ELIZABETH RIVER TMDL ACTION PLAN

VSMP MS4 Permit No. VA0088650

Prepared for:
City of Norfolk, Department of Public Works
Division of Environmental Management
2233 McKann Avenue
Norfolk, Virginia 23509

Prepared by:
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WRA Project No. 019512.006

June 2018
Elizabeth River Bacteria TMDL Action Plan

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June 2018
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ABBREVIATIONS

BMP  Best Management Practice
City  City of Norfolk
CWA  Clean Water Act
HRPDC  Hampton Roads Planning District Commission
HRSD  Hampton Roads Sanitation District
LA  Load Allocation
MOU  Memorandum of Understanding
MS4  Municipal Separate Storm Sewer System
PARS  Permit Administration and Review System
SWMF  Stormwater Management Facility
TMDL  Total Maximum Daily Load
VDEQ  Virginia Department of Environmental Quality
VSMP  Virginia Stormwater Management Program
VPDES  Virginia Pollutant Discharge Elimination System
WLA  Waste Load Allocation
1.0 INTRODUCTION AND BACKGROUND

1.1 Background

With a continued commitment to water quality improvement, the City of Norfolk (City) has developed this Action Plan to address the Bacterial Total Maximum Daily Load (TMDL) for the Elizabeth River Watershed as outlined in our Municipal Separate Storm Sewer (MS4) permit. The City is pleased to have this opportunity to provide more specific information regarding existing management programs as well as its proposed implementation strategies specific to Norfolk’s unique environment that will be implemented to improve the water quality of this valuable resource. Due to the City’s proximity to the Chesapeake Bay and its unique waterfront lifestyle, the Elizabeth River provides direct economic benefits through increased tourism, diverse fisheries, and an enhanced quality of life for residents; therefore, the City is devoted to seeing the Elizabeth River clean-up efforts succeed.

This report provides specific programmatic and structural best management practices (BMPs), both existing and planned, implemented by the City to address bacterial contamination. The City understands its role and responsibilities in the implementation of relevant local strategies through an adaptive management approach to support a reasonable assurance of TMDL compliance. The City is dedicated to improving the quality of both the Chesapeake Bay and local waterways.

Norfolk has had a long-standing commitment to storm water management. The City implemented its Environmental Storm Water Management Program in July 1991—making Norfolk one of Virginia’s forerunners in VPDES implementation. Norfolk’s comprehensive program addresses the quality and quantity of our storm water runoff while meeting state and federal regulations. With approximately 140 miles of shoreline, water quality is a primary concern to this coastal community located at the junction of the James River, the Chesapeake Bay and the Atlantic Ocean.

The City is designated as a Phase 1 MS4 and is authorized to discharge stormwater from municipally-owned or -operated storm sewer outfalls under Virginia Stormwater Management Program (“VSMP”) MS4 Permit No. VA0088650. This permit requires the City to address pollutants of concern (“POC”) in accordance with state requirements where it has been allocated a waste load in an approved TMDL. A TMDL establishes the maximum amount of a pollutant that can enter a water body without violating water quality standards.

The City’s most recent MS4 permit was issued by the Virginia Department of Environmental Quality (DEQ) with an effective date of July 1, 2016 and will expire June 30, 2021. This TMDL Action Plan documents how the City of Norfolk intends to meet the “TMDL Action Plans other than the Chesapeake Bay TMDL” requirement found in Part I.D.2 of its Phase I MS4 Permit. This document, required to be completed within 24 months of permit issuance or not later than July 1, 2018, addresses that requirement and serves as the City’s MS4 specific TMDL Action Plan to identify the BMPs and other activities to be implemented to address the bacteria waste load allocation assigned to the City’s regulated MS4 area by:

- evaluating significant sources of bacteria;
- assessing the adequacy of existing programs and legal authorities;
- identifying new action items and associated schedules and milestones; and,
- determining how the effectiveness of the plan will be assessed.
1.2 Regulated Areas

Regulated areas are lands that produce runoff that drain through the City’s stormwater system and discharge through pipes and/or ditches to the natural waterways within and adjoining the City. These are the lands covered by the City’s MS4 Permit and to which a waste load allocation has been assigned. Direct discharges from land to the surrounding waters that do not pass through the City’s stormwater system are not regulated under the City’s MS4 permit. However, most policies and pollutant reduction practices recommended in this Action Plan will apply city-wide and address discharges from both regulated and non-regulated lands.

The City of Norfolk has delineated their MS4 regulated area following the guidance set forth in the “Chesapeake Bay TMDL Special Condition Guidance – GM15-2005” (dated May 18, 2015). The regulated areas have not changed since the delineation and were used in the development of this TMDL Action Plan. The City’s geographic information system (“GIS”) data was used in the delineation of the MS4 regulated areas and allowable exclusions. The extent of the regulated MS4 service area and the impaired waters covered by this TMDL are provided graphically in Figure 1-1. Regarding Figure 1-1, it is worth nothing that the impaired waters shown are as of the date of the TMDL development in 2010. Subsequent to 2010, in a consummate example of the value of combined City- and community-led programs, the entire Lafayette River system has been delisted with the exception of Knitting Mill Creek.

1.3 Permit Compliance Crosswalk

Guidance Memo No. GM-16-2006, “TMDL Action Planning for Local Total Maximum Daily Loads as required in the Small MS4 General Permit (VAR04) Effective July 1, 2013 and MS4 Individual Permits”, was published by VDEQ on November 21, 2016 for use in developing local TMDL Action Plans. Table 1-1 provides an overview of the organization of this plan and how each section addresses Norfolk’s MS4 permit requirements and VDEQ guidance.

