

# CITY OF FREDERICKSBURG

## FY2016 Annual Report

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VSMP Phase II (MS4) Program

**Permit No. VAR040058**

**July 2015 – June 2016**



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**Background Information**

Program Name: City of Fredericksburg – Municipal Separate Storm Sewer System

Permit Number: VAR 040058

**MS4 Contacts:**

Below named are the lead person(s) responsible for the implementation of the terms and conditions of the permit:

Kevin W. Utt – Stormwater Administrator, Community Planning & Building Department

John M. Saunders, P.E. – Senior Environmental Planner, Community Planning & Building Department

These responsible persons can be reached at the Community Planning & Building Department at City Hall, 715 Princess Anne Street, Fredericksburg, VA 22404, telephone (540) 372-1179, fax (540) 372-6412.

Annual Report Permit Year: FY2016, July 1, 2015 – June 30, 2016 (Year 3 of MS4 implementation, permit cycle 3)

Modifications to roles and responsibilities: None

Number of new MS4 outfalls and associated acreage by HUC added during the permit year:  
None reported at this time.



### **Compliance with State Permit Conditions**

The status of compliance with state permit conditions, an assessment of the appropriateness of the identified best management practices, and progress towards achieving the identified measurable goals for each of the minimum control measures are provided in this Annual Report.

The City of Fredericksburg (the "City") is currently compliant with the MS4 permit. The BMPs identified in the City's Annual Report are intended to address discharges to all waters in the MS4 area and are effectively addressing discharges to impaired waters. Following an annual review, target audiences and strategies were reviews and determined to be appropriate for future outreach efforts. As required under the provisions of 9VAC 25-890-40 the MS4 Program Plan is updated to include the following addition plans: **Appendix A, Local Bacteria TMDL Action Plan for the Tidal Freshwater Rappahannock River Watershed.**

### **Compliance with Table 1 Schedule (MS4 Program Plan Updates)**

The following is a summary of the City's Actions to comply with the requirements of the 2013 MS4 General Permit. The information provided in this section outlines the actions that the City has taken to update the City's MS4 Program Plan according to the schedule contained in Table 1 of the General Permit. Appendix A of the Annual report contains each of the detailed plans summarized below.

#### **Other TMDL Action Plans for applicable TMDLs approved between July 2008 and June 2013**

The City has developed a Local Bacteria TMDL Action Plan for the Tidal Freshwater Rappahannock River Watershed.

### **Compliance with TMDL Requirements**

#### **Special conditions for approved total maximum daily loads (TMDL) other than the Chesapeake Bay TMDL:**

Table 1 Scheduled Submissions:

- 24 months after permit coverage, TMDLs approved before July 2008  
*Not applicable to the City of Fredericksburg*
- 36 months after permit coverage, TMDLs approved between July 2008 and June 2013  
*The City has developed a Local Bacteria TMDL Action Plan for the Tidal Freshwater Rappahannock River Watershed as noted above.*

#### **Special conditions for the Chesapeake Bay TMDL:**

Table 1 Scheduled Submissions:

- 24 months after permit coverage, Chesapeake Bay TMDL Action Plan  
Chesapeake Bay TMDL Action Plan to be developed within 24 months of permit coverage  
*The City's TMDL Action Plan was submitted in conjunction with the FY2015 MS4 Annual Report.*

Reapplication Submissions:

- As part of the reapplication package of the general permit, Draft Second Phase Chesapeake Bay TMDL Action Plan  
*A draft Second Phase Chesapeake Bay TMDL Action Plan is to be developed within 90 days of the end of the current permit cycle as part of the reapplication package.*

The City of Fredericksburg is relying on street sweeping as its primary Means and Methods to achieve compliance in the TP, TN, and TSS target reduction for this permit cycle (5.0%). For more information refer to the City of Fredericksburg Chesapeake Bay TMDL Action Plan.

**MINIMUM CONTROL MEASURE 1 – Public Education and Outreach on Stormwater Impacts**

The City of Fredericksburg implements a public education and outreach plan to distribute educational materials to the community or conduct equivalent outreach activities about the impacts of stormwater discharges on water bodies and the steps that the public can take to reduce pollutants in stormwater runoff.

**BMP 1(A) – Develop Strategies to Target Local Groups**

*Investigate strategies towards education and outreach of local groups of commercial, industrial and institutional entities likely to have positive stormwater management and pollution prevention impact.*

**Compliance with Permit Conditions**

The City plans to perform these investigations in years one, two, and four of the permit cycle and will distribute educational materials as appropriate based on these investigations.

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

Targeting of local groups that are likely to influence better stormwater management and pollution prevention practices is an appropriate mechanism to make sure educational materials reach the right audience to have a positive impact. The City will continue to investigate potential partners to educate the public.

**BMP 1(B) – Distribute Printed Media at Public Facilities and Make Available Electronically**

*Provide distribution points for stormwater management, water quality, and stormwater pollution prevention educational materials in printed form and electronically.*

**Compliance with Permit Conditions**

The City publishes an annual Water Quality Report on its website. While the Water Quality Report is aimed at drinking water, the report also has information on water conservation and stormwater runoff. The report has contact information for reporting violations and information on the NPDES program. Printed materials are also available at City Hall, Dorothy Hart Parks and Recreation facility, and shared and distributed through the Friends of the Rappahannock.

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

Providing printed media at select distribution points is an effective measure to target specific groups and provide them with tangible information to educate them about water quality and stormwater pollution prevention. The City will continue to provide educational materials at designated distribution points.

**BMP 1(C) – Provide Internet Access and Download Capability on SWM and Stormwater P2 Materials**

*Provide education and information to Citizens on stormwater management (SWM), water quality, and stormwater pollution prevention (P2) via the Internet and provide those materials in easily reproducible electronic format.*

**Compliance with Permit Conditions**

The City's website is up to date and will be reviewed again during next year's permit cycles for any necessary updates on stormwater management and stormwater pollution prevention materials. The websites for stormwater management, pollution prevention, and environmental outreach and education received a total of 1164 views for this reporting period.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Making stormwater management and stormwater pollution prevention materials available online electronically is an appropriate mechanism to make sure that educational materials can be easily searched, found, and disseminated to a wide audience rapidly. The City will continue to enhance the appropriate web pages and materials to provide education and awareness to potential internet users.

BMP 1(D) – Stormwater Pollution Prevention Hotline

*Maintain and operate a stormwater pollution prevention hotline to process citizen complaints and concerns related to stormwater management, water quality, and stormwater pollution prevention.*

Compliance with Permit Conditions

The City maintains contact information on the “Environmental” homepage:

<http://www.fredericksburgva.gov/index.aspx?nid=944> to report suspected illicit discharges and provide information on Chesapeake Bay and various stormwater related issues. Suspected stormwater pollution prevention is tracked and reported using the City’s IDDE procedures.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Maintaining a hotline on the City’s website is an effective method to provide citizens and concerned public with a means to notify the City of suspected discharges to the MS4 and make complaints about stormwater related issues. The City will continue to provide this hotline to make available all forms of communication to the Public.

BMP 1(E) – Identify 3 High Priority Water Quality Issues

*Provide for a targeted approach to developing a public education & outreach program that addresses the highest priority water quality issues in the City’s MS4.*

Compliance with Permit Conditions

Three High Priority Water Quality Issues were identified in the FY14 Annual Report:

- Cigarette Butt Campaign
- Pet Waste Campaign
- River Clean Up Campaign

A summary of this reporting period’s efforts is provided in **Appendix B, Three High Priority Water Quality Issues Program Data**.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Prioritizing three high priority water quality issues has a direct and visible impact on reducing sources of pollution to surface waters that have the potential to enter the storm sewer system. The City will continue to prioritize these water quality efforts to involve the Public and advance stormwater pollution prevention.

BMP 1(F) – Identify/Estimate Size of Target Audience(s) to Impact High Priority Water Quality Issues

*Identify the target audience(s) and estimate the population size of audience(s) most likely to have significant impacts for each of the 3 high priority water quality issues.*

Compliance with Permit Conditions

The target audiences and estimated populations were submitted as part of the FY14 annual report for the three high priority water quality issues noted above.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Targeting specific audiences to address the City's three high priority water quality issues is an effective method to implement the programs to address those issues. The City will continue to target these audiences to promote stormwater pollution prevention.

*BMP 1(G) – Develop Relevant Message(s) and Educational/Outreach Materials for Target Audiences*

Compliance with Permit Conditions

Relevant messages and educational and outreach materials have been prepared for target audiences.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Educational and outreach materials are an effective BMP to raise awareness and educate target audiences about water quality issues. The City will continue to distribute materials to these audiences to promote stormwater pollution prevention.

*BMP 1(H) – Provide for Public Participation during Public Education and Outreach Program Development*

Compliance with Permit Conditions

Clean & Green Commission meeting are held on the first Monday of every month and open to the public. Relevant public comments at these meetings are considered in the development of this Program.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Clean & Green Commission meeting minutes are an effective BMP to ensure that citizens with the most interest in the development of this Program can submit feedback. The City will continue to collect minutes from these meetings to ensure that public comments are considered in the Program development.

*BMP 1(I) – Conduct Education/Outreach Activities to Reach 20% of Target Audience*

*Conduct education and outreach activities designed to reach 20% of the population of each target audience. Adjust target audience(s), messages, educational materials, and delivery mechanisms as needed.*

Compliance with Permit Conditions

A flier was developed by the Clean & Green Commission to educate citizens on the pet waste and cigarette butt campaigns. The flier was distributed to 7950 customers as part of their water bill and reached 100% of the target audience. A copy of this flier is available in **Appendix B**.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Promotion of the pet waste and cigarette butt campaigns is an effective measure to achieve high water quality program goals and address specific pollutants. The City will continue to provide outreach to 100% of the target audience to promote participation in these programs.

*BMP 1(J) – Post Waterway Signage at Road Crossings*

*Post waterway signage at road crossings of major streams in the City to identify the streams and their hydrologic connection to the Chesapeake Bay.*

**Compliance with Permit Conditions**

This is an ongoing program to develop a list of potential locations and investigate the feasibility for posting the signs.

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

Roadway signage at road crossings over major streams in the City can promote awareness to travelers about proximity to streams and their connection to the Chesapeake Bay. The City will continue to explore the feasibility of posting roadway signage.

**MINIMUM CONTROL MEASURE 2 – Public Involvement/Participation**

**BMP 2(A) – Provide Copies of the City’s MS4 Program Plan**

*Provide hard copies of the City’s Revised 2013-2018 MS4 Program Plan at City Hall and electronically on the City’s website.*

**Compliance with Permit Conditions**

Hard copies of the Program Plan are available in the City’s Community Planning & Building Department upon request. The Program Plan is also available on the City’s MS4 Program website link:

<http://www.fredericksburgva.gov/index.aspx?nid=967>

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

Providing copies of the MS4 Program Plan is an effective way to disseminate Program details to the public and interested parties. The City will continue to provide copies of the Program Plan in hard copy form and on its website.

**BMP 2(B) – Provide Copies of the City’s MS4 Annual Reports**

*Provide hard copies of the City’s MS4 Annual Reports at City Hall and electronically on the City’s website.*

**Compliance with Permit Conditions**

Hard copies of the Annual Reports are available in the City’s Community Planning & Building Department upon request. The MS4 Annual Reports for the last five permit years are also available on the City’s Stormwater Management website link:

<http://va-fredericksburg.civicplus.com/index.aspx?NID=476>

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

Providing copies of the MS4 Annual Reports is an effective way to disseminate Program progress to the public and interested parties. The City will continue to provide copies of the MS4 Annual Reports in hard copy form and on its website.

**BMP 2(C) – Promote Storm Drain Marking Program**

*Mark storm drains to denote the pollution potential and potential impacts of illicit discharges and illegal dumping into the MS4. Storm drain marking will take place within the City limits.*

**Compliance with Permit Conditions**

All drains have been marked within the City limits, and periodic visual checks to ensure drains are still marked are performed. Missing drain markers are replaced as needed and new drains are given markers. Friends of the Rappahannock volunteers installed 30 new markers on a new development within the City limits for this reporting period.

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

Marking the storm drains raises awareness that litter and spills that occur in streets and parking lots has the potential to enter the storm sewer system and drain to surface waters. The City will continue to mark drains to promote awareness and mitigate potential impacts of illicit discharge and illegal dumping.

