STAFFORD COUNTY PUBLIC SCHOOLS SPECIFIC TMDL ACTION PLAN – RAPPAHANNOCK RIVER BACTERIOLOGICAL IMPAIRMENT

Revised April 2025

As a permittee under the Commonwealth of Virginia 2023-2028 General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4), Stafford County Public Schools (SCPS) is required to develop specific Total Maximum Daily Load (TMDL) Action Plans for pollutants identified in TMDL wasteload allocations as updates to the existing MS4 Program Plan.

For TMDLs approved by the Environmental Protection Agency (EPA) prior to July 1, 2018, permittees with associated wasteload allocations shall update the previously approved Local TMDL Action Plan no later than May 1, 2025 according to Section II.B.2.a of the 2023-2028 MS4 General Permit.

This Action Plan contains the required and suggested elements that should be included to ensure the TMDL Action Plan ("Action Plan") is approvable. This Action Plan should allow the Virginia Department of Environmental Quality (VDEQ) to verify that SCPS will be able to meet the requirements of the Local TMDL Special Condition by the end of the second permit cycle.

This Action Plan includes supporting material to show that the permittee has:

- (*2013-2018 General Permit Section IB2a)* developed a list of legal authorities applicable to reducing bacteria;
- (*2013-2018 General Permit Section IB2b)* developed an updated list of additional management practices, control techniques, system design and engineering methods beyond the Minimum Control Measures included in the Program Plan applicable to reducing bacteria;
- *(2013-2018 General Permit IB2c)* enhanced public education and employee training program to promote reduction of bacteria;
- *(2018-2023 General Permit IIB3g and IIB4b)* included an outreach strategy designed to reduce bacteria;
- *(2013-2018 General Permit IB2e)* assessed significant sources of bacteria from facilities of concern;
- *(2018-2023 General Permit IIB3b*) provided the EPA approval date for the bacteria TMDL;
- *(2018-2023 General Permit IIB3c*) provided the wasteload allocation of bacteria, and the corresponding reduction of bacteria;
- *(2018-2023 General Permit IIB3e-f)* assessed and documented the Best Management Practices (BMPs) designed to reduce the bacteria; and
- *(2018-2023 General Permit IIB3h)* developed an updated schedule of anticipated actions to reduce bacteria during this permit term.
- *(2023-2028 General Permit Section II.B.2.a 1)* Evaluate the results achieved by the previous action plan.
- *(2023-2028 General Permit Section II.B.2.a 2)* Any adaptive management strategies incorporated into updated action plans based on action plan evaluation.

The submitted Action Plan becomes effective and enforceable 90 days after the date received by the VDEQ unless specifically denied in writing by the Department in accordance with Section I.B.1.c of the 2013-2018 General Permit.

Stafford County Public Schools (SCPS) currently operates under the Virginia MS4 General Permit (#VAR040071) to address stormwater discharges from its regulated properties. The components of this MS4 program, including the methods used to fulfill the six minimum control measures (MCM #1 – 6), are detailed in the SCPS MS4 Program Plan (Apex, May 2020).

The Final Report dated April 2008 for *Bacteria TMDL for the Tidal Freshwater Rappahannock River Watershed* assigned an aggregate waste load allocation (WLA) of 3.89E+11 cfu/year for Stafford County Public Schools (Permit No. VAR040071), City of Fredericksburg (Permit No. VAR040058), University of Mary Washington (Permit No. VAR040094), Fredericksburg Virginia Department of Transportation (VDOT) Urban Area – City of Fredericksburg (VAR040061), Stafford County (VAR040056), Fredericksburg VDOT Urban Area – Stafford County (VAR040061), and Spotsylvania County (VAR040055) for bacteria (*E. coli*) impairment of the Rappahannock River watershed. The EPA's TMDL decision rationale is dated May 5, 2008 (*Decision Rationale Total Maximum Daily Loads Recreation Use (Bacteriological) Impairments Tidal Freshwater Rappahannock River Caroline, King George, Spotsylvania, and Stafford Counties, Virginia*). A summary can be found below in Table 1.

