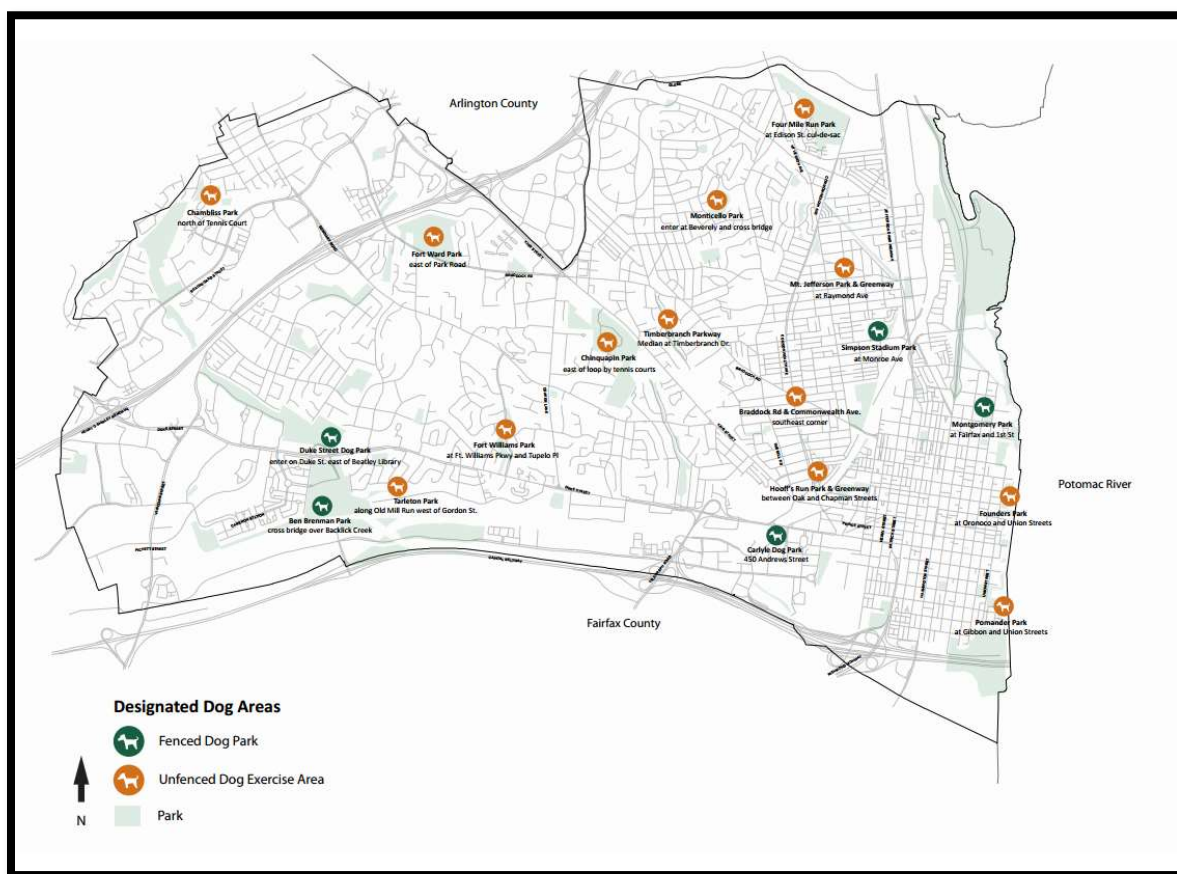
Potential contributors to the bacterial impairments, as documented in the TMDL reports, include wildlife (deer, raccoon, muskrat, beaver, and waterfowl), canine, human, and other. In April 2017, the Virginia General Assembly passed a new law requiring the remediation of the City's combined sewer outfalls by July 1, 2025. In partnership with Alexandria Renew Enterprises, the City submitted a Long Term Control Plan to VDEQ in 2018 which calls for the construction of a system of underground tunnels to convey combined sewage to the wastewater treatment facility.

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, Controls, and Design

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 *2019 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.

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. Education and Outreach

An enhancement to the MS4 Public Education and Outreach Plan that increased efforts and created more measurable goals and specifically identified “Bacteria from Pet Waste” as one of the top three high-priority water quality issues is included in the *2019 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, and the current 2018 – 2023 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.