*BMP 2(D) – Investigate/Promote, Sponsor and/or Participate in Activities to Increase Public Participation*  
*Identify opportunities aimed at increasing public participation to reduce stormwater pollutant loads and improve water quality. Annually the City will investigate and participate in at least four local activities aimed at increasing public participation by citizens and interested stakeholders.*

Compliance with Permit Conditions

Documentation of participation activities as follows:

1. City's Belman Road Recycling Center Operations

- Days and Hours of Operation
  - Monday – Friday: 8:00 a.m. – 4:30 p.m.
  - Saturday – Sunday: 9:00 a.m. – 2:00 p.m.
  - Closed: New Year's Day, Easter Sunday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, Noon on Christmas Eve

2. Curbside Recycling Program

- Curbside recycling was provided for all City trash accounts
- Total Recyclables collected: 979 tons

3. Household Hazardous Waste Collection\*

- October 24:
  - 9,540 gals of HHW including paint, gasoline etc.
  - 16,436 linear feet of fluorescent bulbs
  - 5.67 tons of used batteries
- June 4\*\*:
  - 13,620 gals of HHW including paint, gasoline etc.
  - 49,027 linear feet of fluorescent bulbs
  - 6.03 tons of used batteries

\*All figures obtained through the Rappahannock Regional Solid Waste Management Board (R-BOARD)

\*\*Held at Stafford County Government Center, but open to City residents

4. Residential Bulk Waste Collection Program (Community Cleanup Week)

- October 26 – November 1: 63 tons
- April 10 – April 16: 46 tons

Copies of the event fliers for Household Hazardous Waste Collection and Community Cleanup Events are included in **Appendix C, Solid Waste Event Fliers**. These fliers were posted on the City's website and distributed to subscribers of the Public Works Newsflash, Trash and Recycling subscribers, and to the FRED Alert trash and recycling subscribers, as well as targeted HOA communities and City Council members.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Participating in local activities that promote public participation is an effective BMP to increase public participation by citizens and shareholders. Advertising and promoting these activities ensures that citizens can appropriately dispose of materials that could have an adverse effect on water quality if not handled or disposed of properly. The City will continue to participate in local activities to increase participation.

**MINIMUM CONTROL MEASURE 3 – Illicit Discharge Detection and Elimination**

The City has developed and implemented written procedures to detect, identify, and address unauthorized non-stormwater discharges to the MS4.

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

*Maintain a storm sewer system map and outfall information table in accordance with the permit to identify MS4 outfall discharge points to waters of the Commonwealth.*

**Compliance with Permit Conditions**

A storm sewer system map and information table has been developed and is ongoing. As new outfalls are identified they will be added to the map and pertinent information will be noted for these outfalls. A copy of the current storm sewer map is available upon request by the Public or the Department.

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

Developing and maintaining a map of all outfalls, drainage areas, and characteristics is critical for identifying locations to test for IDDE. The City will continue to enhance the storm sewer system map and add critical information as land and infrastructure is developed and installed.

**BMP 3(B) – Review/Amend Stormwater Pollution and Illicit Discharge Ordinance for Permit Consistency**

*Review Stormwater Pollution and Illicit Discharge Ordinance and initiate any necessary amendments to effectively prohibit non-stormwater discharges in the City's MS4 to the extent allowable under federal, state, and local laws, regulations, and ordinances.*

**Compliance with Permit Conditions**

The City has reviewed current ordinances and no amendments are necessary at this time.

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

Ensuring ordinances reflect the latest permit conditions to prohibit non-stormwater discharges into the City's MS4 is an effective enforcement tool to mitigate illicit discharges to the MS4. The City will continue to enforce ordinances to the maximum extent practicable.

**BMP 3(C) – Development, Implementation, and Update of Written IDDE Procedures**

*To detect and eliminate non-stormwater discharges to the MS4 the City will develop and implement written Illicit Discharge Detection and Elimination (IDDE) Standard Operating Procedures (SOPs) that will include: dry weather screening; addressing potential illicit discharge complaints from the public; determining sources of suspected discharges; elimination of illicit discharges; coordination with other agencies; and safety.*

**Compliance with Permit Conditions**

Non-stormwater discharges are prohibited through ordinance. Written procedures to detect, identify, and address unauthorized non-stormwater discharges, including illegal dumping have been developed. Reference is hereby made to the "City of Fredericksburg Illicit Discharge Detection and Elimination (IDDE) Standard Operating Procedures Manual". This manual is on file at the Community Planning & Building Department and available upon request. Over the course of the next reporting cycle this manual will be reviewed and updated as necessary to ensure that SOPs are consistent with field techniques and follow-up.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Written procedures ensure effective and consistent classification and determination of illicit discharges and follow-up procedures to identify and eliminate the source of discharge. The City will continue to review, update, and implement its IDDE procedures.

*BMP 3(D) – Public Reporting & Follow-up in Response to Illicit Discharge Complaints*

*Promote, publicize, and facilitate public reporting of illicit discharges into or from the City's MS4 and conduct inspections in response to complaints, and where necessary ensure that corrective measures have been implemented by the responsible party.*

Compliance with Permit Conditions

A hotline has been established on the City's website to promote, publicize, and facilitate public reporting of illicit discharges: <http://www.fredericksburgva.gov/index.aspx?NID=476>. Any potential illicit discharges are followed up in accordance with the written IDDE SOP Manual.

For this reporting period no illicit discharges were reported.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

A website hotline and contact information to notify City officials of a potential illicit discharges is effective in involving the public to make reports of suspected non-stormwater discharges. The City will continue to maintain a hotline and contact information for the public to notify about potential illicit discharges.

*BMP 3(E) – HAZMAT Spill Response Program*

*Continue to implement the Hazardous Spill Response Program by the City Fire Department to mitigate entry of hazardous materials into the MS4.*

Compliance with Permit Conditions

The City has continued to document hazardous spill response events and has included them in **Appendix D, HAZMAT Spill Response Log**.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

An effective Hazardous Spill Response Program has a direct impact to ensure that hazardous materials entering the MS4 system are limited. The City will continue to implement this program and track hazardous spill response events.

*BMP 3(F) – Household Hazardous Waste Collection Program*

*Promote the proper disposal of household hazardous waste with the goal of preventing entry of such wastes into the MS4.*

Compliance with Permit Conditions

Household Hazardous Waste Collection Events were held:

- October 24, 2015
- June 4, 2016 (Held at Stafford County Government Center, but open to City residents)

A copy of the event fliers for Household Hazardous Waste Collection Events is included in **Appendix C**.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Household hazardous waste collection events give citizens an opportunity to properly dispose of materials that require special handling and disposal. In lieu of such events such items have the potential to enter the MS4 via dumping the materials. The City will continue to promote and hold household hazardous waste collection events to mitigate illicit discharge of such materials into the MS4.

BMP 3(G) – Notification to Downstream MS4 Operators

*Notify downstream MS4 operators that their MS4s are physically interconnected to the City's MS4.*

Compliance with Permit Conditions

Notification has been informally made to downstream operators. The City will initiate formal notification for the upcoming reporting period.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Notification to downstream operators is appropriate to provide clarification of MS4 service boundaries and responsibilities.

BMP 3(H) – Outfall Screening

Compliance with Permit Conditions

The City currently has 95 outfalls in the MS4 area. At a minimum the City is required to inspect at least 50 outfalls each permit year. Currently the City projects that each outfall will be inspected every other year with some outfalls being inspected every year. Outfalls are currently being inspected for FY2016 and follow-up actions will be taken once the initial inspections are complete. The City plans on conducting at least 50 outfalls again to report for FY2017.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Outfall screening/dry weather monitoring is an appropriate mechanism to detect illicit discharges to the storm sewer system. The City will continue progress toward inspecting the minimum number of outfalls each year within the permit cycle.

BMP 3(I) – Septic Pump Out Program

*Implement program to have all septic systems within CBPA pumped out every five years.*

Compliance with Permit Conditions

All known septic systems within CBPA have been pumped out within the last five years. This program is tracked by and available in the Community Planning & Building Department.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Requiring septic systems to be pumped out every five years especially in Chesapeake Bay Preservation Areas ensures that systems are functioning properly and within capacity so as not to fail prematurely or cause various nuisances/issues. The City will continue to monitor septic pump out and inform citizens when systems need to be pumped.

**MINIMUM CONTROL MEASURE 4 – Construction Site Stormwater Runoff Control**

The City has developed, implemented, and enforces procedures to address discharges into the MS4 from regulated land-disturbing activities.

**BMP 4(A) – Administer Erosion and Sediment Control Program Consistent with State Regulations**

*The City of Fredericksburg will develop, implement, and enforce a program of plan review, site inspection and enforcement consistent with Erosion and Sediment Control Regulations (9VAC25-840) and the City of Fredericksburg Erosion and Sediment Control Ordinance which the City will update as needed for consistency with state regulations.*

**Compliance with Permit Conditions**

The City's Erosion and Sediment Control program is currently deemed consistent with state requirements for a locally administered program.

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

The City has implemented a program to address construction site runoff that is consistent with all applicable state requirements and will continue to implement an Erosion and Sediment Control program consistent with state regulations.

**BMP 4(B) – Personnel Training and Certification for Plan Reviewer, Inspector, and Program Administrator**  
*Plan reviewers, inspectors and program administrators will be trained and maintain certifications in Erosion and Sediment Control.*

**Compliance with Permit Conditions**

Plan reviewers, inspectors, and appropriate managers in the Community Planning and Building Department maintain E&S certifications. A list of certified employees in the City of Fredericksburg can be found as an attachment in **Appendix E, VESCP/VSMP Staff Certifications**.

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

Providing a list of personnel certified for erosion and sediment control ensures employees are up to date with required certifications to administer an effective Erosion and Sediment Control program. The City will continue to ensure the necessary employees are current with the required certifications.

**BMP 4(C) – Administer Virginia Stormwater Management Program Consistent with State Regulations**

THIS BMP HAS BEEN REMOVED FROM THIS SECTION SINCE THE EXACT SAME BMP IS COVERED UNDER MCM 5. REFER TO BMP 5(A).

**BMP 4(D) – Administer and Implement Chesapeake Bay Program**

**Compliance with Permit Conditions**

The City of Fredericksburg is a Chesapeake Bay Preservation locality. The City implements and enforces the Chesapeake Bay Preservation Area Designation and Management Regulations (9VAC25-830) through local ordinance and enforcement of development provisions for the City's Chesapeake Bay Preservation Overlay District.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Adoption and enforcement of Chesapeake Bay regulations and ordinances reinforces stormwater management goals of the MS4 General Permit. The City will continue to enforce these regulations and requirements for development within Chesapeake Bay Preservation Areas.

BMP 4(E) – Land Disturbance Tracked in Annual Report

*The operator shall track regulated land-disturbing activities and submit the following information in accordance with Section IIB 4f:*

- (1) Total number of regulated land-disturbing activities;*
- (2) Total number of acres disturbed;*
- (3) Total number of inspections conducted; and*
- (4) Summary of enforcement actions taken, including the total number and type of enforcement actions taken during the reporting period.*

Compliance with Permit Conditions

The City of Fredericksburg tracks regulated land disturbing activities and the associated acreage. The City performed 186 erosion and sediment control inspections for 83 regulated land-disturbing activities in FY2016. A total of 40.22 acres were disturbed. Each of these inspections includes elements of construction site stormwater runoff as well. The following list shows a total of 2 enforcement actions for FY2016, separated by type:

Illegal land disturbance activities, civil fines and court cases:

Chesapeake Bay Violations:

L&L Real Estate – resolved

Notice to Comply:

Gunnery Road Laydown Area – Caroline Street Water Main Replacement

Stop Work Orders:

None

Revoked Bonds Erosion and Sediment Control:

None

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Individual inspection reports are available for all permitted land disturbing activities and available to DEQ upon request. The reports are effective in addressing the measurable goal. The City will continue to annually track land disturbing activities.

BMP 4(F) – Administer and Implement the City’s LID Ordinance

*Implement the low impact design requirements contained in the City’s Unified Development Ordinance (UDO).*

**RECOMMEND REMOVAL OF THIS BMP FOR REASONS STATED BELOW.**

Compliance with Permit Conditions

The LID Ordinance was originally established to bridge the gap to improve water quality in non-Chesapeake Bay Preservation areas. With the advent and adoption of the VSMP regulations and application of the City’s Unified Development Ordinance to land-disturbing activities with disturbance of 2500 sq. ft. or greater, the LID Ordinance is no longer required or enforced.

The City's development process effectively applies the VSMP water quality criteria to all City-wide land-disturbing activities that result in land disturbance 2500 sq. ft. or greater. The only exception to the application of the VSMP regulations is land-disturbing activities associated with single-family residences outside of a common plan of development as exempted under State Water Control Law.

Furthermore the LID Ordinance required different design storms and mandated BMPs that were not consistent with VSMP design storms or BMP Clearinghouse specifications creating confusion for both plan reviewers and developers/engineers.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

This is no longer an appropriate BMP for managing runoff from construction and providing stormwater management for post construction activities since the City has adopted and administers a VSMP. The City will begin to remove the LID requirements from its Ordinances and continue to enforce ordinances consistent with VESCP and VSMP Regulations.