Table 1. Summary of WLA for SCPS Properties

Aggregate MS4s	Watershed	WLA: *E. coli* (cfu/yr)	Required Reduction
Stafford County Public Schools City of Fredericksburg University of Mary Washington Fredericksburg VDOT – Urban Area – City of Fredericksburg Stafford County Fredericksburg VDOT – Urban Area – Stafford County Spotsylvania County	Rappahannock River	3.89E+11	62.8%

1. Legal Authority

(*2013-2018 General Permit Section I.B.2.a.(1)*) *Develop and maintain a list of 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.*

As a school system, SCPS does not have regulatory authority and must rely on Stafford County to develop and enforce legal authorities such as ordinances, permits or orders. The primary tool for preventing the discharge of *E. coli* to the storm sewer system within Stafford County is Chapter 21.5, Article II of the Stafford County Code, the Stafford County Stormwater Pollution and Illicit Discharge Ordinance.

Section (a) of this ordinance states "It shall be unlawful to cause or allow illicit discharges into the county's stormwater system; discharge materials other than stormwater into the stormwater system by spills, dumping, or disposal without a Virginia Pollution Discharge Elimination System (VPDES) permit; cause or allow industrial discharges into the stormwater system without a VPDES permit; or violate any condition or provision of this article or any permit granted for stormwater discharges.

Section (c) of this ordinance states "In the event that any of the activities listed in subsection (b) above are found to cause sewage, industrial wastes or other wastes to be discharged into the system, the director shall so notify the person performing such activities, and shall order that such activities be stopped or conducted in a manner to avoid the discharge or sewage, industrial wastes or other wastes into a storm sewer system. The failure to comply with any such order shall constitute a violation of the provisions of this article."

On September 17, 2015, SCPS formally requested a collaborative effort with VDOT Fredericksburg, VDOT Stafford, University of Mary Washington, Stafford County, and Spotsylvania County to meet the bacteriological WLA in the Rappahannock River.

2. Significant Source Assessment

(2018-2023 General Permit Section II.B.3.d) 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.

E. coli is a bacteriological organism that is found in the intestinal tract of warm-blooded animals, aka humans, pets, livestock, and wildlife. Sources of *E. coli* may include sanitary sewer systems, septic systems, livestock, wildlife, pets, and land application of manure and biosolids.

The most effective means to identify, reduce, and eliminate *E. coli* is to assess sources from SCPS properties in the impacted watershed. For the purposes of this assessment, a significant source of pollutants 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.

Table 2. SCPS Properties by Watershed

Watershed	HUC	Acres	Schools
Rappahannock River	RA45, RA46	183.22	Conway Elementary Edward E. Drew Middle School Falmouth Elementary Ferry Farm Elementary Gari Melchers Complex Rocky Run Elementary T. Benton Gayle Middle

The majority of the impaired Rappahannock River watershed is forested. Possible sources of *E. coli* include wildlife, manure applications, and failed septic systems. Significant bacteriological sources from SCPS properties may include leaking/malfunctioning sanitary sewer piping, temporary portable toilets at construction sites, and pet waste from field areas.

Sanitary Sewers
No leaking or malfunctioning sanitary sewer systems have been identified at SCPS properties within the Rappahannock River watershed.

Portable Toilets
Portable toilets are typically used on construction sites. They require regular maintenance and must be emptied to reduce anthropogenic bacteria discharge. The Gari Melchers Complex was renovated in 2010 and Falmouth Elementary was renovated in 2012. In 2016-2017, an outfall was repaired at Gari Melchers Complex. All construction-related portable toilets have been removed following completion of renovations. Ferry Farm Elementary is scheduled to be rebuilt in approximately 2020-2021. SCPS regularly monitors the condition of portable toilets on its property and includes interior and exterior checks in the annual Illicit Discharge Detection and Elimination (IDDE) inspections to prevent any discharge to the storm sewer system.

Pet Waste
Pets are banned from synthetic turf fields per the Facility Use Procedures for Stafford County Dept. of Parks, Recreation, & Community Facilities, Field Rentals Section V (E), July 14, 2015. Per Facility Use Procedures Section 111 (B), all animals must be kept on a leash at outdoor facilities, and the caretaker is responsible for clean-up. However, pet waste left on non-synthetic fields at SCPS properties within the watershed serves as a potential source of *E. coli* bacteria discharge to the Rappahannock River.

3. Means and Methods to Meet the Wasteload Allocation

(2018-2023 General Permit Section II.3.e) BMPs designed to reduce the pollutant of concern.

A. Implemented Means and Methods

This section describes the management practices that have been implemented thus far.