Milestones, Measurable Goals and Assessment Methods

Education and outreach messaging use various forms of media and message delivery, while pet waste stations make it more convenient for dog owners to perform this task. 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.

The effectiveness of the City’s education and outreach efforts 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. The City also will perform a survey at the annual Earth Day celebration and/or send out a survey via *eNews* to gauge possible changed behavior due to the City’s local efforts. Results will be provided in each annual report for the corresponding permit term.

c. 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 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.

d. 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 2018 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. In February 2020, the City launched “Alex311” customer service initiative, replacing the City’s *Call.Click.Connect*. Alex311 services included new web, mobile app, social media, and phone options to submit requests for service or information. Similar to the previous, *Call.Click.Connect* system, Alex311 can 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 *2019 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.

e. 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. 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 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 (formerly, *Call.Click.Connect*) 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 City-wide Phase III Stream Assessment and identified three streams for restoration: Lucky Run, Strawberry Run, and Taylor Run. The City received SLAF grant funding to support these stream restorations totaling 3,750 linear feet.
- 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.

b. 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.

c. Schedule

The 2018 MS4 permit, Part II. B. 3. h., identifies the requirement to incorporate a schedule of anticipated actions planned for implementation during the permit term (2018 – 2023). The best management practices described in this action plan have been and are currently being implemented.

The *2019 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. These strategies are reported on annually in the MS4 report.

9. References

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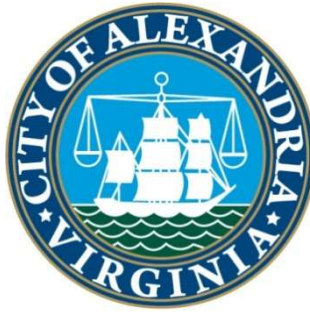
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City of Alexandria, Virginia

**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
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Prepared by:

City of Alexandria, Virginia
Department of Transportation and Environmental Services
Infrastructure and Environmental Quality

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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, 2018 (2018 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, 2013, no later than 18-months after the permit effective date.

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). 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) and incorporates any new information required under the 2018 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 updates the previously submitted plan and includes 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. 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.

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, and 2018 – 2023 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

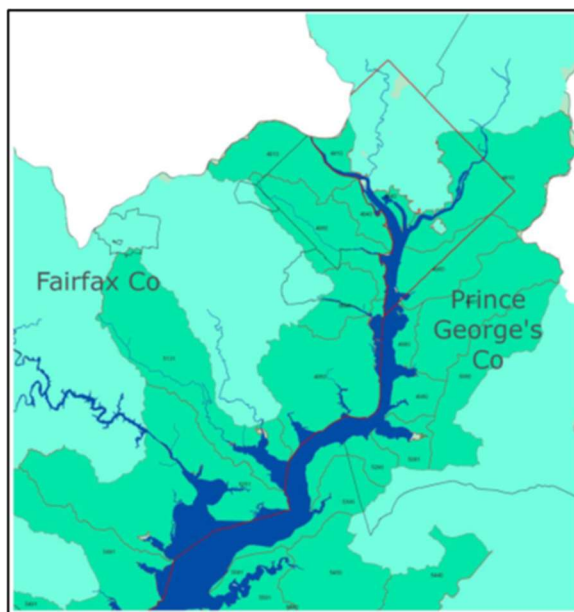


Figure 1. Direct Drain Watershed Segments in Upper Basin (ICPRB, 2007)

location of direct drain watersheds in green which were used to calculate the WLA for MS4 permits.

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.

NPDES 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;
- Implementation of the erosion and sediment control program; and
- Enhanced education and outreach, and employee training.

a. 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 disposed 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. As part of this action plan and per the Special Condition requirements in the 2013 – 2018 MS4 general permit, 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. According to the 2013 – 2018 MS4 general permit, 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).

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.

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 developed during the 2017 – 2018 MS4 program year, as required by the last two MS4 Permits. 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 normal 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 a local E&SC program and Virginia Stormwater Management Program (VSMP). 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 operates a local VSMP effective July 1, 2014. Inspections related to E&SC and VSMP 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 E&SC and VSMP 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 online at alexandriava.gov/52652.

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 or 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

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 E&SC program and VSMP 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

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