**MINIMUM CONTROL MEASURE 5 – Post-construction Stormwater Management in New Development and Redevelopment**

The City has developed, implemented, and enforces procedures to address post-construction stormwater runoff into the MS4 from regulated land-disturbing activities.

**BMP 5(A) – Administer Virginia Stormwater Management Program Consistent with State Regulations**

*The City of Fredericksburg will develop, implement, and enforce a program of plan review, site inspection and enforcement consistent with Virginia Stormwater Management Program Regulations (9VAC25-870) and the City of Fredericksburg Virginia Stormwater Management Program Ordinance which the City will update as needed for consistency with state regulations.*

**Compliance with Permit Conditions**

The City of Fredericksburg implements and enforces a stormwater management program consistent with state regulations. The City ensures stormwater management facilities are designed and installed in accordance with the appropriate water quality and water quantity design criteria (9VAC25-870), state and local design criteria, and any Department approved annual standards and specifications.

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

The City of Fredericksburg's VSMP has been approved and is in compliance with state regulations. Controlling the quality and quantity of stormwater discharged to surface waters to required levels protects the environment. The City will continue to implement a Stormwater Management program consistent with State regulations.

**BMP 5(B) – Develop/Present Seminar for HOAs on Stormwater Management Facility Maintenance**

*Educate Homeowners' Associations (HOAs) that are responsible for stormwater management facilities on the requirements for and proper maintenance of these facilities. This effort will also help raise awareness of the local community to the purpose of these facilities and the need for proper maintenance and address Public Education & Outreach goals under MCM 1.*

**Compliance with Permit Conditions**

This effort is still ongoing. The City plans to create educational materials for routine maintenance and information about stormwater management facilities. Furthermore lists are being developed for private facility owners for Contractors and Engineers who can perform maintenance and inspections for these facilities.

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

Educating private facility owners about their responsibilities and maintenance procedures is instrumental in ensuring that facilities are operating as designed and performing as intended. The City will continue to develop educational materials for private facility engineers, facilitate maintenance, and engage the owners whenever possible.

**BMP 5(C) – Long-term Operation and Maintenance of Stormwater Management Facilities Procedures**

*The City will develop written procedures for inspection, maintenance, and enforcement of maintenance agreements (when applicable) for stormwater management facilities located within or discharging into the MS4.*

Compliance with Permit Conditions

Written procedures for inspection, maintenance, and enforcement have been developed. Reference is hereby made to the “Stormwater Best Management Practices Inspection and Operation & Maintenance Plan” (BMP IO&M Plan). This manual is on file at the Community Planning & Building Department and available upon request. Over the course of the next reporting cycle this plan will be reviewed and updated as necessary to ensure that these written procedures are consistent with current practices.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Written procedures ensure that City officials and private facility owners who are responsible for maintaining facilities and having inspections conducted know what the procedures and expectations are to ensure proper working order of the facility. These procedures also help provide continuity and consistency throughout the BMP agreement enforcement program. The City will continue to review and implement these written procedures.

*BMP 5(D) – Privately-Owned Stormwater Management Facilities*

*For privately-owned stormwater management facilities (including individual residential lots), The City of Fredericksburg ensures long term care and maintenance through the use of a recorded maintenance agreement, or with the combination of a drainage easement and a maintenance agreement. In concurrence with the maintenance agreement is an inspection schedule (at least once every 5 years) and enforcement strategy.*

Compliance with Permit Conditions

The City of Fredericksburg requires maintenance agreements for all new private stormwater facilities. Maintenance agreements require periodic inspections in order to determine if privately managed facilities are being properly maintained.

The agreement requires adequate long-term operation and maintenance by the owner of structural stormwater management facilities. The City provides enforcement of maintenance responsibilities.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Maintaining records of inspection and maintenance are effective ways to ensure the proper operation and maintenance of stormwater facilities. The City will continue to ensure long-term operation and maintenance of privately-owned facilities.

*BMP 5(E) – Operator-Owned Stormwater Management Facilities*

THIS BMP WAS PREVIOUSLY JUST FOR ‘INSPECTION’ OF SWM FACILITIES AND HAS BEEN COMBINED WITH BMP 5(F) FROM PREVIOUS CYCLES WHICH DEALT WITH ‘MAINTENANCE’ OF SWM FACILITIES.

*The City of Fredericksburg provides adequate long-term operation and maintenance services for operator-owned stormwater management facilities. The City maintains procedures for inspection, compliance, and enforcement.*

Compliance with Permit Conditions

Publicly owned and operated stormwater facilities are inspected by the City of Fredericksburg Department of Public Works. Inspections for publicly owned stormwater basins that serve a specific City-owned property will be performed annually.

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

Maintaining records of inspection and maintenance are effective ways to ensure the proper operation and maintenance of stormwater facilities. The City will continue to ensure long-term operation and maintenance of operator-owned facilities.

**BMP 5(G) – Stormwater Management Facility Tracking**

*The City of Fredericksburg will track all known permanent stormwater management facilities that discharge to the regulated small MS4 and submit the required information.*

**Compliance with Permit Conditions**

The City maintains a database of all public and private stormwater management facilities that contain relevant fields for BMP characteristics, features, location, and owner contact information.

As part of its ongoing MS4 compliance activities, the City will be doing a thorough review of all facilities to initiate inspection activities and enforcement actions.

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

Maintaining records of inspection and maintenance are effective ways to ensure the proper operation and maintenance of stormwater facilities. As noted above the City will be focusing attention on inspections and maintenance compliance in the upcoming FY. The City will continue to track all known permanent stormwater management facilities.

**MINIMUM CONTROL MEASURE 6 – Pollution Prevention/Good Housekeeping for Municipal Operations**

The City of Fredericksburg will implement daily operational procedures, identify all municipal high-priority facilities, identify all applicable lands where nutrients are applied to a contiguous area of more than one acre, and conduct training for employees.

**BMP 6(A) – Daily Good Housekeeping Procedures**

*The City has developed written procedures for pollution prevention and good housekeeping of municipal facilities. Guidance is designed to minimize or prevent pollutant discharges to the storm sewer system from activities such as road, street, and parking lot maintenance; equipment maintenance; and the application, storage, transport, and disposal of pesticides, herbicides, and fertilizers.*

**Compliance with Permit Conditions**

The City has developed guidance which will be implemented in accordance with the Table 1 schedule. Applicable municipal facilities are responsible for managing solid waste, performing maintenance for roads and streets, equipment maintenance, and facilities that store, transport, and apply herbicides and fertilizers. Pollution prevention documents are a component of the SWPPPs and SOPs prepared for the City Shop and Parks and Recreation facilities.

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

Daily good housekeeping of municipal facilities is essential to preventing pollutant discharges into the storm sewer system and downstream surface waters. City employees at municipal facilities are aware of the proper handling of materials that have the potential to pollute if mishandled. The City will continue to maintain good housekeeping procedures and progress towards implementation.

**BMP 6(B) – Identify High Priority Facilities and Develop SWPPPs**

THIS BMP WAS PREVIOUSLY JUST FOR 'IDENTIFICATION' OF MUNICIPAL HIGH PRIORITY FACILITIES AND HAS BEEN COMBINED WITH BMP 6(C) FROM PREVIOUS CYCLES WHICH DEALT WITH 'SWPPP DEVELOPMENT AND IMPLEMENTATION' FOR SUCH HIGH PRIORITY FACILITIES.

*The City will identify all municipal, high priority facilities including those that have a high potential for discharging pollutants and develop Stormwater Pollution Prevention Plans (SWPPPs) for those facilities.*

**Compliance with Permit Conditions**

The City has identified all applicable municipal, high priority facilities that have a high potential for discharging pollutants from vehicle operations, equipment maintenance, and the application, storage, transport and disposal of pesticides, herbicides, and fertilizers. The facilities identified and statuses of SWPPP development are listed below:

- City Shop: SWPPP Complete
- Parks & Recreation: SWPPP Complete
- City Shops Operations: SOPs Complete

**BMP 6(D) – Nutrient Management Plan Locations and Development**

THIS BMP WAS PREVIOUSLY JUST FOR 'IDENTIFICATION' OF APPLICABLE LANDS AND HAS BEEN COMBINED WITH BMP 6(E) FROM PREVIOUS CYCLES WHICH DEALT WITH 'NMP DEVELOPMENT AND IMPLEMENTATION' FOR SUCH APPLICABLE LANDS.

*The City has identified all applicable land where nutrients are applied to a contiguous area of more than one acre. The City will develop and implement a NMP prepared by a Certified Turf and Landscape Nutrient Management Planner in accordance with §10.1-104.2 of the Code of Virginia for all lands owned or operated by the MS4 operator where nutrients are applied to a contiguous area greater than one acre.*

**Compliance with Permit Conditions**

The City has identified all applicable lands where nutrients are applied to a contiguous area of more than one acre within the 2000 urbanized area:

- Dixon Park; 15.1 acres – NMP Complete
- Old Mill Park; XX acres – NMP to be developed this cycle

The implementation schedule requires 15% of identified acres to be covered by a NMP within 24 months, 40% within 36 months, 75% within 48 months, and 100% within 60 months. A NMP was prepared for Dixon Park.

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

By developing and implementing NMPs on City-owned property where nutrients are applied to large areas, the City can effectively mitigate stormwater nutrient runoff to the MS4 in areas where those nutrients are more heavily applied. The City will continue to develop NMPs for all identified sites and implement by the end of the permit cycle.

**BMP 6(F) – Annual Training for City Staff**

THIS BMP WAS PREVIOUSLY JUST FOR 'DEVELOPMENT' OF A TRAINING PLAN AND HAS BEEN COMBINED WITH BMPs 6(G) AND 6(H) FROM PREVIOUS CYCLES WHICH DEALT WITH 'PROVIDING TRAINING TO RECOGNIZE AND REPORT ILLICIT DISCHARGES' AND 'PROVIDING TRAINING ON GOOD HOUSEKEEPING AND POLLUTION PREVENTION PRACTICES'.

*The City will develop and implement an annual training plan for City employees to educate personnel in the recognition and reporting of illicit discharges, and provide training regarding good housekeeping and pollution prevention practices to be employed during road, street, and parking lot maintenance; in and around maintenance and public works facilities; and in and around recreational facilities.*

**Compliance with Permit Conditions**

Annual training was conducted in years 1 and 2 of the current permit cycle. There was no annual training conducted this year, but annual training will resume in the upcoming permit year for FY17.

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

Annual training for City employees ensures that staff is aware of how to respond to illicit discharges and pollution prevention practices to support daily operations and mitigate potential non-stormwater

discharges to the MS4. The City will continue to provide training to its employees so that proper procedures can be implemented when necessary.

**BMP 6(I) – Compliance with Virginia Pesticide Control Act**

*The City of Fredericksburg will ensure/require that all employees and/or private contractors who apply pesticides and herbicides receive proper training and certification in accordance with the Virginia Pesticide Control Act.*

**Compliance with Permit Conditions**

Employees who apply pesticides and herbicides are properly trained and certified in accordance with the Virginia Pesticide Control Act. A list of certifications is maintained on file at the Parks, Recreation & Public Facilities Department. The City does not contract out any pesticide or herbicide applicators. The City does contract pest treatment at facility buildings.

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

Maintaining certifications for compliance with the Virginia Pesticide Control Act ensures that pesticides and herbicides are applied on City property responsibly and effectively to minimize impacts to the MS4 and downstream surface waters. The City will continue to ensure that employees and contractors have the required certifications for applications.

**BMP 6(J) – Spill Response Training for Emergency Responders**

**Compliance with Permit Conditions**

The City of Fredericksburg Fire Department requires personnel to maintain the minimum level of training in Hazardous Material Operations, in accordance with NFPA 1001, NFPA 742, and OSHA 1910.120. The Department also maintains and operates a Virginia Department of Emergency Management Hazardous Materials Response team with personnel trained to the levels of Technician and/or Specialist. All initial training is conducted in accordance with Fire Department policy, and as mandated by the Virginia Department of Emergency Management. Documentation of training is on file at the Fire Department and available upon request.

**Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal**

Since emergency responders are often the first officials on scene during incidents where spills occur they are critical in stopping and responding to spills that could enter the MS4. Training for these responders will continue as they are instrumental in protecting the MS4 from potential illicit discharges.

**BMP 6(K) – Maintain Training Documentation**

*Maintain required documentation on each training event required under MCM 6 for a period of three years after each training event.*

**Compliance with Permit Conditions**

Documentation for training conducted in previous years of the permit cycle was provided in previous annual reports. For FY16 no formal training was conducted, however training will resume in FY17 and documentation will be provided in the next annual report.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Maintaining documentation ensures that the proper City Staff is trained and provides a tool for how to implement and target future training. The City will continue to document training efforts and attendance.