1.4 Public Notification and Comment

This TMDL Action Plan has been subjected to public notification and review. The Action Plan was published on the City of Norfolk website between May 11 and June 4, 2018 for public comment. Email notifications of the comment period were sent to contact lists for Keep Norfolk Beautiful, Bay Star Homes, and Civic League Presidents. A copy of the comments received and any action taken as a result of the comments is provided in Appendix A.
Figure 1-1. Impaired Waters Covered by this TMDL
<table>
<thead>
<tr>
<th>Action Plan Section</th>
<th>Action Plan Element</th>
<th>DEQ Local TMDL Action Plan Guidance</th>
<th>MS4 Permit Requirement Reference Section</th>
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<tr>
<td>Section 2.0</td>
<td>TMDL Report</td>
<td>The name(s) of the final TMDL report(s)</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Section 2.0</td>
<td>Pollutant of Concern</td>
<td>The pollutant(s) causing the impairment(s)</td>
<td>Not Applicable</td>
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<tr>
<td>Section 2.0</td>
<td>Bacteria TMDLs</td>
<td>The WLA(s) assigned to the MS4 as aggregate or individual WLAs</td>
<td>Not Applicable</td>
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<tr>
<td>Section 3.0</td>
<td>Evaluation of Significant Sources of Bacteria</td>
<td>Significant sources of POC(s) from facilities of concern owned or operated by the MS4 operator that are not covered under a separate VPDES permit</td>
<td>Section I.D.2.b)4)</td>
</tr>
<tr>
<td>Section 4.0</td>
<td>Existing and Planned Management Controls</td>
<td>Existing or new management practices, control techniques, and system design and engineering methods that have been or will be implemented as part of the MS4 Program Plan</td>
<td>Section I.D.2.b)2)</td>
</tr>
<tr>
<td>Section 5.0</td>
<td>Legal Authorities</td>
<td>Legal authorities such as ordinances, state and other permits, orders, specific contract language, and inter-jurisdictional agreements applicable to reducing the POCs</td>
<td>Section I.D.2.b)1)</td>
</tr>
<tr>
<td>Section 6.0</td>
<td>Enhanced Education, Outreach, and Training</td>
<td>Enhancements to public education, outreach, and employee training programs to reduce discharges of the POC(s)</td>
<td>Section I.D.2.b)3)</td>
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<tr>
<td>Section 7.1</td>
<td>Schedule and Milestones</td>
<td>A schedule of interim milestones and implementation of the items in 4, 5, and 6;</td>
<td>Section I.D.2.b)5)</td>
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<td>Section 7.2</td>
<td>Assessment of Effectiveness</td>
<td>Methods to assess TMDL Action Plans for their effectiveness in reducing POC(s)</td>
<td>Section I.D.2.b)5)</td>
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<tr>
<td>Section 7.3</td>
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<td>Measurable goals and the metrics that the permittee and Department will use to track goals (and milestones required by the permit)</td>
<td>Section I.D.2.b)5)</td>
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</table>
2.0 APPLICABLE TMDL REPORT, POLLUTANT OF CONCERN, AND WASTE LOAD ALLOCATION

Based on the water quality assessment presented in the April 2010 “Bacterial Total Maximum Daily Load (TMDL) for the Elizabeth River Watershed”, herein referred to as the Elizabeth River TMDL, prepared by the Louis Berger Group, Inc. for the Virginia Department of Environmental Quality (“VDEQ”), the Elizabeth River does not support its designated use of primary contact recreation (e.g. swimming and fishing). In accordance with Section 303d of the Clean Water Act and the US Environmental Protection Agency’s (“EPA”) Water Quality Planning and Management Regulations (40 CFR Part 130), VDEQ has developed a TMDL for the POC enterococcus bacteria in the Elizabeth River and the City has been allocated a waste load allocation (“WLA”). The TMDL was approved by the EPA on July 20, 2010 and by the State Water Control Board (“SWCB”) on September 30, 2010.

The City of Norfolk is subject to two (2) separate TMDLs that assign WLAs for discharges of bacteria to impaired waters. The WLAs are assigned in aggregate to multiple MS4 permit holders within the City of Norfolk’s geographic boundary. MS4 permit holders include the City of Norfolk and Norfolk State University (VAR040097).

Table 2-1 summarizes the approved TMDL WLAs for enterococcus.

<table>
<thead>
<tr>
<th>TMDL Watershed</th>
<th>WLA</th>
<th>Aggregated Permittee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Branch, Elizabeth River – Lower Broad Creek, Eastern Branch - Elizabeth River</td>
<td>1.18E+13 cfu/day</td>
<td>Norfolk State University (VAR040097)</td>
</tr>
<tr>
<td>Elizabeth River Mainstem – Upper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knitting Mill Creek</td>
<td>1.03E+13 cfu/day</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Lafayette River - Upper</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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### 3.0 SIGNIFICANT SOURCES OF THE POLLUTANT OF CONCERN

The MS4 Permit requires the City to assess all significant sources of the POC from facilities of concern owned or operated by the City that are not covered under a separate VPDES permit. This topic is covered more fully in Section 4.0 of this plan. However, as a whole, it is important to understand the magnitude of each of the bacterial sources in the affected watersheds so that effective programs can be developed and implemented to address the TMDL in a cost-effective manner. Table 3-1 summarizes the nature and magnitude of the bacterial sources in each of the affected watersheds, the required reductions, and the amount of the source reduction as a percent of the total reduction required.

#### Table 3-1. Bacteria Sources and Required Reductions for each TMDL Watershed

<table>
<thead>
<tr>
<th>Bacterial Source</th>
<th>Impaired Watershed</th>
<th></th>
<th></th>
<th>Lafayette River</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower Eastern Branch, Lower Southern Branch, Indian River, Broad Creek Upper Mainstem</td>
<td></td>
<td></td>
<td>Lafayette River</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Percent of Existing Load (%)</td>
<td>Required Reduction in Source (%)</td>
<td>Required Reduction in Source as a Percent of Total Reduction (%)</td>
<td>Percent of Existing Load (%)</td>
<td>Required Reduction in Source (%)</td>
<td>Required Reduction in Source as a Percent of Total Reduction (%)</td>
</tr>
<tr>
<td>Sanitary Sewer Overflows</td>
<td>5.7</td>
<td>100</td>
<td>6.0</td>
<td>5.9</td>
<td>100</td>
<td>7.8</td>
</tr>
<tr>
<td>Failed Septic Systems</td>
<td>&lt; 0.1</td>
<td>100</td>
<td>&lt; 0.1</td>
<td>&lt; 0.1</td>
<td>100</td>
<td>&lt; 0.1</td>
</tr>
<tr>
<td>Pets</td>
<td>45.3</td>
<td>100</td>
<td>47.7</td>
<td>69.9</td>
<td>98</td>
<td>90.1</td>
</tr>
<tr>
<td>Wildlife</td>
<td>15.9</td>
<td>68</td>
<td>11.4</td>
<td>22.6</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Livestock</td>
<td>33.1</td>
<td>100</td>
<td>34.8</td>
<td>1.6</td>
<td>98</td>
<td>2.1</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 3-1 illustrates that the vast majority of source load reduction requirements are associated with pet waste in both TMDL watersheds. Each watershed also has nominal removal requirements for bacterial sources resulting from sanitary sewer overflows and failing septic system. Norfolk has substantial existing programs in place to address these bacterial sources.
An anomaly of the TMDL is the rather high source loadings associated with livestock and wildlife sources within the Elizabeth River watershed. A review of the TMDL reveals that no livestock loadings were attributed to Norfolk during development of the TMDL loads. However, waste load allocations in the TMDL were performed on the basis of ratios of urbanized areas for the cities located in the Elizabeth River watershed. Therefore, while Norfolk has a small percentage of the affected watershed as a whole compared to the City of Chesapeake, for example, the waste load allocation attributable to Norfolk is an artifact of the process of apportionment rather than being based on actual land use which affects livestock loadings. In practical terms, Norfolk has no real requirement to address livestock loads.
4.0 EXISTING MANAGEMENT PRACTICES

Part 1.D.2.b)2) of the MS4 Permit requires the City to “… identify and maintain an updated list of all additional management practices, control techniques … that have been implemented as part of the MS4 Program Plan that are applicable to reducing the pollutant identified in the WLA.”

Throughout this section, existing management practices performed by the City to address bacterial sources of water quality impairments are highlighted. These practices have both great depth and breadth. It is worth noting that these practices are not new; conversely, since the Elizabeth River TMDL came to fruition in 2010, the City has been implementing and adding programs to address the bacterial issue even prior to the requirement to do so. In fact, many of the programs discussed below were instigated to specifically address the 2010 TMDL, examples of which include the City’s pet waste management and public education programs.

