Elizabeth River TMDL Action Plan

Norfolk State University

Project No. 132887

DRAFT
5/14/2021

Elizabeth River TMDL Action Plan

prepared for

Norfolk State University

Norfolk, Virginia

Project No. 132887

DRAFT
5/14/2021

prepared by

Burns & McDonnell Engineering Company, Inc.
Chesapeake, Virginia

TABLE OF CONTENTS

Page No.

LIST OF TABLES

Page No.

LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
BMP	Best Management Practice
DEQ	Department of Environmental Quality
EPA	Environmental Protection Agency
MS4	Municipal Separate Storm Sewer System
NSU	Norfolk State University
POC	Pollutant of Concern
SSO	Sanitary Sewer Overflow
SWBC	State Water Control Board
TMDL	Total Maximum Daily Load
University	Norfolk State University
VPDES	Virginia Pollutant Discharge Elimination System
WLA	Waste Load Allocation

1.0 INTRODUCTION

1.1 Background

This Bacterial Total Maximum Daily Load (TMDL) Action Plan has been developed by Norfolk State University (NSU) for the approved local TMDL report for the Elizabeth River Watershed, as required by the University's Small Municipal Separate Storm Sewer System (MS4) Permit (VAR040097). The MS4 Permit was issued by the Virginia Department of Environmental Quality (DEQ) with an effective date of November 5, 2018 and will expire on October 31, 2023. This Plan was developed to address pollutants of concern (POC) in accordance with Permit requirements where the University has been assigned a waste load allocation (WLA) in an approved TMDL. NSU drains to the Lower Eastern Branch segment of the Elizabeth River, and is therefore subject to the approved bacteria TMDL for the Elizabeth River.

1.2 Regulated Areas

NSU is located within the City of Norfolk, and the regulated area for the University's MS4 Permit is limited to the University's State-owned property to-date, which is approximately 138 acres. Although offsite properties drain through the campus via a closed storm sewer system, properties not owned by the State are not accounted for in the Permit. These other properties are addressed under the City's MS4 Permit. The extent of the regulated MS4 service area is shown on the *NSU Campus MS4 Service Area Delineation Map* included in **Appendix A**.

1.3 Permit Compliance Crosswalk

The MS4 Permit lays out specific requirements that are to be addressed in this local TMDL Action Plan. **Table 1.1** lists the Local TMDL Action Plan requirements set forth in the MS4 permit, the MS4 Permit reference section, and the corresponding Action Plan section where the requirement is addressed.

Table 1-1: Action Plan and Permit Compliance Crosswalk

Action Plan Section	MS4 Permit Requirement	MS4 Permit Requirement Reference Section
Section 2.0	TMDL Project Name	Section II.B.3.a
Section 2.0	EPA approval date of the TMDL	Section II.B.3.b
Section 2.0	Waste load allocated to the permittee (individually or in aggregate), and the corresponding percent reduction, if applicable	Section II.B.3.c

Action Plan Section	MS4 Permit Requirement	MS4 Permit Requirement Reference Section
Section 3.0	Identification of the significant sources of the pollutants of concern discharging to the permittee's MS4 and that are not covered under a separate VPDES permit. For the purposes of this requirement, a significant source of pollutants means a discharge where the expected pollutant loading is greater than the average pollutant loading for the land use identified in the TMDL	Section II.B.3.d
Section 4.0	The BMPs designed to reduce the pollutants of concern in accordance with Parts II.B.4, B.5, and B.6	Section II.B.3.e
Section 5.0	For action plans developed in accordance with Part II.B.4 and B.5, an outreach strategy to enhance the public's education (including employees) on methods to eliminate and reduce discharges of the pollutants	Section II.B.3.g
Section 6.0	A schedule of anticipated actions planned for implementation during this permit term	Section II.B.3.h
Section 7.0	Prior to submittal of the action plan required in Part II.B.1, the permittee shall provide an opportunity for public comment proposed to meet the local TMDL action plan requirements for no less than 15 days.	Section II.B.7

2.0 APPLICABLE TMDL REPORT, POLLUTANT OF CONCERN, AND WASTE LOAD ALLOCATION

In 2008, the Elizabeth River was listed on Impaired Waters – 303(d) List for Recreation, due to exceedances of the criteria for *enterococcus* bacteria for primary contact. In accordance with Section 303(d) of the Clean Water Act and the US Environmental Protection Agency's (EPA) Water Quality Planning and Management Regulations (40 CFR Part 130), a TMDL for the POC *enterococcus* bacteria in the Elizabeth River has been developed by Virginia DEQ and the University has been assigned a WLA. The April 2010 *"Bacterial Total Maximum Daily Load (TMDL) for the Elizabeth River Watershed"*, herein referred to as the Elizabeth River TMDL, was approved by the EPA on July 20, 2010 and by the State Water Control Board (SWCB) on September 30, 2010.