BMP 6(L) – Procedures for Municipal Contractors

*The City of Fredericksburg requires that all municipal contractors use appropriate control measures and procedures for stormwater discharges to the City's MS4 and has included oversight procedures in the City's MS4 Program Plan.*

Compliance with Permit Conditions

Municipal contractors must apply for a "Special Excavation Permit" to work within the City's Right of Way (ROW). The Permit requires that appropriate control measures and procedures for stormwater discharges are adhered to utilizing appropriate BMP practices such as, silt fence, inlet protection, designated concrete washout areas, etc. depending on the location and type of work being performed in the ROW. Also the City requires dumpster permits which require the use of covers during a runoff producing event since these types of indirect stormwater runoff can produce pollutants that can enter the MS4.

In instances where City contractors are performing land disturbance, all necessary plan submittals, reviews, and permits to satisfy state and local VESCP and VSMP regulations are required prior to the start of land disturbance. These types of activities are treated like any other private development or redevelopment in the City.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Work performed by municipal contractors, especially within the ROW or associated with land disturbance has an increased potential to impact the MS4. By requiring contractors to apply for and obtain necessary permits the City can ensure that conditions are in place to control stormwater discharges from these activities to the MS4. The City will continue to require its contractors to follow necessary procedures for work within the City.

BMP 6(M) – Street Sweeping Program

Compliance with Permit Conditions

For this reporting year street sweeping efforts collected and disposed of 363.3 tons.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Street sweeping is an effective BMP to remove dirt/debris/sediment and associated nutrients from City streets that have a potential to enter surface water through the MS4. The City will continue street sweeping efforts to achieve TMDL goals and report on tonnage removed annually.

BMP 6(N) – Leaf Collection Program

Compliance with Permit Conditions

For this reporting year leaf collection efforts collected and disposed of 537.8 tons.

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Leaf collection is an effective BMP to remove leaves before they are decomposed and enter collection systems. Furthermore leaf collection also prevents clogging up of stormwater conveyance systems. The City will continue leaf collection and report on tonnage removed annually.

BMP 6(O) – Stormwater Collection Infrastructure Maintenance

Compliance with Permit Conditions

During this reporting period the following maintenance activities occurred:

- Storm Drain Inlets Repaired or Reconstructed: 15
- Storm Drain Inlets Cleaned: 1,780
- Storm Sewer Pipes Cleaned and Repaired: 111
- Ditches Cleaned and Repaired: 151
- Major Drainage Projects: 1
- Total Pounds of Debris Removed: 109,620 lbs (54.81 tons)

Appropriateness and Effectiveness of BMP/Progress towards Achieving Measurable Goal

Annual maintenance and repair efforts for stormwater collection infrastructure ensures that the MS4 is functioning as intended to provide proper drainage and stormwater conveyance. Maintenance efforts also remove debris and materials that could enter surface waters and helps identify future repairs. The City will continue maintenance on its stormwater collection infrastructure.

BMP 6(P) – Environmental Management System (EMS)

*The City will analyze, control, and reduce the environmental impact of its activities, products and services, and operate with greater efficiency and control.*

RECOMMEND REMOVAL OF THIS BMP. EMS IS MORE OF AN OVERALL ENVIRONMENTAL PROGRAM NOT FORMALLY IMPLEMENTED BY THE CITY AND IS NOT REQUIRED UNDER THE GENERAL PERMIT. WHILE STORMWATER AND MS4 COMPLIANCE COULD CERTAINLY BE AN ASPECT OF AN EMS, IT DOES NOT SEEM APPROPRIATE TO DEVELOP AND ADOPT AN EMS AS PART OF THE MS4 GENERAL PERMIT.

BMP 6(Q) – Inlet Trash Guard Program

*Develop a program to install Trash Guard devices in outfalls discharging to tributaries.*

RECOMMEND REMOVAL OF THIS BMP. WHILE TRASH GUARDS ARE HELPFUL IN COLLECTING TRASH AND DEBRIS AT OUTFALLS, THE CAPITAL INVESTMENT TO INSTALL AND RECURRING COSTS TO MAINTAIN (CLEAN) THESE DEVICES IS NOT INSIGNIFICANT. OTHER BMPS PROVIDED FOR IN THE ACTION PLAN ENSURE THAT OUTFALLS ARE MONITORED, MAINTAINED, AND REPAIRED WHEN NECESSARY. ALSO PUBLIC OUTREACH EFFORTS PROVIDE OPPORTUNITIES TO INTERCEPT AND COLLECT TRASH AND DEBRIS FROM TRIBUTARIES.

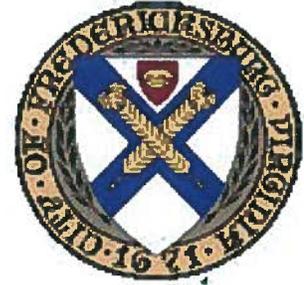
FURTHERMORE LOSSES THAT COULD OCCUR IN THE STORM SEWER SYSTEM AS A RESULT OF TRASH GUARDS WERE NOT CONSIDERED WHEN THIS PROGRAM WAS PROPOSED. THE CAPITAL INVESTMENTS REQUIRED TO IMPLEMENT THIS PROGRAM WOULD BE BETTER UTILIZED FOR ACHIEVING TMDL GOALS WHICH THIS PROGRAM WOULD NOT PROVIDE ANY CREDIT FOR.

# Appendix A

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Local Bacteria TMDL Action Plan for the Tidal  
Freshwater Rappahannock River Watershed

VIRGINIA  
*Fredericksburg*



# Local Bacteria TMDL Action Plan for the Tidal Freshwater Rappahannock River Watershed

City of Fredericksburg, Virginia  
Community Planning & Building Department

June 30, 2016



GREELEY AND HANSEN

CENTER FOR  
WATERSHED  
PROTECTION

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### **Appendices**

Appendix A - City of Fredericksburg Local Bacteria TMDL Action Plan Meeting, Follow-up Letter (8/28/2015)

### **List of Acronyms**

BMP	Best Management Practice
BST	Bacterial Source Tracking
CFU	Colony Forming Unit
DEQ	Department of Environmental Quality
IDDE	Illicit Discharge Detection and Elimination
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
POC	Pollutant of Concern
SOP	Standard Operating Procedure
SWCB	State Water Control Board
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
VDH	Virginia Department of Health



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## Table of Contents

### List of Acronyms (cont.)

VPDES	Virginia Pollutant Discharge Elimination System
VSMP	Virginia Stormwater Management Program
WLA	Waste Load Allocation
WQIR	Water Quality Integrated Report



## Section 1 Introduction

### 1.1 Purpose

The purpose of this document is to describe the City of Fredericksburg's approach to reducing bacteria discharges from its MS4 for compliance with the MS4 aggregate waste load allocation (WLA) identified in the Bacteria TMDL for the Tidal Freshwater Rappahannock River Watershed.

### 1.2 MS4 Permit Special Conditions for Local TMDLs

Section I.B of the Phase II MS4 General Permit establishes special conditions for approved total maximum daily loads (TMDLs) other than the Chesapeake Bay TMDL. This section requires that permittees *"update their MS4 program plan to incorporate approvable TMDL Action Plans that identify best management practices and other interim milestone activities that will be implemented during the remaining term of this permit for pollutants identified in TMDL wasteload allocations approved either on or after July 9, 2008"*.

The Bacteria TMDL for the Tidal Freshwater Rappahannock River Watershed was developed in April 2008. It was approved by EPA in May 2008 and by the State Water Control Board (SWCB) in April 2009. In accordance with Table 1 of the MS4 Permit, the City must update its MS4 program plan to include an action plan for this bacteria TMDL within 36 months of permit coverage (i.e. June 30, 2016).

The MS4 permit requires the City to address the following items in its TMDL Action Plan:

- Develop and maintain a list of legal authorities applicable to reducing bacteria
- Identify and maintain a list of additional management practices (beyond minimum control measures) that have been implemented that are applicable to reducing bacteria
- Enhance public education and outreach and employee training programs to promote methods to eliminate/reduce discharges of bacteria
- Assess all significant sources of bacteria from facilities of concern owned or operated by the City that are not covered under a separate VPDES permit, and identify all municipal facilities that may be a significant source of bacteria
- Develop and implement a method to assess the TMDL action plan for its effectiveness in reducing bacteria



## Section 2 TMDL Background

### 2.1 Introduction

The Rappahannock River between the Fall Line at the Route 1 bridge crossing in Fredericksburg and the Route 301 bridge crossing near Port Royal was listed as impaired for bacteria by both E. coli and fecal coliform indicators in DEQ's 305(b)/303(d) Water Quality Integrated Reports (WQIR) in 2002, 2004, and 2006. To address this impairment, a Bacteria TMDL for the Tidal Freshwater Rappahannock River Watershed (hereafter referred to as the Bacteria TMDL document) was developed in 2008. The watershed encompasses the City of Fredericksburg and portions of Caroline, King George, Spotsylvania, and Stafford Counties.

### 2.2 MS4 Aggregate Waste Load Allocation (WLA)

The Bacteria TMDL document establishes an aggregate waste load allocation (WLA) for the MS4 permittees within the watershed. The established MS4 WLA for E. coli is 389 trillion cfu/yr, which represents a 62.8% reduction from the existing load. The MS4 permittees that are identified in the Bacteria TMDL document are the following:

- City of Fredericksburg
- Spotsylvania County <sup>(1)</sup>
- Stafford County
- Stafford County Public Schools
- University of Mary Washington
- VDOT

*(1) Not currently listed as an MS4 permittee*

### 2.3 Recent Developments since TMDL Approval

Since the development of the Bacteria TMDL document in April 2008, Spotsylvania County was removed from the list of MS4 permittees. This development will undoubtedly have an impact on the feasibility of achieving the aggregate MS4 WLA, since there are fewer permittees to achieve the load reductions. However, the City has not taken a numeric approach to compliance with the TMDL (refer to Section 5.3 for more information).

Additionally, since the TMDL was developed in 2008, two segments of the Rappahannock River have been delisted in DEQ's WQIR due to continued water quality monitoring. The two (2) delisted segments are the furthest downstream segments. The segments to which the City of Fredericksburg discharges remain impaired as of the Draft WQIR for 2014.

As of the date of this report, a TMDL implementation plan for the watershed has yet to be developed.



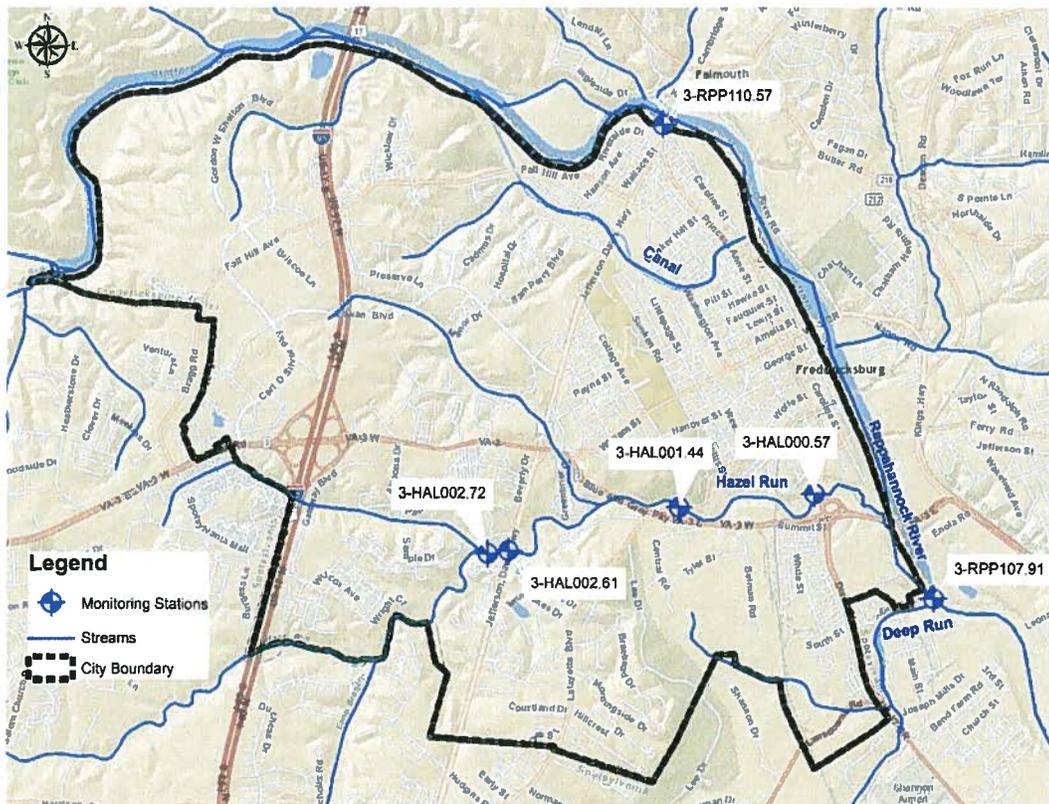
## 2.4 Forthcoming WLAs for Existing TMDL

There are no forthcoming WLAs for this TMDL and the City does not have any expanded urban area from the 2010 census that would impact the WLA.