The City of Norfolk has an aggressive storm water management program in place to address water quality improvements related to the Elizabeth River Bacteria TMDL including, but not limited to:

- A BMP program that includes aggressive inspections;
- Maintenance, repair, and cleaning of the City-owned and operated MS4 system including ditches, pipes, structures, outfalls, and BMPs;
- Sweeping of all streets within the City of Norfolk;
- An Environmental Crimes Task Force, a collaboration of special commissioned police officers in Departments that collectively investigate and enforce environmental ordinances throughout the City including pollution of the storm water system;
- A Spill Response and Illicit Discharge Detection and Elimination Program to prevent, identify, and clean potential discharges to the City’s MS4;
- A program to inspect storm water structures to identify and eliminate illicit discharges;
- A Sanitary Sewer Overflow (SSO) and cross connection elimination program;
- Annual dry weather monitoring of the MS4 system;
- Local and regional coordination and participation on committees such as the Watershed Management Task Force, Keep Norfolk Beautiful / Norfolk Environmental Commission, Hampton Roads Joint Environmental Committee, Elizabeth River Steering Committee, and Lafayette River Steering Committee;
- A public education and outreach program to address water quality improvement; and,
- Construction of water quality improvement projects.

VDEQ Guidance Memo No. 16-2006, TMDL Action Planning for Local Total Maximum Daily Loads as Required in the Small MS4 General Permit (VAR04) Effective July 1, 2013 and MS4 Individual Permits, dated November 21, 2016, stipulates that any illicit discharges (e.g., illicit discharges, leaking pipes, sanitary sewer overflows) must be addressed by the permittee in the TMDL Action Plan. However, DEQ has also recognized that existing programmatic practices, ordinances, and outreach currently in place may be sufficient to address bacterial sources and permittees are encouraged to consider practices such as public education and outreach to influence behaviors. Accordingly, the remainder of this section of the TMDL Action plan is organized by: (1) activities which address illicit discharges; and (2) other programmatic activities which improve bacterial water quality.
4.1 Activities Addressing Illicit Discharges

4.1.1 Sanitary Sewer Overflows

The Department of Utilities makes notification of sanitary sewer spills to DEQ through the DEQ/HRPDC Sanitary Sewer Overflow Reporting System (SSORS). SSORS is a web-based spill reporting and tracking system developed by the HRPDC that simplifies the initial notification and 5-day letter reporting requirements for sanitary sewer overflows. Once Norfolk logs into the SSORS system and enters necessary data, a report is automatically sent to DEQ and, for spills exceeding 1,000 gallons, to the Virginia Health Department.

Data collected in SSORS includes the date and time of reporting, date and time of the incident, location of the incident, possible receptors/affected water body, material spilled, amount spilled, amount cleaned up, amount reaching state waters, and corrective actions taken. SSORS provides a summary of spill reports, upon request, that can be downloaded into Microsoft Excel or similar programs.

4.1.2 Sanitary Sewer System Maintenance and Repair

The Norfolk Department of Utilities, Division of Wastewater performs preventative maintenance to repair pipes and clear blockages to minimize exfiltration from the sanitary sewer system. The Division maintains a list of lines and a schedule of when they are to be inspected and maintained. The Division performs television inspection of sanitary sewer lines. Potential problem areas are inspected on a 7, 14, 30, or 60-day basis, depending on the assigned level of risk. The Division tracks the maintenance and inspection performed and reports this data annually to the Division of Environmental Storm Water Management for inclusion in the Annual Report.

The MS4 permit requires the City to continue implementing a program to minimize the exfiltration from the sanitary system to the MS4. While the Department of Public Works is not responsible for the inspection and maintenance of the sanitary sewer system, the Department works closely with the Department of Utilities to identify and correct deficiencies within the sanitary sewer network in part through implementation of a storm water preventative maintenance inspection program for storm water infrastructure. This effort is instrumental in allowing the Departments of Public Works and Utilities to cooperatively identify and remove cross-connections between the sanitary and storm sewer systems.

The City will continue to inspect a minimum of 724,000 linear feet of sanitary sewer as required by Part I, Section B.2.e)2) of the MS4 permit to identify deficiencies in the sanitary sewer system. In FY 2017, the City inspected 854,150 linear feet of sanitary sewer.

A list of recent sanitary sewer evaluation and rehabilitation construction projects addressing potential illicit discharges, and which will continue in the future, is provided in Table 4-1.
Table 4-1. Recently Completed Sanitary Sewer Evaluation and Rehabilitation Projects

<table>
<thead>
<tr>
<th>Project Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barraud Park Pump Station 153 Service Area - Phase 2</td>
</tr>
<tr>
<td>Bayview PS 23 Service Area Water &amp; Sewer Replacement - Phase 2</td>
</tr>
<tr>
<td>Bayview PS 23 Service Area Water &amp; Sewer Replacement - Phase 3</td>
</tr>
<tr>
<td>Bayview PS 23 Service Area Water &amp; Sewer Replacement - Phase 4</td>
</tr>
<tr>
<td>Bruce’s Park Pump Station 152 - Phase 2</td>
</tr>
<tr>
<td>Bayview PS 23 Service Area Water &amp; Sewer Replacement – Phase 2</td>
</tr>
<tr>
<td>Bayview PS 23 Service Area Water &amp; Sewer Replacement – Phase 3</td>
</tr>
<tr>
<td>Bayview PS 23 Service Area Water &amp; Sewer Replacement – Phase 4</td>
</tr>
<tr>
<td>Fairmount Park PS 18 Water &amp; Sanitary Sewer Replacement – Phase 11</td>
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<tr>
<td>Fairmount Park PS 18 Water &amp; Sanitary Sewer Replacement – Phase 12</td>
</tr>
<tr>
<td>Fairmount Park PS 18 Water &amp; Sanitary Sewer Replacement – Phase 13a</td>
</tr>
<tr>
<td>Ghent Neighborhood/Mowbray Arch Water &amp; Sanitary Sewer - Phase 2</td>
</tr>
<tr>
<td>Kensington/Park Place PS 10 Water &amp; Sewer Upgrades</td>
</tr>
<tr>
<td>Monticello Sewer PS 4 Replacement</td>
</tr>
<tr>
<td>West Ocean View/Northside PS 15 Water &amp; Sanitary Sewer Replacement - Phase 2</td>
</tr>
<tr>
<td>West Ocean View/Northside PS 15 Water &amp; Sanitary Sewer Replacement - Phase 3</td>
</tr>
</tbody>
</table>

4.1.3 Illicit Discharge Detection and Elimination (IDDE)

The City addresses illicit discharges to the stormwater system in accordance with Sections I.B.2.e)5) and I.B.2.l)1) of the MS4 permit with the goal of detecting the presence of potential illicit connections and unauthorized discharges by conducting dry weather screening. The City’s IDDE program has existed since the inception of the stormwater management program dating back more than 20 years, but has seen significant expansion of staff and scope since 2010 in support of the Elizabeth River Bacteria TMDL and other regulatory requirements, with many of these efforts formalized as requirements in the 2016 MS4 permit renewal.