In an effort to reduce bacteriological loads from pet waste sources, SCPS implements and enforces the requirements of the Stafford County Dept. of Parks, Recreations & Community Facilities on its properties. Pets are prohibited from synthetic turf fields per the Facility Use Procedures, Field Rentals Section V (E). Per Facility Use Procedures Section III (B), all animals must be kept on a leash at outdoor facilities, and the caretaker is responsible for clean-up.

SCPS properties within the Rappahannock River watershed are inspected annually. Sewage odors above the human odor threshold serve as an early warning sign of a leaking sewer line. Routine inspections may identify and stop leaks before discharge into the impaired watersheds. The following Illicit Discharge Source Determination & Investigation Procedures are utilized following the identification of possible bacteriological contamination:

1. **Field Procedures – Initial Investigations**

If a non-stormwater discharge is identified, the field staff will note the flow rate and field conditions of the discharge, and attempt to identify the source of the discharge by tracing the flow upstream. Photographs will be taken of observed conditions and/or sources. Field staff will notify their supervisor and the SCPS Operations & Maintenance Department and collect samples if instructed to do so.

If a non-illicit source is identified through initial investigation, the source will be noted. Discharges authorized under a separate VPDES or state permit require no further action. If dry weather flow is present at the outfall and the flow does not appear to be an obvious illicit discharge (e.g., flow is clear, odorless, etc.), field staff will attempt to identify the source of the flow and document the discharge for future comparison.

If an illicit source is identified through initial investigation, the field staff will note the source and notify the Operations & Maintenance Supervisor for follow-up investigation. If multiple illicit sources are identified during the course of annual screening, prioritize follow-up investigations as follows:

a. Discharges suspected of being sanitary sewage or significantly contaminated.

b. Discharges suspected of being less hazardous to human health and safety, such as noncontact cooling water or wash water.

2. **Field Procedures – Follow-Up Investigations**

If no source can be identified through initial investigation, the field staff will notify the Operations & Maintenance Supervisor to create a work order within the SchoolDude system for follow-up investigation by SCPS at one week intervals.

If an illicit discharge is identified, SCPS will conduct additional investigations as needed to eliminate the source. See Section 3 – Source Elimination.

If an intermittent discharge is observed, SCPS will document (via SchoolDude) a minimum of 3 separate investigations made in an attempt to observe the discharge when it is flowing. If all 3 attempts are unsuccessful, the follow up investigations will be terminated and the outfall will continue to be assessed on the annual schedule.

If an illicit discharge is identified, but within 6 months of initiation of investigations a source has not been identified AND the same discharge has not been identified again, the occurrence will be documented and the outfall's inspection priority will be increased in future annual inspections.

3. Source Elimination

Internal Source – Originating On-Site (from SCPS land, equipment, or activities)

a. Operations & Maintenance will identify and contact the responsible party and direct supervisor of the responsible party to amend activities/procedures or conduct repairs to eliminate the discharge.

b. Field Staff will conduct a follow-up investigation to verify that the discharge has been eliminated. If not addressed, Operations & Maintenance will repeat Step 1, also contacting the next level of management. Continue as needed.

c. Operations & Maintenance will update online tracking table.

d. Field Staff will increase the outfall's inspection priority in future annual inspections.

External Source – Originating Off-Site

a. Operations & Maintenance will identify and contact the responsible party to amend activities/procedures or conduct repairs to eliminate the discharge.

b. Field Staff will conduct a follow-up investigation to verify that the discharge has been eliminated. If not addressed, Operations & Maintenance will contact Stafford County and notify of the responsible party's actions in reference to the Stafford County Code of Ordinances, Chapter 21.5, Article II, Stormwater Pollution And Illicit Discharge Prohibitions.

c. Operations & Maintenance will update online tracking table.

d. Field Staff will increase the outfall's inspection priority in future annual inspections.

B. Table 5 Strategy

(2018-2023 General Permit Section II.B.4.b) If the permittee is not an approved VSMP authority, the permittee shall select as least one strategy listed in Table 5 below designed to reduce the load of bacteria to the MS4 relevant to sources of bacteria applicable within the MS4 regulated area.

SCPS has selected the following strategy from Table 5 of the 2018-2023 General Permit to meet requirements:

Source: *Dry Weather Urban Flows*
Strategy: *Inspect dumpster areas monthly*
Each month, SCPS staff or contractors will inspect dumpster areas for potential issues, including illicit discharges. Dumpster inspection includes overall structural integrity, dent or hole detection, plug presence, and lid integrity and functionality. Inspection will be documented according to the associated Standard Operating Procedures (SOP). If an issue is found, a workorder would be created in SchoolDude. This will ensure waste is not introduced into the storm sewer system due to damaged or misused dumpsters.