## 2.5 Water Quality Monitoring History

DEQ maintains six (6) water quality monitoring stations within the vicinity of the City of Fredericksburg that measure bacteria concentrations. Two (2) stations are located in the Rappahannock River; one at the Route 1 bridge crossing and the other at the confluence of the Rappahannock River and Deep Run. The remaining four (4) monitoring stations are located along Hazel Run within the boundary of the City. A map of the monitoring station locations is provided in Figure 2-1.

**Figure 2-1  
Local Monitoring Stations Vicinity Map**



DEQ publishes the data from their monitoring stations every two years as part of the WQIR. DEQ lists a water segment as impaired for bacteria when greater than 10.5% of collected



**Local Bacteria TMDL Action Plan**

## Section 2

samples exceed the State's water quality criteria for recreation (235 cfu / 100 mL for E. coli). A summary of the published water quality data from 2008 – 2014 for the stations in the vicinity of the City is provided in Table 2-1.

**Table 2-1  
Local Monitoring Station E. Coli Data Summary**

Station ID <sup>(1)</sup>	Reporting Data	2008	2010	2012	2014
3-RPP107.91	Exceedances	2	4	4	2
	Samples	20	31	30	17
	<b>% Exceedance</b>	<b>10%</b>	<b>13%</b>	<b>13%</b>	<b>12%</b>
3-RPP110.57	Exceedances	8	11	7	6
	Samples	30	42	43	35
	<b>% Exceedance</b>	<b>27%</b>	<b>26%</b>	<b>16%</b>	<b>17%</b>
3-HAL000.57	Exceedances	3	3	3	4
	Samples	11	11	12	11
	<b>% Exceedance</b>	<b>27%</b>	<b>27%</b>	<b>25%</b>	<b>36%</b>
3-HAL001.44	Exceedances	3	7	4	-
	Samples	14	25	17	-
	<b>% Exceedance</b>	<b>21%</b>	<b>28%</b>	<b>24%</b>	<b>-</b>
3-HAL002.61	Exceedances	3	3	3	-
	Samples	10	10	10	-
	<b>% Exceedance</b>	<b>30%</b>	<b>30%</b>	<b>30%</b>	<b>-</b>
3-HAL002.72	Exceedances	-	-	0	0
	Samples	-	-	1	1
	<b>% Exceedance</b>	<b>-</b>	<b>-</b>	<b>0%</b>	<b>0%</b>

(1) Refer to Figure 2-1 for monitoring station locations

(2) Data from DEQ Water Quality Integrated Reports (2008 – 2014)



## 2.6 Sources of Impairment

Several monitoring stations within the watershed have bacterial source tracking (BST) data that can determine the percentage of each sample that originated from different sources. The BST data in the Bacteria TMDL document breaks the samples down into the following source categories:

- Wildlife
- Human
- Livestock
- Pet

BST data is only available from one (1) monitoring station in the vicinity of the City (3-HAL000.57). The BST data for this monitoring station from 2005 – 2006 that was reported in the Bacteria TMDL document is provided in Table 2-2. It is interesting to note that the predominant sources of *E. coli* measured during water quality standard exceedance events (indicated in bold) were wildlife and livestock. Exceedance events had very small contributions from pet waste and human waste (the only sources over which the City has any potential influence), with two (2) of the (3) exceedance events having no pet or human source contributions (i.e. 100% wildlife and livestock source contribution).

**Table 2-2**  
**2005 – 2006 BST Data for 3-HAL000.57**

Date of Sample	<i>E. coli</i> (cfu / 100 mL)	Number of Isolates	Wildlife	Human	Livestock	Pet
<b>7/20/05</b>	<b>940</b>	<b>24</b>	<b>83%</b>	<b>0%</b>	<b>17%</b>	<b>0%</b>
<b>8/24/05</b>	<b>242</b>	<b>24</b>	<b>54%</b>	<b>0%</b>	<b>46%</b>	<b>0%</b>
9/27/05	212	24	0%	0%	4%	96%
10/26/05	219	24	0%	12%	59%	29%
11/29/05	54	24	72%	4%	12%	12%
12/21/05	32	15	67%	0%	20%	13%
1/24/06	64	24	59%	4%	25%	12%
2/21/06	6	3	33%	67%	0%	0%
3/28/06	32	17	18%	18%	64%	0%
4/19/06	199	24	42%	21%	25%	12%
5/9/06	230	23	9%	9%	43%	39%
<b>6/21/06</b>	<b>310</b>	<b>24</b>	<b>8%</b>	<b>8%</b>	<b>76%</b>	<b>8%</b>

(1) Water quality standards violations (>235 cfu/ 100 mL) indicated in bold

(2) Data from Tidal Freshwater Rappahannock River Watershed TMDL document



## **2.7 TMDL Implementation Plan Recommendations**

Section 5.1 of the Bacteria TMDL document provides the following recommendations for reducing bacteria loads from urban sources (such as the City):

- Addressing failing septic systems
- Inspecting sanitary sewers for leaks
- Establishing more restrictive ordinances
- Improved garbage collection and control
- Improved street sweeping

Documentation of the City programs that address each of the above recommendations from the Bacteria TMDL document is provided in Section 4.



## **Section 3 Significant Sources of Pollutants of Concern (POCs)**

### **3.1 Introduction**

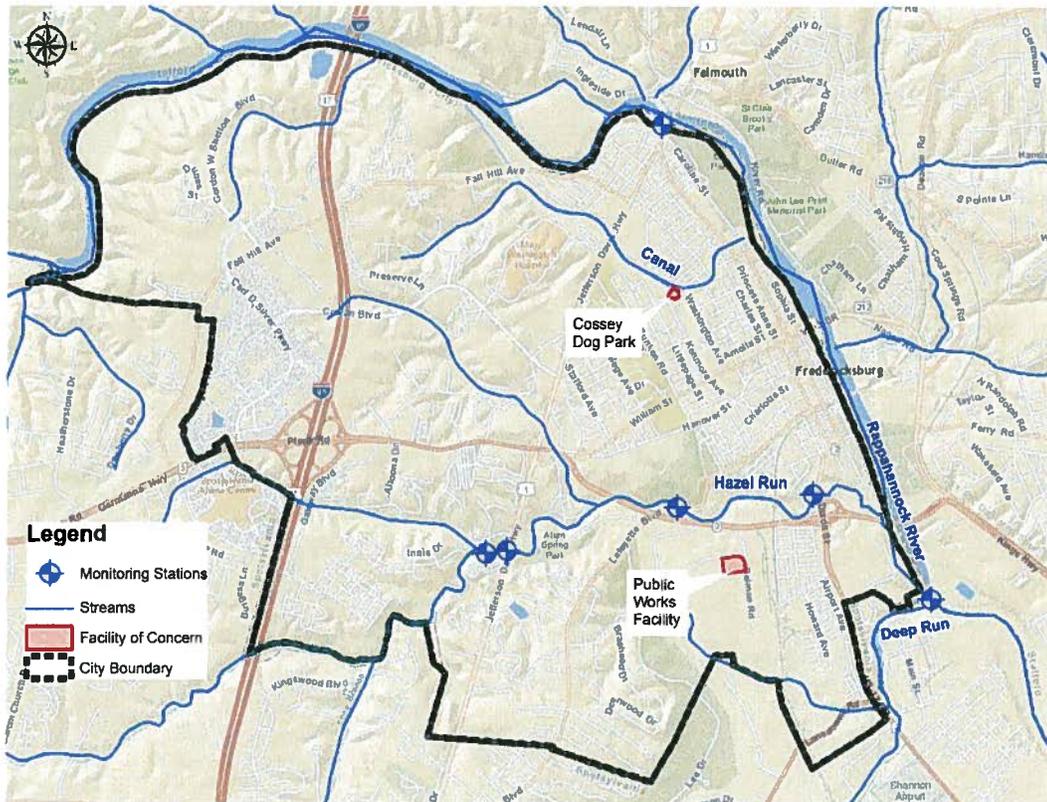
Section I.B.2.d of the MS4 Permit requires the City to, “asses all significant sources of pollutant(s) from facilities of concern owned or operated by the MS4 operator that are not covered under a separate VPDES permit and identify all municipal facilities that may be a significant source of the identified pollutant”. This section goes on to state that, “a significant source of pollutant(s) from a facility of concern means a discharge where the expected pollutant loading is greater than the average pollutant loading for the land use identified in the TMDL”, and gives the example of a dog park as a facility of concern for a bacteria TMDL where bacteria loading would be anticipated to be higher than other recreational facilities where dogs are prohibited.

### **3.2 Facilities of Concern**

The land use loading for the City that was used in the development of the TMDL is not provided in the Bacteria TMDL document. However, the City has identified two (2) facilities of concern, where the bacteria loading could be greater than other sites. The facilities of concern are Cossey Dog Park (1601 Kenmore Avenue) and the Public Works Facility (1000 Tyler Street) where the City’s garbage collection trucks are staged. The Public Works Facility has a stormwater pollution prevention plan (SWPPP) and a standard operating procedure (SOP) for trash trucks. Cossey Dog Park is equipped with pet waste station BMPs to address discharges of bacteria. A map of the City’s facilities of concern is provided in Figure 3-1.



**Figure 3-1**  
**Facilities of Concern Vicinity Map**



## **Section 4 Review of Existing Plans, Practices & Legal Authorities**

### **4.1 MS4 Program Plan Minimum Control Measures (MCMs)**

The City has adopted an MS4 Program Plan that documents its compliance with several minimum control measures. A review of the elements of the City's MS4 program plan that are applicable to reducing bacteria discharges is provided in the following subsections. The MS4 Program Plan is available on the City's website. The MS4 program plan is updated each year in the City's annual report, which is also available on the City's website (<http://www.fredericksburgva.gov/index.aspx?NID=967>).

#### **4.1.1 MCM 1 – Public Education & Outreach**

The City has identified pet waste as one (1) of its three (3) high priority water quality issues for public education and outreach. The City has distributed pet waste educational flyers, posted pet waste information on its website, and installed signage for its pet waste stations. The increase in public awareness of the water quality issues associated with improper pet waste disposal should help reduce bacteria loads.

#### **4.1.2 MCM 2 – Public Participation**

The City promotes and facilitates the collection and proper disposal of garbage from streams through its river cleanup campaign. Reporting from these volunteer community events indicates thousands of pounds of trash being removed from City streams. These cleanup efforts have the potential to reduce in-stream bacteria levels.

#### **4.1.3 MCM 3 – Illicit Discharge Detection & Elimination (IDDE)**

The City has developed and adopted a standard operating procedure (SOP) for its illicit discharge detection and elimination (IDDE) program. The SOP establishes illicit discharge field screening methodologies and procedures for handling citizen reports of potential illicit discharges. The continued implementation of the City's IDDE program has the potential to reduce bacteria discharges from the City's MS4, especially in instances where the discharges contain human or pet waste. A copy of the IDDE SOP is available in the City's Community Planning and Building Department located at 715 Princess Anne Street.

#### **4.1.4 MCM 4 – Construction Site Stormwater Runoff Control**

As a local VSMP authority, the City requires the development of SWPPPs prior to land disturbance for construction, when coverage under the construction general permit applies. SWPPPs identify numerous sources of potential pollutants and identify measures to ensure that those pollutants are not mobilized or discharged during stormwater events. SWPPPs have the potential to reduce bacteria discharges from potential sources such as porta johns.



#### **4.1.5 MCM 5 – Post-Construction Stormwater Management**

As a local VSMP authority, the City requires adequate post-construction stormwater management practices (i.e. structural BMPs) prior to development plan approval. Although the focus of these structural BMPs is the reduction in discharge of nutrients and sediment for compliance with the Chesapeake Bay TMDL, research has shown that structural BMPs provide some reductions in bacteria discharges.

#### **4.1.6 MCM 6 – Pollution Prevention / Good Housekeeping / Employee Training**

In compliance with the schedule in the MS4 permit, the City has developed SWPPPs for its municipal facilities of concern, including the Public Works Facility where the City's garbage collection fleet is staged. Additionally, as part of its good housekeeping efforts, the City has developed an SOP for its garbage collection fleet. The implementation of these plans and procedures has the potential to reduce bacteria discharges from potential sources such as garbage collection residue on the City's trash trucks.

The City is in the process of developing an employee training program specific to bacteria. Educating key personnel on best management practices for bacteria also has the potential to reduce stormwater bacteria discharges.