Prior to 2017, IDDE and infrastructure inspections were predominately based on complaints received from citizens or city field staff. In 2017, the City expanded its IDDE program to a more strategic approach in order to meet both environmental regulatory screening and preventative maintenance inspection goals. Field staff aim to visually inspect the City’s approximately 28,000 stormwater structures on a routine basis. The program also utilizes a closed-circuit television (CCTV) truck to inspect pipes. Inspectors coordinate with operational staff to conduct identified maintenance or repairs. Any inspections conducted more than 48 hours after a rainfall event are also considered dry-weather screenings. Inspection zones were created based on:

- areas of concern such as pet kennels, commercial car washes, car dealerships, and restaurants;
- sites requiring further investigation, as identified through previous screening;
- the age and density of development, with a focus on older residential, commercial and industrial areas;
- the general land uses in the city;
- areas with environmentally sensitive downstream features; and,
- areas having a history of complaints.

The Department of Public Works also conducts environmental investigations on a complaint driven basis. If a resident reports a suspicious complaint, it is investigated to ensure there is not an illicit discharge.
During inspections, the structures are checked for flowing water, discharges, strange odors, blockages, and maintenance problems. If flow is discovered, the lines are traced back using GIS mapping. Approximately 60% of the City’s infrastructure is influenced with inundation during normal tidal cycles. Inspectors utilize tidal data when investigating flow. Field samples, where applicable, are taken to determine the source of flow. Samples may be analyzed in the field for pH, alkalinity, chlorine, petroleum and detergents. Action is taken if the sample results fall outside a targeted range of values or there is evidence of an odor typical of sanitary sewage.

If an illicit discharge is discovered during inspections and action is required based on the screening values, efforts are made to contain the discharge, take necessary corrective actions to eliminate the discharge, and report the discharge immediately to the Department of Environmental Quality (DEQ). If the discharge is suspected waste water from Hampton Roads Sanitation District or Department of Utilities systems, stormwater field inspectors will coordinate with the responsible party to address and eliminate the sanitary sewer overflow. If a discharge from private property is suspected to require individual coverage under a storm water permit, the owner/manager is notified to contact VDEQ regarding obtaining a storm water permit. VDEQ is also notified by the City to follow up with the private property owner.

The City also maintains a list of high-risk dischargers to the MS4 that do and do not have a VPDES industrial discharge permit. The list includes facilities such as nurseries, landscape facilities, pet care facilities, and areas with a history of complaints. Inspection of facility discharges to the MS4 are prioritized by Norfolk based on: historical discharges; local water quality impairments for pollutants; DMR violations; and citizen complaints. Norfolk inspects, but does not necessarily monitor, all VPDES industrial permitted outfalls that tie into the City’s MS4 at least once every five years. While the City inspects non-VPDES-permitted facilities that tie into the MS4, the high priority inspections are based on their risk of contributing a significant pollutant load to an impaired water through the MS4.

### 4.2 Programmatic Activities to Improve Bacterial Water Quality

#### 4.2.1 Septic System Programs

Most of the City’s household sanitary sewage is discharged to the public sewer system. Records indicate that a limited number of properties continue to use a septic system city-wide, including properties within Norfolk’s regulated MS4 service area contributing to the Elizabeth River watershed. Figure 4-1 illustrates the location of active septic systems within the City of Norfolk while Table 4-2 summarizes the distribution of septic systems within the City. Septic systems in the City will continue to be reduced as new connections to the public sewer are made through sewer extensions which allow property owners to connect to the sanitary sewer system and abandon/remove their septic tanks, effectively reducing the risk of septic tank discharges. Section 39.1-5 of the City Code requires the owner of any premises or other building in which humans live or congregate to connect to public sewer when accessible within 200 feet of the property line.

In accordance with Section 39.2-4 of the City Code, all on-site sewage disposal systems not requiring a Virginia Pollution Discharge Elimination System (VPDES) permit are required to be pumped out at least once every five (5) years in accordance with state and local law and HRSD requirements. During fiscal year 2016, 114 septic tank pump outs were reported to the Virginia Department of Health. As failed drainfields are the primary cause of failed on-site wastewater treatment systems,
Section 39.2-3 of the City Code requires that a reserve drainfield with a capacity at least equal to that of the primary drainfield be provided for systems installed after October 1, 1989.

Figure 4-1. Septic Tank Locations
Table 4-2. Distribution of Septic Tank Systems

<table>
<thead>
<tr>
<th>Service Area Delineation</th>
<th>Unimpaired Waterbodies</th>
<th>Impaired Water Bodies</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lafayette River</td>
<td>Elizabeth River</td>
<td></td>
</tr>
<tr>
<td>In MS4 Service Area</td>
<td>82</td>
<td>52</td>
<td>152</td>
</tr>
<tr>
<td>Outside MS4 Service Area</td>
<td>43</td>
<td>38</td>
<td>106</td>
</tr>
<tr>
<td>Total</td>
<td>125</td>
<td>90</td>
<td>258</td>
</tr>
</tbody>
</table>

In its Eastern Branch Environmental Restoration Strategy adopted November 2014, the Elizabeth River Project (ERP) set a goal to establish a regional task force on septic tanks, with the Eastern Branch as the pilot focus area. The purpose of the task force is to increase tracking of existing septic tanks, enforce tank pump outs, provide education and consider incentives and grant programs for replacing tanks with wastewater hookups. The regional task force has been established in partnership with the ERP, municipalities including the City, the Virginia Department of Health (VDH), and the Hampton Roads Sanitation District (HRSD). The City will remain a stakeholder on the Task Force. The various City Departments, including Public Works, Utilities, and Health will also continue to cooperate to ensure that the effective review and implementation of septic tank pumpouts is accomplished. Finally, the City will coordinate with outside parties and NGOs to identify grant opportunities and cost sharing opportunities to remove septic systems on qualifying properties.

4.2.2 Boater Programs

Marinas and heavy boating can contribute to bacteria loads when waste is not properly collected and transported for treatment via the sanitary sewer system in pump stations. While there are numerous privately-owned marinas in Norfolk, there are no City-owned marinas. Table 4-3 lists the privately-owned marinas within the City.

The Virginia Clean Marina Program promotes the voluntary adoption of measures that reduce pollution from marinas, boatyards, and recreational boats. A marina that is in compliance with all legal regulatory requirements and has adopted best management practices (BMPs) as outlined in the clean marina criteria checklist is certified as a “Virginia Clean Marina”. Marinas in the City of Norfolk that are designated as a “Clean Marina” are indicated by (*) in Table 4-3, while marinas that are located in one of the impaired watersheds are indicated by (#). While not all marinas are located within the limits of the impaired watersheds, many are located adjacent to impaired segments. It should be recognized that boats are mobile sources and the available pumpout facilities provide water quality benefits for both impaired and unimpaired waters in the Elizabeth River.