4. Education and Outreach

(2018-2023 General Permit Section II.B.3.g) An outreach strategy to enhance the public's education (including employees) on methods to eliminate and reduce discharges of the pollutants.

A. Public Education & Outreach

SCPS incorporates education of the effects of human activity on water quality and how we as humans affect it into public science education courses at multiple grade levels. Through the Virginia Standards of Learning (SOLs), students learn the importance of protecting and maintaining our water resources and how it affects their watershed. SCPS implements all Virginia SOLs and specifically incorporates water quality issues into grade 4 and 6 earth science courses.

Fourth grade students specifically cover water resources and the Chesapeake Bay watershed under Virginia Standard 4.9. Students conduct a laboratory lesson in which they design water filters, discuss human sources of pollution and examine the impacts of non-point source pollution on the Chesapeake Bay. The students create and interpret a model of a watershed and evaluate the statement: "We all live downstream." Students differentiate among positive and negative influences of human activity on ecosystems.

Sixth grade students specifically cover the following under Virginia Standard 6.5 – "In the past, streams and rivers were often used to dispose of human waste, and open sewers were common. During the mid-1800s, public health officials recognized the connection between disease outbreaks and contamination of public wells and drinking water. Advances in water treatment and sanitary sewers have helped eliminate diseases associated with human waste." Under Standard 6.7, students are taught to locate their own local watershed and the rivers and streams associated with it, explain the factors that affect water quality in a watershed and explain how those factors can affect an ecosystem. Students also learn water quality monitoring techniques, including the collection of water samples to analyze chemical and/or biological parameters (pH, temperature, salinity, dissolved oxygen, turbidity, and the presence of macroinvertebrate organisms).

B. Employee Training

E. coli contamination has been incorporated into annual employee training programs. Training will address the identification, risk factors, and significant sources within the SCPS system. PowerPoint presentations during training provided material about the TMDL and their WLA. Custodians and operations and maintenance staff are made aware of the consequences of *E. coli* contamination in their local waters.

5. TMDL Action Plan Evaluation

(2013-2018 General Permit Section I.B.2.e) Develop and implement a method to assess TMDL Action Plans for their effectiveness in reducing the pollutants identified in the WLAs.

The non-structural BMPs and methods included in this action plan are not associated with an assigned load reduction efficiency. Therefore, SCPS will evaluate the effectiveness of this action plan by annually reviewing the measures outlined in Sections 3 and 4 for completion.

Facility Assessment: SCPS will continue to include sewage odor/visual detection in annual MS4 outfall IDDE inspections at facilities within the Rappahannock River watershed. Detection of any potential sewage introduction into the MS4 will be investigated according to IDDE procedures outlined in the Program Plan.

Education and Outreach: SCPS will include metrics for attendance and involvement in the educational programs outlined in section 3 in the Annual Report.

Dumpster Inspection: SCPS will conduct inspection of dumpsters and surrounding areas monthly. Completion of inspection and any notable deficiencies and action items will be recorded in the Annual Report.

Evaluation of the results achieved by the previous action plan

(2023-2028 General Permit Section II.B.2.a 1) Evaluate the results achieved by the previous action plan.

An evaluation of the results achieved by the previous action plan indicate that SCPS has continued to perform investigations, and source elimination procedures outlined in the action plan. The strategy implemented to conduct monthly inspections of dumpster locations has continued to ensure waste is not being carried into waterways from these locations. They have also continued their public education and employee training on the topic of bacteria. This evaluation indicates that the action plan has been successful in achieving the results laid out in previous action plans.

(2023-2028 General Permit Section II.B.2.a 2) Any adaptive management strategies incorporated into updated action plans based on action plan evaluation.

No new adaptive management strategies are to be incorporated into the updated action plan based on the evaluation of the action plan.

6. Annual Reporting

(2023-2028 General Permit Part I.D.5) Annual reporting requirements.

SCPS will submit the revised TMDL Action Plan with the Year 2 Annual Report and subsequent Annual SCPS will submit the revised local TMDL Action Plan May 1, 2025 and with the Year 2 Annual Report in accordance with the associated schedule identified in the General Permit.

In proceeding Annual Reports, SCPS will provide a report on the implementation of the TMDL Action Plan and associated evaluation including the results of any monitoring conducted as part of the evaluation.