### **4.2 Additional Management Practices & Control Techniques**

The City has implemented a number of management practices and control techniques (beyond the required minimum control measures) to reduce bacteria discharges from its MS4. An overview of some of these practices is provided in the following subsections.

#### **4.2.1 Pet Waste Campaign**

The City has initiated a pet waste campaign to educate its citizens and visitors on the impacts of pet waste on water quality and provide facilities to encourage proper pet waste disposal. Within the current permit cycle, the City has nearly doubled the number of pet waste stations and has seen the utilization of tens of thousands of bags from these stations on an annual basis. The continued implementation of this successful campaign has the potential to decrease bacteria discharges within the City.

#### **4.2.2 Targeted Sewer Evaluation Program**

The City is in the process of developing a program to assess the hydraulic capacity and physical condition of its sewer infrastructure and establish a rehabilitation/replacement schedule. This program will consist of field reconnaissance such as flow monitoring and camera inspections and will utilize data from the 2010 Sewerage Cost Allocation Study to develop a risk assessment to identify the general probability and consequence of failure. This evaluation will identify and prioritize the sewer segments in need of renewal or additional evaluation.

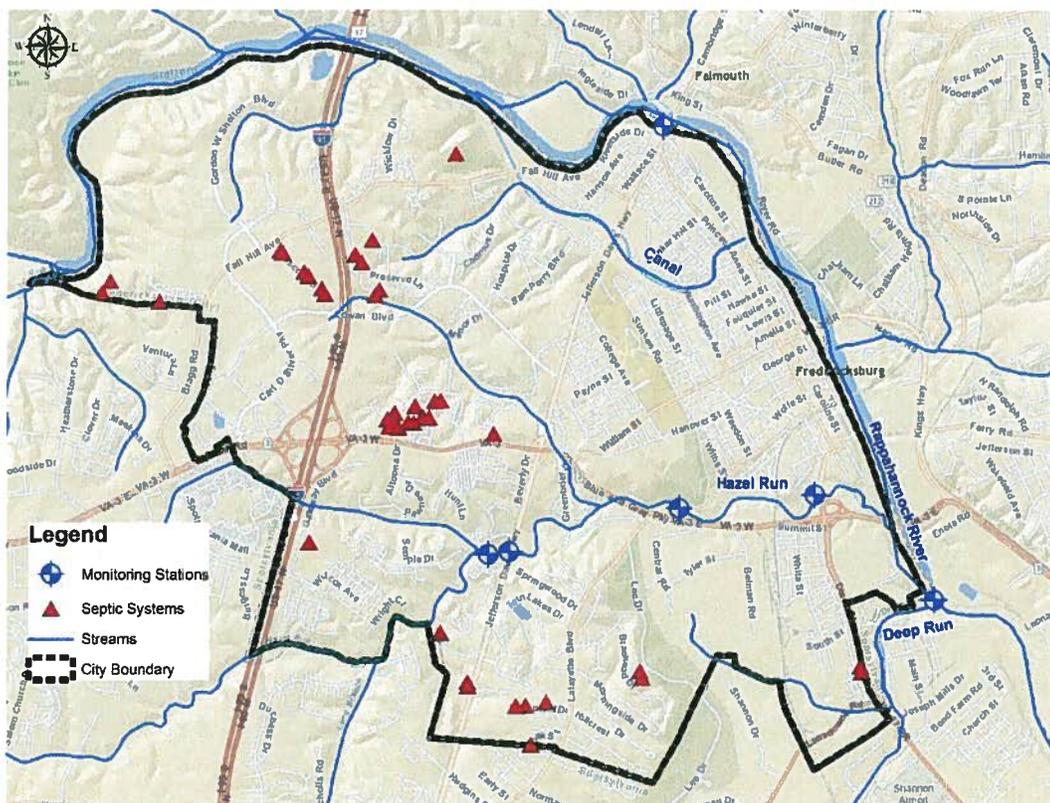


### 4.2.3 Septic System Program

The City maintains a database of residents with septic systems with information about system activation and pump outs. In the event that a resident fails to pump out their septic system within the required 5-year timeframe, the City notifies the resident and coordinates with Virginia Department of Health (VDH). This program helps ensure that septic systems in the City are adequately maintained, reducing the potential for bacteria discharges.

The vast majority of City residents are connected to City sewer. City records show only 42 septic systems within the City boundary. A map these septic system locations is provided in Figure 4-1 for reference.

**Figure 4-1  
Septic System Map**



#### 4.2.4 Street Sweeping Program

The City has a robust street sweeping program that covers over one hundred lane miles of City streets. This program is highly effective at reducing nutrient and sediment discharges from the City's MS4, but also has the potential to reduce bacteria discharges. A map of the City's street sweeping routes is contained in an appendix of the City's Chesapeake TMDL Action plan, which is available on the City's website (<http://www.fredericksburgva.gov/DocumentCenter/View/5167>).

#### 4.2.5 Garbage Collection Program

The Department of Public Works offers weekly garbage and recycling collection services to City residents. The City has published guidelines for proper storage and containment of trash on its website (<http://www.fredericksburgva.gov/index.aspx?nid=1167>). Weekly collection and appropriate storage guidance (e.g. all trash must be bagged and stored in containers with lids) has the potential to decrease bacteria discharges from household waste.

#### 4.2.6 Watershed Property Management Plan

The City owns a forested corridor of riparian land along 32 miles of the Rappahannock and Rapidan Rivers and an additional 30+ miles along many tributary streams. This area, totaling 4,232 acres, was placed into a conservation easement in 2006. In 2011, the City approved a Watershed Property Management Plan to govern the stewardship of this exceptional natural resource. Current research has shown that riparian buffers can be very effective at limiting the amount of bacteria that reaches streams during stormwater events. Additional information about this resource is available on the City's website.

### 4.3 Legal Authorities

Section I.B.2.a of the MS4 Permit requires the City to "*develop and maintain a list of its legal authorities such as ordinances, state and other permits, orders, specific contract language, and interjurisdictional agreements applicable to reducing the pollutant identified in each applicable WLA*". A list of the City's legal authorities applicable to reducing bacteria is provided below. These ordinances are available on the City's website.

- Animal care & control (§14-151 - §14-158)
- Miscellaneous provisions for animals (§14-181 - §14-187)
- Illicit Discharge (§59-400 - §59-402)
- Solid Waste (§62-1 - §62-13)
- Cesspools, unconnected water closets and privies prohibited (§74-132)
- Septic Tanks (§74-139)



## Section 5 TMDL Compliance

### 5.1 Introduction

As discussed in Section 2.2, the Bacteria TMDL document established an aggregate WLA of 389 trillion cfu/yr for the MS4 permittees within the watershed, which represents a 62.8% reduction from the existing load. Since the land use load used to develop the TMDL was not provided in the Bacteria TMDL document, the City cannot determine its portion of the aggregate WLA and its individual reduction requirement. DEQ has advised the City that it is not responsible for determining these numeric values, nor is the City required to take a numeric-based approach to TMDL compliance. Documentation of the City's discussions with DEQ regarding this and other issues is provided in Appendix A.

### 5.2 Literature Review

During the discussions documented in Appendix A, DEQ requested that the City perform a literature review in an effort to develop a ballpark estimate of the pollutant reduction that could be achieved by the BMPs that the City has implemented. The City reviewed dozens of studies on the efficiency of various structural and non-structural stormwater BMPs for reducing bacteria discharges. The range of reported bacteria removal efficiencies from a selection of these studies is provided in Table 5-1.

As shown in Table 5-1, reported bacteria removal efficiencies for stormwater BMPs varied widely from study to study, with the exception of constructed wetlands which are commonly used for treating bacteria. Much of the variability may be attributable to the differences in BMP design and implementation, pollutant loading rates, and other watershed characteristics that vary from site to site. Most of the available data focuses on structural BMPs, since they can be monitored more easily. Data on non-structural BMPs is very scarce and often involves estimating the probability of behavioral changes, which can be very subjective.



**Table 5-1**  
**Summary of Published Bacteria Removal Efficiencies from Literature Review**

BMP	Sources	Bacteria Removal Efficiency		
		Min.	Max.	Mean
Bioretention	1,5,8,14,15	40%	96%	76%
Bioswale	1,2,5,6	-338%	52%	-73%
Constructed Wetland	1,2,3,5,6,13	78%	99%	83%
Dry Pond	2,3,5,6,12,15	18%	90%	50%
Filtration Practice	3,4,11,15	30%	60%	41%
Infiltration Trench	9,15	50%	90%	70%
Media Filter	5	72%		
Manufactured Treatment Device	5	-47%		
Pet Waste Management Program	7,15	50%	75%	63%
Porous Pavement	15	50%		
Rain Garden	8,15	40%	70%	55%
Septic System Pump-out	15	5%		
Vegetated Buffer	10,15	57%	99%	78%
Vegetated Filter Strip	2	13%		
Wet Pond	1,2,3,4,5,6,15	32%	95%	67%

1. International Stormwater BMP Database. 2014. Pollutant Category Statistical Summary Report.
2. University of Houston. 2006. Study on the Effectiveness of BMPs to Control Bacteria Loads. Prepared for Texas Commission on Environmental Quality.
3. Center for Watershed Protection. 2007. National Pollutant Removal Performance Database. Version 3.
4. Environmental Protection Agency. 1999. Preliminary Data Summary of Urban Storm Water Best Management Practices.
5. Clary et al. 2008. Can Stormwater BMPs Remove Bacteria? New findings from the International Stormwater BMP Database.
6. Virginia Stormwater Management Handbook. 2013.
7. Swann, C. 1999. A survey of residential nutrient behaviors in the Chesapeake Bay. Widener Burrows, Inc. Chesapeake Bay Research Consortium. Center for Watershed Protection. Ellicott City, MD.
8. Hunt, William F, Jonathan T Smith, and Jon Hathaway. 2007. City of Charlotte Pilot BMP Monitoring Program, Mal Marshall Bioretention Final Monitoring Report. City of Charlotte.
9. Schueler, T.R., 1992. A Current Assessment of Urban Best Management Practices. Metropolitan Washington Council of Governments. (Number of sampling events is not provided by the source)
10. Tate, K. W., Atwill, E. R., Bartolome, J. W. & Nader, G. 2006. Significant Escherichia coli attenuation by vegetative buffers on annual grasslands. J. Environ. Qual. 35, 795-805.
11. Center for Watershed Protection. 1994. Developments in Sand Filter Technology to Improve Stormwater Runoff Quality. Watershed Protection Techniques. Vol. 1(2): 47-54.
12. Borden, R. C., J.L. Dorn, J.B. Stillman and S.K. Liehr. 1996. Draft Report. Evaluation of Ponds and Wetlands for Protection of Public Water Supplies. Water Resources Research Institute of the University of North Carolina. Department of Civil Engineering. North Carolina State University. Raleigh, North Carolina.
13. Center for Watershed Protection. 1996. Vegetated Rock Filter Treats Stormwater Pollutants in Florida. Watershed Protection Techniques. Vol. 2(2):372-374.
14. Hathaway, J.M., W.F. Hunt, and S. Jadlocki. 2009. Indicator bacteria removal in storm-water best management practices in Charlotte, North Carolina. Journal of Environmental Engineering, 135(12):1275-1285.
15. Virginia Department of Conservation and Recreation and Virginia Department of Environmental Quality. 2003. Guidance Manual for Total Maximum Daily Load Implementation Plans.



### 5.3 Approach

As discussed in the previous section, available literature on bacteria removal rates is scarce, reported removal efficiencies vary widely between sources, and the majority of the literature focuses on the performance of structural BMPs, which are widely viewed as the least effective means of reducing bacteria loads.

Non-structural BMPs aimed at changing habits and behaviors are viewed as being more effective and are the focus of the City's action plan for reducing bacteria loads. As such, the City's approach to TMDL compliance consists of continuing to implement the BMPs identified in Section 4 to the maximum extent practicable (MEP).

### 5.4 Interim Milestones

The interim milestones for the current MS4 permit cycle for programs and actions applicable to reducing bacteria loads are summarized below:

- June 30, 2016
  - Update of MS4 Program Plan to include this Local Bacteria TMDL Action Plan for the Tidal Freshwater Rappahannock River Basin
- June 30, 2017
  - Complete stormwater map and information table under IDDE program
  - Complete SWPPPs for all high priority municipal sites
- April 1, 2018 (permit reapplication)
  - Complete evaluation of appropriateness and effectiveness of public education and outreach program
  - Identify BMPs and other steps to be implemented during the next permit cycle
  - Develop estimated end date for achieving the WLA

### 5.5 Assessment Methods & Measureable Goals

The City has identified two (2) assessment methods that will be used in parallel to determine the effectiveness of its TMDL Action Plan. The first assessment method is compliance with its MS4 Program Plan. As described in Section 4, the City's MS4 Program Plan covers a number of practices that have the potential to reduce bacteria discharges from the MS4. The measurable goal under this assessment is compliance with the elements of the MS4 Program Plan that are applicable to reducing bacteria loads.