The City, along with other municipalities and organizations, has entered into an agreement, “The Hampton Roads Boater Pump-Out Internship Program” with HRSD, to educate local boaters about proper disposal of vessel sewage at marinas within HRSD’s service area. The Hampton Roads Boater
Pump Out Program is a supportive effort of the City of Norfolk, HRSD, the City of Virginia Beach, and the Sport Fish and Wildlife Restoration Grant Program administered the VDH. As part of the program, HRSD:

- educates the public on the reasons for proper disposal of waste from marine sanitation devices;
- recognizes the City on displays promoting the program;
- attends water-themed events and festivals in the City to promote the program; and,
- provides boat owners another vessel-friendly alternative to using marina pump out facilities, including residential appointments.

Program interns work to educate the boating community on the hazards of dumping boater sanitary wastewater into local waterways. A free pump out service is provided from Memorial Day Weekend through Labor Day Weekend on Fridays to Sundays and in the fall and spring on Saturdays. Sewage is pumped out of holding tanks to be transported to HRSD wastewater treatment plants for proper treatment.

**Table 4-3. Private Marinas located in the City of Norfolk**

<table>
<thead>
<tr>
<th>Marina Name</th>
<th>Address</th>
<th>Boating Activity Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobb’s Marina *</td>
<td>4524 Dunning Road</td>
<td>Marina</td>
</tr>
<tr>
<td>Little Creek Marina *</td>
<td>4801 Pretty Lake Avenue</td>
<td>Marina</td>
</tr>
<tr>
<td>Bay Point Marina *</td>
<td>9500 30th Bay Avenue</td>
<td>Marina</td>
</tr>
<tr>
<td>Knitting Mill Creek Yacht Club #</td>
<td>765 West 48th Street</td>
<td>Yacht club</td>
</tr>
<tr>
<td>American Legion Post 60 Marina #</td>
<td>4610 Colley Avenue</td>
<td>Marina</td>
</tr>
<tr>
<td>Tidewater Boat Club #</td>
<td>798 West 46th Street</td>
<td>Marina</td>
</tr>
<tr>
<td>Mack’s Pier #</td>
<td>794 West 45th Street</td>
<td>Marina</td>
</tr>
<tr>
<td>Nauticus Marina *</td>
<td>One Waterside Drive</td>
<td>Marina</td>
</tr>
<tr>
<td>Norfolk Yacht &amp; Country Club # *</td>
<td>7001 Hampton Boulevard</td>
<td>Yacht club</td>
</tr>
<tr>
<td>Rebel Marine Service</td>
<td>1525 Bayview Street</td>
<td>Marina</td>
</tr>
<tr>
<td>Vinings Landing Marina *</td>
<td>8166 Shore Drive</td>
<td>Marina</td>
</tr>
<tr>
<td>Waterside Marina *</td>
<td>333 Waterside Drive</td>
<td>Marina</td>
</tr>
<tr>
<td>Willoughby Harbor Ltd. *</td>
<td>1553 Bayville Street</td>
<td>Marina</td>
</tr>
<tr>
<td>Williams Pier</td>
<td>1201 Little Bay Avenue</td>
<td>OPWBAM</td>
</tr>
<tr>
<td>Willoughby Boat Club Condo</td>
<td>863 Little Bay Avenue</td>
<td>Marina</td>
</tr>
<tr>
<td>Little Bay Boat &amp; Beach Club</td>
<td>833 Little Bay Avenue</td>
<td>OPWBAM</td>
</tr>
<tr>
<td>Little Bay Harbor Marina</td>
<td>787 W. Ocean View Ave.</td>
<td>OPWBAM</td>
</tr>
<tr>
<td>Little Bay Landing Condos</td>
<td>585 W. Ocean View Ave.</td>
<td>Marina</td>
</tr>
<tr>
<td>U. S. Naval Station REC Sailing</td>
<td>1025 A Winged Foot Court</td>
<td>Marina</td>
</tr>
</tbody>
</table>

* Virginia Clean Marina

# Marina located in an impaired watershed
4.2.3 Pet Waste Programs

Pet waste can enter the MS4 when it is left on a surface that drains to a storm sewer. Dog parks, dog kennels, and veterinary facilities are examples of specific land uses with a potential high risk for bacteria to enter the MS4.

The Department of Public Works has a multitude of programs to address proper disposal of pet waste. The City’s “Scoop the Poop” program is an ongoing campaign that has been coordinated through the Hampton Roads Planning District Commission and adopted by the City. The “Scoop the Poop” campaigning varies from year to year, but is incorporated in outreach campaigns through civic presentations, school programming, special events, festivals, and other media venues and brochure development. Additionally, proper pet waste disposal is a key component of the City’s Star Homes programs, established since 2010 to assist with TMDL requirements and other City goals.

Norfolk has identified twelve dog parks, both fenced and unfenced, located within the City MS4 service area. All but one of the dog parks, the fenced Maple Avenue Dog Park located at 176 Maple Avenue in the Little Creek Watershed, are located in the Elizabeth River watershed. Since 2010, the City has afforded citizens increased assistance in managing pet waste by encouraging environmental stewardship, including: providing baggies for collecting pet waste; procuring and installing pet waste stations at parks, beaches, and dog parks; and creation of a community-based program for installing additional pet waste stations.

Over the course of the last several years, the City has also placed an emphasis on educating pet care facilities via site visits and distribution of educational information. A total of eleven (11) facilities were visited in FY 2017 focusing on doggie day care facilities, groomers, boarders, and kennels.

4.2.4 Wildlife Contribution Controls

By ordinance, feeding of native Virginia wildlife, except by bird feeders, is unlawful within the City limits except in areas designated for that purpose. While the City has no requirement to address additional wildlife contribution controls, it will nonetheless explore additional opportunities which may present benefits. Specifically, the City will investigate whether additional signage discouraging wildlife feeding may be beneficial at select locations including areas surrounding publicly maintained wet ponds and at high profile public facilities such as the Virginia Zoological Park.

4.2.5 Structural Best Management Practices

Over time, both the City and private concerns have implemented well over 1,000 structural best management practices (BMPs) providing direct water quality benefits to the Elizabeth River. Figure 4-2 illustrates the location of active BMPs within the City of Norfolk while Table 4-4 summarizes the distribution of the BMPs. Collectively, these BMPs treat more than 7,500 acres (11.8 square miles) of land area and these BMPs provide a significant bacterial loading reduction. Table 4-5 provides VDEQ recognized bacterial removal efficiencies for the structural BMPs present in Norfolk.

The City has instituted an aggressive inspection and maintenance program to ensure these facilities maintain their pollutant removing capabilities. Inspection of City-owned BMPs, including those of Norfolk Public Schools, are typically conducted annually and City maintenance crews perform
maintenance on the City-owned BMPs based on inspection discrepancies or on the preventative maintenance program. Re-inspections of storm water facilities are conducted to ensure maintenance has been completed.