Norfolk State University is subject to one (1) TMDL that assigns a WLA 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 (VA0088650) and Norfolk State University.

Table 2-1 summarizes the approved TMDL WLA for *enterococcus*.

Table 2-1: Elizabeth River TMDL Enterococcus Waste Load Allocation (WLA)

TMDL Watershed	Existing Load (counts/day)	Allocated Load (counts/day)	Required Reduction	Aggregated Permittee
Lower Eastern Branch – Elizabeth River	2.48E+14	1.18E+13	95%	City of Norfolk (VA0088650)

3.0 SIGNIFICANT SOURCES OF THE POLLUTANT OF CONCERN

As identified in the Elizabeth River TMDL, non-point sources of bacteria include livestock, wildlife, pets, and failed septic systems. The TMDL also identified sanitary sewer overflows (SSOs) as a point source load of bacteria. The SSO bacteria loads were included in the Load Allocation and not the WLA for several reasons, as outlined in the Elizabeth River TMDL.

Table 3-1 outlines the estimated bacterial contribution by source and the corresponding percent reduction required as shown in the Elizabeth River TMDL.

Table 3-1: Estimated Bacterial Contribution by Source and Percent Reduction Required as Shown in the Elizabeth River TMDL

Bacterial Source	Percent of Existing Load	Required Reduction
Livestock	33.1%	100%
Wildlife	16.9%	68%
Failed Septic System	<0.1%	100%
Pets	45.3%	100%
SSOs	5.7%	100%

The University does not consider livestock, failed septic systems, pets, or SSOs to be a significant source of bacteria within the MS4 service area for the following reasons:

- There is no livestock present within the University's MS4 service area
- Pets are not allowed on campus grounds
- There are no septic systems within the service area
- The University does not experience SSOs

Therefore, wildlife is considered to be the primary source of bacteria-laden runoff for the University's MS4 service area. The most notable wildlife present on campus is waterfowl. These animals are a large contributor to this source of bacteria as they are attracted to open spaces and wet areas present on the campus. Research with staff members has indicated that waterfowl are also attracted to the campus by individuals feeding them. While having these birds gather in grassy areas may allow for some treatment of runoff to occur through landscaped and turf areas, areas of pavement drain runoff carrying bacteria directly into the storm system and ultimately to the Elizabeth River without treatment.

4.0 BEST MANAGEMENT PRACTICES

NSU has attempted to reduce bacteria caused by waterfowl by placing cutouts of dog and alligators in areas where geese tend to concentrate in effort to ward them off. Unfortunately, this effort has not had the desired effect. Therefore, NSU will hire a group of expert dog handlers to scare the geese off in an attempt to create the sense that the area is inhospitable to the geese. If this strategy does not work, the University will look at other means, including the installation of string around the edge of structural BMPs (after they have been retrofitted), which has been proven to deter geese from landing in these areas.

Another strategy that will be implemented is the installation of signs that read “DO NOT FEED GEESE” outside campus cafeteria entrances. Regular emails and/or fliers are sent out to University students, staff and faculty asking them to not feed geese or seagulls on campus.

5.0 ENHANCED EDUCATION, OUTREACH, AND TRAINING

Norfolk State University continues to implement a public education and outreach program as part of its MS4 Program Plan. The University considers the public to be all members of the campus community along with contractors and visitors to academic and athletic events. This program includes making the public aware of the impacts of polluting the stormwater system and educating the public on ways to decrease the amount of pollution that is entering the area's waterways.

The University's website is a source of information on other local programs (conducted through private interest groups and the City of Norfolk) aimed at improving water quality. The website, which will be updated annually, also provides public access to information on stormwater regulations, pollution prevention, the MS4 Program Plan, and illicit discharge information and reporting.

6.0 TMDL ACTION PLAN PROGRESS

As permitted in the MS4 General Permit, the University is proposing to implement this Action Plan in multiple stages over multiple permit cycles using an adaptive iterative approach.

6.1 Schedule of Anticipated Actions Planned for Implementation

Below is the schedule of anticipated actions planned for implementation during this permit term, ending on October 31, 2023.

- Hire expert dog handlers – Spring 2022 (funding-dependent)
- Install signage – Fall 2021 (timing to correspond to other stormwater signage that will be installed throughout the campus later this year)

7.0 PUBLIC COMMENTS RECEIVED

This TMDL Action Plan will be subjected to public notification and review for a minimum of 15-days as required in the MS4 Permit. Once the public comment period has ended, any comments received will be reviewed, responded to, and the Action Plan will be updated accordingly, if applicable. Then all public comments will be incorporated into the Action Plan.

APPENDIX A - NSU CAMPUS MS4 SERVICE AREA DELINEATION MAP

BURNS McDONNELL

CREATE AMAZING.

Burns & McDonnell World Headquarters
1317 Executive Blvd, Suite 300
Chesapeake, VA 23320
O 757-548-2056
www.burnsmcd.com