The second assessment method is continuing to evaluate data from DEQ's water quality monitoring stations as it is published. Although parsing out the City's individual contribution to bacteria concentrations is impossible, the City would hope to see concentrations decrease to levels that meet the State's water quality standards as a result of the programs and practices that it and other entities have put in place. While the City cannot commit to a numeric



measurable goal due to the nature of the data, continued water quality monitoring data may be used as an alternative means of assessing the effectiveness of the City's TMDL action plan.

### **5.6 Coordination with Regional MS4s**

Since the City has an aggregate WLA that it shares with other MS4s within the watershed, the City is committed to working with those MS4s in a collaborative effort to improve local water quality and decrease bacteria loads from urban sources.

### **5.7 Adaptive Management**

DEQ's draft guidance memo for Local TMDL Action Plans (April, 2015) states that, "*Local TMDL Action Plans can be implemented in multiple stages over multiple permit cycles using an adaptive iterative approach provided the permittee demonstrates adequate progress toward achieving reductions necessary to meet the WLA(s)*". The City reserves the right to modify its TMDL Action Plan over time for reasons including but not limited to the implementation of more effective BMPs and the exclusion of ineffective BMPs.



APPENDIX A

City of Fredericksburg Local Bacteria TMDL Action Plan Meeting  
Follow-up Correspondence (8/28/2015)



# City of Fredericksburg Local Bacteria TMDL Action Plan Meeting Follow-up Letter (8/28/2015)

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Ms. Bauer / Mr. Thomas,

Thank you for taking the time to speak with us about the City of Fredericksburg's local bacteria TMDL action plan. I have summarized some of the main discussion points from our phone call below. Please reply to this letter confirming our understanding of DEQ's position on the items listed below. If you see anything that needs further clarification, please let me know.

## **Schedule**

The Bacteria TMDL for the Tidal Freshwater Rappahannock River Watershed was approved by EPA on 5/5/2008 and approved by the Virginia State Water Control Board (SWCB) on 04/28/2009. Since the final approval date (SWCB) occurred after July 1, 2008, the TMDL Action plan will be completed by July 1, 2016 and submitted in the MS4 annual report by October 1, 2016, in accordance with DEQ's draft guidance document for local TMDL action plan.

## **Partial Impairment Delisting**

The partial impairment delisting for segments of the Rappahannock River due to continued water quality monitoring at stations 3RPP080.19 and 3-RPP091.55 (located 15 -25 miles downstream of the City) only apply to the river segments in the vicinity of those stations. Continued monitoring at other upstream stations closer to the City continue to indicate a bacteria impairment. As such, the City is required to develop a bacteria TMDL Action plan.

## **TMDL Waste Load Allocation (WLA) & Pollutant Reduction**

- The City is not required to report its individual WLA (i.e. its portion of the aggregate WLA)
- DEQ recognizes the challenges associated with applying numeric reductions to BMPs for bacteria removal due to the inherent variability in pollutant loading and the lack of extensive research and consensus on BMP efficiencies. As such, DEQ has stated that the City is not required to report numeric reductions from existing or proposed BMPs. The City will conduct a literature review to document and report the potential ranges of bacteria reduction efficiencies for reference purposes only.

## **TMDL Action Plan Effectiveness & Compliance**

- DEQ stated that the City may develop a single TMDL action plan to address the multiple impaired segments (i.e. Assessment Unit IDs) to which it discharges.
- The effectiveness of the City's TMDL Action Plan and the City's compliance with the TMDL WLA will be based upon implementation of programmatic BMPs to the maximum extent practical.
- The City may implement its TMDL Action Plan in an iterative and adaptive manner over time to allow for the evaluation of the effectiveness of various BMPs.
- DEQ's ambient water quality monitoring data will indicate the effectiveness of control measures by various sectors.

Best Regards,  
Kevin Utt

## Custalow, Benjamin

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**From:** Kevin W. Utt <kwutt@fredericksburgva.gov>  
**Sent:** Friday, September 04, 2015 8:46 AM  
**To:** Thomas, Bryant (DEQ)  
**Cc:** Bauer, Jaime (DEQ); Shoemaker, Rebecca (DEQ); Custalow, Benjamin; Liang, Lin; Joe Battiata  
**Subject:** RE: Rappahannock River Impairment Information

Bryant,

Thanks for the follow up and time in helping sort this out.

I'll be sure to keep the dialogue open as we move forward in the development of our action plan and will probably provide you a draft copy for review prior to submission to ensure we are on track with DEQ's expectations.

Please keep me posted of any new guidance that comes out or developments moving forward on this issue.

Thanks, and have a great Holiday weekend.

Kevin W. Utt  
Stormwater Administrator & Environmental Planner  
Planning Services Division  
Community Planning & Building Department  
715 Princess Anne Street  
Fredericksburg, VA 22404-7447  
540.372.1080

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**From:** Thomas, Bryant (DEQ) [mailto:Bryant.Thomas@deq.virginia.gov]  
**Sent:** Thursday, September 03, 2015 6:26 PM  
**To:** Kevin W. Utt  
**Cc:** Bauer, Jaime (DEQ); Shoemaker, Rebecca (DEQ); Custalow, Benjamin; Liang, Lin; Joe Battiata  
**Subject:** RE: Rappahannock River Impairment Information

Kevin,

In general, your summary is accurate. We do have a couple of minor comments to offer.

*Concerning the section TMDL Waste Load Allocation & Pollutant Reduction:*

- We agree with your summary. Please note that DEQ will be receiving and reviewing a number of local bacteria TMDL action plans in the coming months. Should we develop additional guidance or other information relative to this topic, we may have further clarification or details to offer.

*Concerning the section on TMDL Action Plan Effectiveness & Compliance:*

- The first bullet is correct regarding development of a single TMDL action plan for each pollutant addressed by an applicable TMDL(s), e.g. one TMDL action plan to address bacteria impaired streams. If there were other applicable TMDLs for different pollutants, we would expect to see separate action plans to address these applicable waste load allocations.

Please continue to communicate and coordinate with us, as needed, in the coming months as you work to develop your local action plan(s). The conversation/correspondence is helpful to all, and helps to ensure expectations are aligned as we move forward.

Respectfully,  
Bryant

*Bryant Thomas  
Regional Water Permits & Planning Manager  
Virginia Department of Environmental Quality  
Northern Regional Office  
13901 Crown Court  
Woodbridge, Virginia 22193  
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Email: [Bryant.Thomas@deq.virginia.gov](mailto:Bryant.Thomas@deq.virginia.gov)  
Website: [www.deq.virginia.gov](http://www.deq.virginia.gov)*

---

**From:** Kevin W. Utt [<mailto:kwutt@fredericksburgva.gov>]  
**Sent:** Tuesday, September 01, 2015 3:42 PM  
**To:** Thomas, Bryant (DEQ)  
**Cc:** Bauer, Jaime (DEQ); Shoemaker, Rebecca (DEQ); Custalow, Benjamin; Liang, Lin; Joe Battiatia  
**Subject:** RE: Rappahannock River Impairment Information

Bryant,

Thanks again for the follow up information and clarifications on this issue.

I've attached a follow up letter requesting confirmation of DEQ's position and our understanding on the items discussed on our August 14th phone conversation.

Please confirm.

Thanks.

Kevin W. Utt  
Stormwater Administrator & Environmental Planner  
Planning Services Division  
Community Planning & Building Department  
715 Princess Anne Street  
Fredericksburg, VA 22404-7447  
540.372.1080

 Please consider the environment before printing this e-mail

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**From:** Thomas, Bryant (DEQ) [<mailto:Bryant.Thomas@deq.virginia.gov>]  
**Sent:** Friday, August 21, 2015 1:23 PM  
**To:** Kevin W. Utt  
**Cc:** Bauer, Jaime (DEQ); Shoemaker, Rebecca (DEQ)  
**Subject:** Rappahannock River Impairment Information

Good afternoon Kevin,

Following up from our discussion last Friday, August 14, 2015, I am providing information and details concerning the recreation use impairments along the mainstem of and tributaries to the Rappahannock River in the upper tidal freshwater region. As you are aware, the [Tidal Freshwater Rappahannock Bacteria TMDL](#) was approved by the State Water Control Board in 2009, and included bacteria impairments for the recreation designated use for the Rappahannock River from the Route 1 bridge downstream to the confluence with Mill Creek (just below the Route 301 bridge). The impairment included in the TMDL is noted as TMDL ID VAN-E20E-01 and may appear to be one continuous impairment along the river; however, multiple assessed river segments compose VAN-E20E-01.

Subsequent to completion of the TMDL, DEQ completed water quality assessments for the years 2010, [2012](#), and [2014](#) (which is still under EPA review and is currently considered to be draft). Based on these assessments, two segments of the river were delisted for the recreation use due to water quality monitoring results that indicate that the segments are meeting the water quality standards for bacteria. Additionally, various other stream segments within the TMDL watershed were determined to be impaired for the recreation use and were 'nested' into the existing TMDL (which indicates that a new TMDL is not required for an impairment because the existing TMDL addresses the impairment's drainage area).

The attached spreadsheet outlines the water segments (noted by ID305B/Assessment Unit) within the TMDL watershed that were identified as impaired for the recreation use in the 2014 assessment. The table also indicates the location and size of each segment, as well as general information about each recreation impairment (including a description of the monitoring station(s) used to list the impairment) and indication of whether or not the segment was nested into the TMDL. The segments that were not nested (along with the two that have been delisted) represent the original portion of the Rappahannock River that was included in the TMDL. The field '2014 Cause Group Code' refers to codes that are assigned to impaired segments during the assessment process – these codes can be used to find the segments in the water quality assessment reports. Please note that both ID305B and cause group codes can change over time and may not necessarily represent the same stream reach from one assessment to another. The cause group codes indicated in the attached spreadsheet are specific to recreation bacteria impairments; the stream segments may have additional cause group codes assigned to them for impairments of other designated uses. Additionally, improved mapping capabilities used for the 2014 assessment may have resulted in changes to assessment unit size when compared to earlier assessments.

The 2014 assessment results for the recreation use within the TMDL boundary are also shown in the attached map. You can also see the assessment and TMDL information in DEQ's interactive mapping tool called [VEGIS](#). This [link](#) is specific to VEGIS for the 2014 assessment; to look at bacteria impairments, click on the link for Recreation Use Map Service. You will need to zoom in on the map in order to see river segments (the rivers layer is available only at specific map scales). You can click on an impaired (red) segment in the map; in the pop-up box, you can click on the ID305B to see more details about that segment's impairment (including the assigned cause group code and a list of other assessment units that are included in the same cause group code). In order to add the TMDL watershed boundary, click 'Add Map Layers' along the top of the map, choose 'Tmdl\_Main' in the TMDL folder, and then click on the green cross to add this service. After the TMDL service has loaded, turn on the 'TMDL Watershed' layer to see the outline of the Rappahannock River Tidal Fresh boundary.

I do not have the contact information for everyone that was on the call last week. Please forward this information along, as appropriate. Additionally, please let me know if you have any questions, comments or if you need additional information.

Respectfully,  
Bryant

*Bryant Thomas*  
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Northern Regional Office  
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City of Fredericksburg  
Community Planning & Building Department  
715 Princess Anne Street  
Fredericksburg, VA 22404  
<http://www.fredericksburgva.gov>

# Appendix B

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## Three High Priority Water Quality Issues Program Data

## Cigarette Butt Campaign

### Program Overview:

This is the third year (Reporting period FY2016) of implementation of this high water quality issue. This reporting period goal was to work with the City Attorney's office through the Clean & Green Commission to develop a new litter ordinance. In November 2015 cigarette butts identified as litter were reclassified from a Class III to Class I Misdemeanor offense with up to a \$2500 fine and/or 40 hours of community service. The specific code section is referenced here:

<http://www.ecode260.com/28967507?highlight=littering,litter>

The "Butts Are Litter Too" Campaign kicked off on November 1, 2015 and began a week long campaign to promote proper disposal of cigarette butts. The campaign featured the following:

- 96 yard signs at parks, high traffic or key areas and businesses
- 3 Letters to the Editor and Editorial in the Free-Lance Star
- AM radio hour long talk show partnering with Friends of the Rappahannock and University of Mary Washington (UMW)
- Door to door promotion in the downtown merchant area and length of Princess Anne Street asking business owners to have employees pledge to use receptacles
- Fred Bus, local government vehicles, businesses and organizations placed 3" x 5" adhesive-friendly stickers on windows
- UMW also participated with yard signs and stickers for this weeklong campaign, plus assembled 60 sand bucket ashtrays
- Two paid students worked downtown 2.5 hours on 3 weekend evenings handing out 2-sided cards with butt litter facts on one side and new ordinance on the reverse
- Fredericksburg Virginia Main Street program advertised the campaign in its newsletter
- Two banners were erected at Old Mill Park and Maury Stadium Playground to advertise the campaign, in addition to the UMW electronic sign on US Route 1
- Along with Friends of the Rappahannock, 26 volunteers collected 825 pounds of letter from the City Dock

At the Earth Day Festival held on April 18, 2016 tables were present with displays encouraging proper cigarette disposal and information on new fines for littering.