The City also performs regular inspections of privately-owned structural BMPs, at a minimum frequency of once every 5-years. Prior to site plan approval for a project constructing a privately-owned BMP, a Declaration of Covenants (i.e., BMP Maintenance Agreement) must be completed and recorded with the City Clerk of the Court. The Declaration of Covenants outlines the property owner’s responsibility to maintain the BMP and permits the City of Norfolk to conduct routine inspections and maintenance if necessary. Additionally, per the authority of Section 41.1 of the Norfolk City Code, the City requires property owners to install and maintain BMPs per their approved site plan. Violation of this ordinance may result in a class 1 misdemeanor charge.

If a condition is discovered on a private BMP and maintenance is required, the owner of the BMP is notified by an inspection report to correct all maintenance items. The BMP is then re-inspected to ensure all maintenance items are corrected and in compliance with all state and federal regulations. If problems persist, enforcement action is taken.

The City will continue implementing and maintaining projects identified as part of its Chesapeake Bay TMDL Action Plan. While the primary purpose is the reduction of nutrients and sediments to the Chesapeake Bay, the City has and will continue to invest significant resources to capital projects identified in the plan which will also serve to reduce anthropogenic sources of bacteria within not only the impacted watersheds covered by the bacteria TMDL, but across the entire watershed on both regulated and unregulated lands. Because the Elizabeth River watershed is a direct tributary to the Chesapeake Bay, implementing BMPs to help achieve the Bay TMDL Bay goals will also help to reduce bacteria levels in the river.

Table 4-4. Distribution of Structural BMPs

<table>
<thead>
<tr>
<th>Service Area Delineation</th>
<th>Unimpaired Waterbodies</th>
<th>Impaired Water Bodies</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lafayette River</td>
<td>Elizabeth River</td>
<td></td>
</tr>
<tr>
<td>Inside MS4 Service Area</td>
<td>371</td>
<td>198</td>
<td>283</td>
</tr>
<tr>
<td>Outside MS4 Service Area</td>
<td>112</td>
<td>61</td>
<td>91</td>
</tr>
<tr>
<td>Total</td>
<td>483</td>
<td>259</td>
<td>374</td>
</tr>
</tbody>
</table>
### Table 4-5. Bacteria Removal Efficiencies of Structural BMPs

<table>
<thead>
<tr>
<th>PARS BMP Designation (1)</th>
<th>No. of BMPs Present in Norfolk</th>
<th>VDEQ BMP Designation (2)</th>
<th>VDEQ Recognized Bacteria Removal Efficiency (2) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioretention 1</td>
<td>14</td>
<td>Bioretention</td>
<td>90</td>
</tr>
<tr>
<td>Bioretention 2</td>
<td>11</td>
<td>Bioretention</td>
<td>90</td>
</tr>
<tr>
<td>Bioretention Basin</td>
<td>75</td>
<td>Bioretention</td>
<td>90</td>
</tr>
<tr>
<td>Bioretention Urban</td>
<td>5</td>
<td>Bioretention</td>
<td>90</td>
</tr>
<tr>
<td>Constructed Stormwater</td>
<td>1</td>
<td>Constructed Wetland</td>
<td>80</td>
</tr>
<tr>
<td>Wetlands</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detention Basin</td>
<td>136</td>
<td>Dry Detention Pond</td>
<td>30</td>
</tr>
<tr>
<td>Dry Swale 1</td>
<td>7</td>
<td>Bioswale</td>
<td>80</td>
</tr>
<tr>
<td>Dry Swale 2</td>
<td>4</td>
<td>Bioswale</td>
<td>80</td>
</tr>
<tr>
<td>Extended Detention Basin</td>
<td>55</td>
<td>Wet Pond</td>
<td>70</td>
</tr>
<tr>
<td>Extended Detention Pond 1</td>
<td>1</td>
<td>Wet Pond</td>
<td>70</td>
</tr>
<tr>
<td>General Infiltration Practices</td>
<td>325</td>
<td>Infiltration Trench</td>
<td>90</td>
</tr>
<tr>
<td>General Intermittent Sand</td>
<td>1</td>
<td>Filtering Practice</td>
<td>35</td>
</tr>
<tr>
<td>Filter Practices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grass Channel</td>
<td>13</td>
<td>Bioswale</td>
<td>80</td>
</tr>
<tr>
<td>Grassed Swale</td>
<td>67</td>
<td>Bioswale</td>
<td>80</td>
</tr>
<tr>
<td>Infiltration 1</td>
<td>12</td>
<td>Infiltration Trench</td>
<td>90</td>
</tr>
<tr>
<td>Infiltration 2</td>
<td>10</td>
<td>Infiltration Trench</td>
<td>90</td>
</tr>
<tr>
<td>Manufactured BMP Systems</td>
<td>264</td>
<td>Manufactured BMPs</td>
<td>80</td>
</tr>
<tr>
<td>Other SWMF</td>
<td>16</td>
<td>Not Applicable (3)</td>
<td></td>
</tr>
<tr>
<td>Permeable Pavement 1</td>
<td>10</td>
<td>Not Applicable (3)</td>
<td></td>
</tr>
<tr>
<td>Permeable Pavement 2</td>
<td>2</td>
<td>Not Applicable (3)</td>
<td></td>
</tr>
<tr>
<td>Rainwater Harvesting</td>
<td>1</td>
<td>Not Applicable (3)</td>
<td></td>
</tr>
<tr>
<td>Retention Basin</td>
<td>73</td>
<td>Wet Pond</td>
<td>70</td>
</tr>
<tr>
<td>Rooftop Disconnect</td>
<td>6</td>
<td>Not Applicable (3)</td>
<td></td>
</tr>
<tr>
<td>Vegetated Filter Strip</td>
<td>3</td>
<td>Riparian Buffer – Grass/Grass</td>
<td>50</td>
</tr>
<tr>
<td>Wet Pond 1</td>
<td>4</td>
<td>Wet Pond</td>
<td>70</td>
</tr>
</tbody>
</table>

1 HRPDC Permit Administration and Review System (PARS). PARS stores information regarding all active BMPs located throughout the City.
3 No corresponding entry available in GM-17-2004.
Figure 4-2. Structural BMP Locations
4.2.6 Water Quality Monitoring

In addition to the monitoring protocols implemented as part of the IDDE program, the City implements water quality monitoring as warranted by specific problems, including problems typically manifested as acute events related to bacterial contamination. In the past, the City has partnered with HRSD and other stakeholders to identify the source of contamination using bacterial source tracking (BST) techniques. This has been accomplished in the past in the headwaters of the Lafayette River and in Knitting Mill Creek, and is currently underway in Haven Creek and Broad Creek. The City will continue to accomplish local monitoring for bacterial source identification and removal as circumstances merit.
5.0 LEGAL AUTHORITIES

Norfolk has developed an MS4 Program Plan in accordance with Virginia Stormwater Management Law, Virginia Stormwater Management Regulations, and MS4 Permit requirements. The Program Plan was most recently revised and submitted to VDEQ in June 2017.

Part 1.D.2.b(1) of the MS4 Permit requires the City to “… develop and maintain a list of its legal authorities such as ordinances, permits, orders, specific contract language, and inter-jurisdictional agreements applicable to reducing the pollutant identified in a WLA.”