### Ongoing Activities:

- Door to door contact with businesses and organizations downtown and other key areas to encourage adoption of sand buckets
- Refilled 36 existing buckets and distributed 60 additional buckets
- Purchase, assembly (drill holes, cut out liner, fill with sand) and delivery of sand buckets with litter scoop to businesses and organizations downtown

- Education of new litter ordinance via calling card sized handouts, Police Department interface, on the street handouts, tabling, permanent signage at the Courthouse and Parks, one on one education with businesses and organizations downtown
- Purchase and installation of 11 metal butt receptacles on trash cans in the downtown area

## CALL TO ACTION

By Paula Chow, Commissioner, Clean & Green Commission

What do the following items have in common: cigarette butts, plastic bottle caps, beer caps, plastic utensils, broken fishing lines, rib bones, candy wrappers, gum? Answer: LITTER. Let's add tires to the list, too. On Sat., Nov. 7<sup>th</sup>, 30 volunteers came out to help the Clean & Green Commission's (C&G) campaign end of "Butts Are Litter Too" with a river clean up teaming with Friends of the Rappahannock at Old Mill Park and City Dock. Approximately 2,000 lbs. of litter was collected in 2 hours.

Interestingly, with the "Butts Are Litter Too" signs being up since Nov. 1<sup>st</sup>, there were many littered cigarette butts that were less than a week old throughout the parking lots. There were even parking places where smokers had come to enjoy the park and river view, all the while littering the parking lot with at least 6 cigarettes each. There is obvious dumping of their ash trays in other areas. Who are these smokers?

The C&G's campaign was timed after the City of Fredericksburg implemented the new litter ordinance. Whereas the littering fine was a Class 4 misdemeanor with a \$250 fine, the new ordinance increases the penalties to a Class 1 misdemeanor with up to \$2,500 fine, up to a year in jail and/or up to 40 hours of community service. Cigarette butts are identified in this new ordinance as litter. The campaign was an effort to inform and educate the public about this as well as to provide receptacles for cigarette butt disposal. Many businesses participated so there are a multitude of receptacles throughout downtown. Perhaps this is not enough of a solution. The City was intent on reducing the unwanted litter by increasing the litter ordinance penalties. Enforcement is probably the next step.

The smokers who litter are probably not reading this. So this is a call to action. Each of us can do something simple to help reduce this litter by speaking up. At the workplace, are there receptacles? If they are used, do these smokers also make it a habit to use receptacles elsewhere in their daily lives? It's an easy conversation to start if it's a co-worker. What about relatives and folks in your church or clubs? Start a conversation about this issue. We need your help.

## **Letter: No butts about it, stand against cigarette litter**

**Posted: Thursday, November 19, 2015 12:00 am**

They are all litter.

On Nov. 7, 30 volunteers including myself came out to help with the campaign finale of "Butts Are Litter Too" with a river cleanup organized by Friends of the Rappahannock at Old Mill Park and City Dock. FOR estimated that 825 pounds of litter was collected in two hours.

Interestingly, even with the "Butts Are Litter Too" signs being up since Nov. 1, there were many cigarette butts that were less than a week old throughout the parking lots. There were even parking places where smokers had come to enjoy the park and river view, all the while littering the parking lot with at least six cigarettes at each spot.

There is obvious dumping of their ashtrays in other areas.

About a month ago, Fredericksburg's new litter ordinance increased the penalties to a Class I (from a Class IV) misdemeanor with up to a \$2,500 fine, up to a year in jail and/or up to 40 hours of community service.

Cigarette butts are identified as litter in this new ordinance. The campaign was an effort to inform and educate the public about this as well as to provide receptacles for cigarette butt disposal.

Many businesses participated in the effort as evidenced by a multitude of receptacles throughout downtown.

Perhaps this is not enough. The city is intent on reducing the unwanted litter by increasing the litter ordinance penalties. Enforcement is probably the next step.

This is a call to action. Each of us can do something simple to help reduce this litter by speaking up. Are there receptacles at the workplace? If they are used, do these smokers also make it a habit to use receptacles elsewhere in their daily lives?

It's an easy conversation to start if it's a co-worker. What about relatives, friends and folks in your church or clubs? Start a conversation about this issue. Our community needs your help.

Paula Chow

Fredericksburg

## **Pet Waste Campaign**

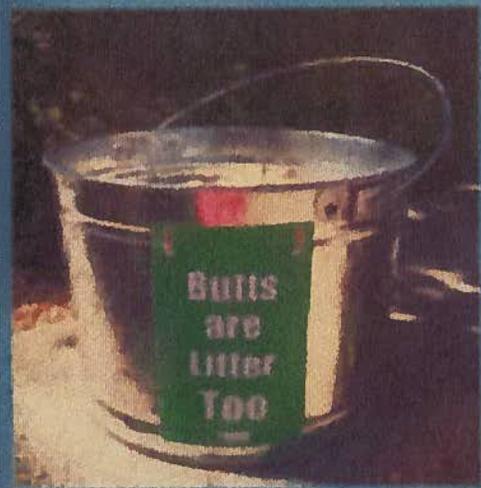
### **Program Overview:**

This is the third year (Reporting period FY2016) of implementation of this high water quality issue. The goal for this reporting period was to continue the ongoing efforts of previous years. During this reporting period the following ongoing activities were conducted:

- Monitoring of pet waste stations with signage and analysis of additional stations
- Stocking of "Mutt Mitt" bags at stations
- Monitoring of posted "Clean Up" signs and installation of new signs at new locations as needed
- Continue posting information on the City's website

The City will continue these ongoing activities for the upcoming reporting period. The estimated number of people reached and targeted audience is the licensed pet owners in the City and the numerous visitors with pets that utilize these facilities within the City. Also, potential exposure includes not only the City of Fredericksburg's local population of 28,213 (based on last census data), but the additional 210,000 people that visit Fredericksburg (taken from the Fredericksburg Visitors' Center data for 2014).





CLEAN & GREEN  
COMMISSION

## **River Clean Up Campaign**

### **Program Overview:**

This is the third year (Reporting period FY2016) of implementation of this high water quality issue. This reporting period plan was to again target areas of the Rappahannock River that front the City. Trash receptacles have been placed at strategic locations along the river and trail systems that abut the river, and along the canal that runs through the City. The River Cleanup Campaign for this period was composed of several dates in the fall and spring months.

It is estimated that the target audience that will be reached is hard to quantify, however these events are advertised in the local newspaper with a circulation of 46-50k copies, and posted on various organization websites that partner with the City, including the Friends of the Rappahannock and the American Canoe Association in addition to the City's website.

### **Summary/Results:**

#### **Summer/Fall 2015:**

- 147 volunteers
- 514 volunteer hours
- 11 clean up events
- 20 sites
- 6,105 pounds (3.05 tons) of trash removed

#### **Winter/Spring 2016:**

- 298 volunteers
- 894 volunteer hours
- 10 cleanup sites
- 15 sites
- 15,130 pounds (7.57 tons) of trash removed

The City will continue to partner with Friends of the Rappahannock to promote and participate in these crucial clean up events that have a direct impact on improving water quality.

# Appendix C

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## Solid Waste Event Fliers

# FALL CLEANUP TIME IN THE CITY!

## COMMUNITY CLEANUP WEEK

October 26-November 1

Clean up your business, yard & neighborhood

For information call 372-1023

### CONTAINER LOCATIONS/Community Cleanup Week

Take furniture, tires, appliances, brush, scrap materials to centralized locations in the City

(NO) household trash, paint, hazardous materials):

- SUMMIT STREET AND AIRPORT AVENUE (Mayfield)
- 1400 BLOCK OF KENMORE AVENUE (beside Cossey Botanical Park)
- FREEDOM LANE (in gravel lot between VFW and Falmouth Bridge)
- ALTOONA DRIVE (Sam Perry Fire House)
- RAPPAHANNOCK AVENUE (at Payne Street)
- BRAEHEAD WOODS (near Meade Ct.)
- CHADWICK COURT

### Appliance Pickup Day

Tuesday,  
October 27.

To request an  
appliance pickup,

Call

372-1023

by 4:30 p.m. Monday,  
October 26.

## Household Hazardous Waste Collection

**NEW LOCATION:**

★ ★ 1000 TYLER ST ★ ★  
CITY SHOP

**Saturday, October 24**

**9am-3pm**



# SPRING CLEANUP TIME IN THE CITY

## COMMUNITY CLEANUP WEEK

April 10 - 16, 2016

Clean up your business, yard & neighborhood

For information call 372-1023

### CONTAINER LOCATIONS/Community Cleanup Week

Take furniture, tires, appliances, brush, scrap materials  
(**NO** household trash, paint, or hazardous materials)  
to centralized locations in the City:

- **SUMMIT STREET AND AIRPORT AVENUE** (Mayfield)
- **1400 BLOCK OF KENMORE AVENUE** (beside Cossey Botanical Park)
- **FREEDOM LANE** (in gravel lot between VFW and Falmouth Bridge)
- **ALTOONA DRIVE** (Sam Perry Fire House)
- **RAPPAHANNOCK AVENUE** (at Payne Street)
- **BRAEHEAD WOODS** (near Meade Ct.)
- **CHADWICK COURT**

**Appliance Pickup Day**  
Tuesday, April 12

To request an  
appliance pickup,  
Call  
372-1023  
by 4:00 p.m. Monday,  
April 11

## *Household Hazardous Materials Collection Day*

### NEW LOCATION:

The Stafford County Government Center parking lot  
1300 Courthouse Road, Stafford, VA

Saturday, June 4th 9 am – 3 pm

See Cox Cable channel 84 or visit: [www.fredericksburgva.gov](http://www.fredericksburgva.gov) for more details

Sponsored by Rappahannock Regional Solid Waste Management Board (R-Board) and the City of Fredericksburg



FY2016 MS4 ANNUAL REPORT

# Appendix D

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## HAZMAT Spill Response Log

**Reporting Period 7/1/2015 thru June 30, 2016**

<b>Incident Date</b>	<b>Incident Address</b>	<b>Suspected Discharge</b>	<b>Resolution</b>	<b>Date Closed</b>
07/05/2015	2600 Cowan Blvd.	Vehicle leaking gasoline	Use epoxy putty & sta-dry to absorb the spilled fuel.	07/05/2015
07/16/2015	1321 Belman Road	Employees moving containers that produced noxious fumes. Totes originally contained formaldehyde and they were to have been triple washed before sending to current location.	Area contained and blocked from further entry and was turned over to clean-up contractor for mitigation.	07/16/2015
09/30/2015	801 William Street	Fumes related to an old diesel tank on site. Two days before incident, a contractor that was digging a foundation had located the fill pipe to an abandoned underground fuel oil tank. The fill pipe had been left open and during this time the City received a large amount of rain and the tank filled up with water and about 5 gallon of fuel was displaced in the parking lot.	The contractor was notified and responded to the scene. They cleaned up the spill and capped off the pipe until the tank can be removed.	09/30/2015
09/30/2015	616 Kenmore Avenue	Five gallon cans (6) filled with waste motor oil were leaking.	Each can was double bagged and placed on tarp. Business owner was informed to have all the waste disposed of immediately.	09/30/2015
11/05/2015	1500 Olde William Street	Motor vehicle leaking gasoline.	Driver had the right part to correct the problem and fixed it on the scene.	11/05/2015
02/27/2016	722 Caroline Street	Motor vehicle leaking gasoline.	Sta-dry was placed on and around the vehicle. FPD attempted to contact owner to get problem resolved.	02/27/2016

# Appendix E

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## VESCP/VSMP Staff Certifications

#	Last Name	First Name	Certification Type	Certification #	Expiration Date	Dept
1	Amin	Bassam	E&SC Combined Administrator	196	11/30/2018	Public Works
2	Bahre	Tim	E&SC Inspector	2667	11/30/2018	Planning & Building
3	O'Connor	Tracey	E&SC Inspector	3755	11/30/2016	Planning & Building
4	Saunders	John	Dual Combined Administrator	DCA0146	11/14/2017	Planning & Building
5	Utt	Kevin	E&SC Combined Administrator	483	11/30/2016	Planning & Building