A review of City Codes and Ordinances was conducted during development of this TMDL Action Plan. No new or modified legal authorities are currently planned or necessary to meet the Special Condition requirements of the permit. The City has adequate legal authority to address not only the permit-related waste load allocation (WLA), but pollution attributable to other bacterial sources included in the load allocation (LA).

A list of applicable ordinances addressing both LA and WLA pollutant sources are listed below. The list of legal authorities is extensive and provides the opportunity for improving bacterial water quality in the Elizabeth River and its tidal tributaries. A full copy of the City of Norfolk ordinances can be found online at https://library.municode.com/va/norfolk/codes/code_of_ordinances.

- Sec. 6.1-13 - Feeding of native Virginia wildlife, except by bird feeders, is unlawful within the city limits except in areas designated for that purpose. (Ord. No. 39,717, § 2, 8-31-99; Ord. No. 42,840, § 1, 9-18-07)
- Sec. 6.1-72 - Allowing animals to defecate on public property or on private property of other persons is unlawful unless immediately removed and disposed of in a proper waste receptacle. (Ord. No. 39,717, § 2, 8-31-99)
- Sec. 6.1-79 - It is unlawful for the owner, custodian or other person in charge or control of any animal to permit or allow such animal to be at large within the city limits or to negligently fail to prevent such animal from being at large within the city limits. (Ord. No. 39,717, § 2, 8-31-99; Ord. No. 43,299, § 1, 11-25-08)
- Sec. 25.2-32 - The owners or custodians of leashed dogs and domestic animals when lawfully present in public parks or on public sand beaches shall obey the city's provisions concerning animal feces contained in chapter 6.1, as amended. (Ord. No. 39,590, § 4, 5-18-99; Ord. No. 43,299, § 2, 11-25-08; Ord. No. 44,098, § 1, 1-11-11)
- Sec. 29-16.1 - It is unlawful for any person to urinate or defecate on any public street, alley, sidewalk, park, beach or other public place or area where the public gathers or has access, other than in facilities designed for such purpose. (Ord. No. 31,457, § 1, 12-8-81; Ord. No. 40,456, § 1, 8-28-01)
- Sec. 39.1-5 - The owner of any premises or other building in which humans live or congregate is required to connect to public sewer when accessible within 200 feet of the property line. Following connection, it is unlawful to empty any sewage or residential, commercial or industrial waste into any well, septic tank, open stream or waterway, upon any other land or water or into any noncertified sewer service at any time. (Ord. No. 44,838, § 1, 9-11-12)
- Sec. 39.1-6 - The Director of Utilities is authorized to permit premises or buildings located outside of and adjacent to the city limits to connect directly with the public sewerage
system of the city if sewer service is not available from the adjacent locality.  (Ord. No. 44,838, § 1, 9-11-12)

- Sec. 39.2-2 - The Commonwealth of Virginia, State Board of Health, Sewage Handling and Disposal Regulations, 1988, as amended, are hereby adopted as the private sewer disposal regulations for the City of Norfolk. (Ord. No. 36,176, § 1, 8-28-90)

- Sec. 39.2-3 - For septic tank systems, a reserve sewage disposal site with a capacity at least equal to that of the primary sewage disposal site shall be provided for lots recorded after October 1, 1989. (Ord. No. 36,176, § 1, 8-28-90)

- Sec. 39.2-4 - All on-site sewage disposal systems not requiring a Virginia Pollution Discharge Elimination System (VPDES) permit shall be pumped out at least once every five (5) years in accordance with state and local law and Hampton Roads Sanitation District requirements. (Ord. No. 36,176, § 1, 8-28-90)

- Sec. 39.2-4 - It shall be unlawful for any person to fail, neglect or refuse to maintain or cause to be maintained any septic tank or other sewage disposal system ... in a manner satisfactory to the director of the health department. (Ord. No. 36,176, § 1, 8-28-90)

- Sec. 39.2-5(a) - It shall be unlawful for any person in any manner to discharge, cause to be discharged or allow to be discharged, or allow or cause to accumulate any sewage, as defined in the regulations, on any public or private property within the city. (Ord. No. 36,176, § 1, 8-28-90)

- Sec. 39.2-5(b) - It shall be the duty of the director of the department of health or his authorized agent to direct the person who is responsible for the discharge or accumulation to cause such matter to be removed, or the conditions corrected, within forty-eight (48) hours. (Ord. No. 36,176, § 1, 8-28-90)

- Sec. 39.2-1 - Any person violating any provision of this chapter shall be guilty of a Class 3 misdemeanor. Each day's continuance of such violation shall constitute a separate offense. (Ord. No. 36,176, § 1, 8-28.90)

- Sec. 39.2-6 - If the director of the health department or his authorized agent shall find any violation of this chapter or the provisions of the permit issued under it, he shall direct the person to whom the permit was issued, by written notice, to make the necessary corrections, within such reasonable time as shall be specified therein. (Ord. No. 36,176, § 1, 8-28-90)

- Sec. 41.1-2 - Any person who violates any provision of the Stormwater Management chapter or any regulation promulgated pursuant to authority granted in the chapter shall be guilty of a class 1 misdemeanor. (Ord. No. 38,344, § 1, 5-14-96)

- Sec. 41.1-3 - The director of public works shall be responsible for the use, management, operation and maintenance of the stormwater system and shall have authority to establish procedures and to enforce regulations pertaining to the stormwater system (Ord. No. 38,344, § 1, 5-14-96)

- Sec. 41.1-4(a) - It shall be unlawful for any person to put, throw, place or deposit ... any filth, animal or vegetable matter ... or any other substance or pollutant ... in the stormwater system or ... in an area which drains into the stormwater system. (Ord. No. 38,344, § 1, 5-14-96)

- Sec. 41.1-4(c) - It shall be unlawful for any commercial, industrial, or manufacturing entity to discharge process water, wash water, or unpermitted discharge into the stormwater system. (Ord. No. 38,344, § 1, 5-14-96)
- Sec. 44-38(a) - The only system of sewage disposal for trailer coach parks shall be the public system of the Hampton Roads sanitation district commission. Any other system of sewage disposal is prohibited.
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6.0 ENHANCED EDUCATION, OUTREACH, AND TRAINING

The City’s education, outreach, and training program has been developed over time in an iterative manner based on periodic assessments of potential sources and the effective means of reducing these sources. Programs such as Bay Star Homes and contracts with the Elizabeth River Project have resulted in significantly increased outreach opportunities. As previously noted, education and outreach on proper disposal of pet waste is a requirement of the MS4 permit. The City will review the effectiveness of its pet waste education program annually and make changes as warranted. The City also proposes to enhance its pet waste program by providing brochures and/or performing other initiatives directed at homeowner education on the need and value to pick up pet waste promptly in back yards and other places out of the public eye. Further, the City’s training program addresses all potential sources of illicit discharges, including bacteria. Implementation is documented in annual reports to DEQ. Norfolk believes that these education and outreach efforts meet the requirements for an enhanced program.
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7.0 TMDL ACTION PLAN PROGRESS

7.1 SCHEDULE AND MILESTONES

The City will continue to execute its existing MS4 program in accordance with the approved MS4 Program Plan, dated June 2017. Additional actions identified in Section 4.0 and outlined below will be implemented and documented in the MS4 annual report as previously described.

Ongoing activities, implemented since 2010, will continue to be undertaken and include the following:

- participation in a joint HRSD-VDH-City boater pump out initiative;
- performing an enhanced system inspection and dry weather screening program;
- completing high risk industrial/commercial inspections;
- installing or retrofitting structural BMPs and restoration projects;
- installing community-adopted pet waste stations;
- accomplishing pet waste baggie giveaways;
- actively promoting Bay Star Homes and Lake Star Homes campaigns;
- coordination with local non-profits on outreach and pollution reduction projects;
- participating on the Regional Septic Task Force; and,
- coordinating with HRSD on bacteria source tracking monitoring efforts as warranted.

In addition, the following future activities are proposed:

- developing a targeted public education campaign regarding timely collection of pet waste at home or work; and,
- working with NGOs and outside parties to identify grant and cost sharing activities for removing failing septic tank systems; and,
- investigating the potential to reduce wildlife bacterial contributions by placing additional signage discouraging wildlife feeding at publicly maintained wet ponds and high profile public facilities.

7.2 ASSESSING EFFECTIVENESS

Unlike structural stormwater management controls, the practices put in place to reduce bacteria pollution do not have assigned reduction efficiencies. Further, ambient in-stream water quality monitoring programs, while effective at measuring overall progress toward bacteria reduction targets, are not appropriate indicators of MS4 permit compliance or for the success of programmatic activities in the near term. The City will assess the effectiveness of its efforts by reviewing the accomplishment for the previous year against permit requirements during submission of each Annual Report to DEQ.

7.3 MEASURABLE GOALS

The City’s measurable goal will be to reduce bacteria loads to the impaired waterbodies covered by the applicable TMDL through implementation of the programs developed or enhanced since 2010 and those planned for future implementation, as summarized in Section 4.0. Progress toward implementing the actions in this plan will be reported annually to DEQ in each MS4 permit annual report.
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APPENDIX A

PUBLIC COMMENTS AND RESPONSES ON TMDL ACTION PLAN

Comment No. 1:

Comment:

No amount of pollution in our waterways is acceptable.

Response:

As demonstrated by this TMDL Action Plan, the City regards itself as a steward of the environment, has undertaken numerous programs and activities to protect local water resources, and will be commencing additional initiatives as outlined in this TMDL Action Plan to further improve water quality to the benefit of the environment and local residents.

Action Taken:

No changes to the TMDL Action Plan were made as a result of this comment.

Comment No. 2:

Comment:

Good Afternoon,

I am writing in response to the request for public comments for the Elizabeth River TMDL Action Plan. Overall, the plan seems very thorough and the City appears to be making great progress towards its TMDL goals. I would like to see more detail and focus on strategies for reducing pet waste. Is there any way to tell whether dog or cat feces seems to be a bigger issue, or are the bacteria indistinguishable?

If cat feces is an issue, I would love to see more information about the best way to dispose of it. The only guidance I have ever seen says to not dump it directly into a trash can, but rather in a plastic bag. Should pet owners be double bagging? Is there anything else cat owners can do? Could we increase animal control efforts to spay and neuter feral cats?

If dogs waste is a bigger issue perhaps outreach to the volunteers that oversee City dog parks could be a potential strategy. Could civic leagues be encouraged to adopt a dog waste station?

It may not be the purview of this action plan to get into that level of detail, but I think it would still be helpful to have slightly more detailed overview of the pet waste-related action plan since that is where the highest load reduction requirements need to occur.

Thank you for all the work you do to improve our water quality.
Response:

The science of differentiating between different bacterial sources, e.g. cats versus dogs, is relatively new although it continues to improve. The City has partnered with HRSD on similar investigations of limited scope and will continue to do so as needs evolve. The City has instituted a program whereby citizens can indeed adopt a dog park. Rest assured that the City will continue to pursue the science and implementation of programs to address all manner of fecal bacterial sources.

Action Taken:

No changes to the TMDL Action Plan were made as a result of this comment.

Comment No. 3:

Comment:

There would be a huge outcry, but I really think we have reached the point where dogs ought to be banned from our beaches. The amount of dog poop I see on my morning walks is just appalling, and it all makes its way into the Bay eventually. (I know I sound like a fanatic. Sorry.)

Response:

As previously described in Section 5.0 of this TMDL Action Plan, Section 25.2-32 of the City Code stipulates that owners or custodians of leashed dogs and domestic animals when lawfully present in public parks or on public sand beaches shall obey the city's provisions concerning animal feces contained in Chapter 6.1, as amended. While the City has put the necessary legal instruments in place to address the situation you describe, human nature also plays a role and it is contingent upon all citizens to assist in routine education activities.

Action Taken:

No changes to the TMDL Action Plan were made as a result of this comment.

Comment No. 4:

Comment:

Our concern with storm water in the Bay is the street runoff (which contains oil, gasoline, garbage etc.) - is this filtered in some way before it goes through those pipes on the beach and into the Bay?

Response:

As previously described in Section 4.2.5 of this TMDL Action Plan, over time, both the City and private concerns have implemented well over 1,000 structural best management practices (BMPs) providing direct water quality benefits to the Elizabeth River. Collectively, these BMPs treat more than 7,500 acres (11.8 square miles) of land area and provide significant treatment of stormwater runoff.
Action Taken:

No changes to the TMDL Action Plan were made as a result of this comment.

Comment No. 5:

Comment:

Good morning,

I am very much in favor of all TMDL requirements for the Chesapeake Bay including the Elizabeth River. I would encourage the City of Norfolk to do everything possible to meet or exceed these goals.

Response:

As demonstrated by this TMDL Action Plan, the City regards itself as a steward of the environment, has undertaken numerous programs and activities to protect local water resources, and will be commencing additional initiatives as outlined in this TMDL Action Plan to further improve water quality to the benefit of the environment and local residents.

Action Taken:

No changes to the TMDL Action Plan were made as a result of this comment.

Comment No. 6:

Comment:

Please have professional landscapers stop blowing grass clippings in the street, create some type of fine to stop this. I live in Larchmont and my street floods even in a light rain sometime, I know we need more storm drains, but I also know they cost time and money for the city, but continue to focus on the storm drains.

Response:

As previously described in Section 4.1.3 of this TMDL Action Plan, the City addresses illicit discharges to the stormwater system in accordance with Sections I.B.2.e)5) and I.B.2.l)1) of the MS4 permit with the goal of detecting the presence of potential illicit connections and unauthorized discharges by conducting dry weather screening. In 2017, the City expanded its IDDE program to a more strategic approach in order to meet both environmental regulatory screening and preventative maintenance inspection goals. Field staff aim to visually inspect the City’s approximately 28,000 stormwater structures on a routine basis. The Department of Public Works also conducts environmental investigations on a complaint driven basis. If a resident reports a suspicious complaint, it is investigated to ensure there is not an illicit discharge.

Action Taken:

No changes to the TMDL Action Plan were made as a result of this comment.