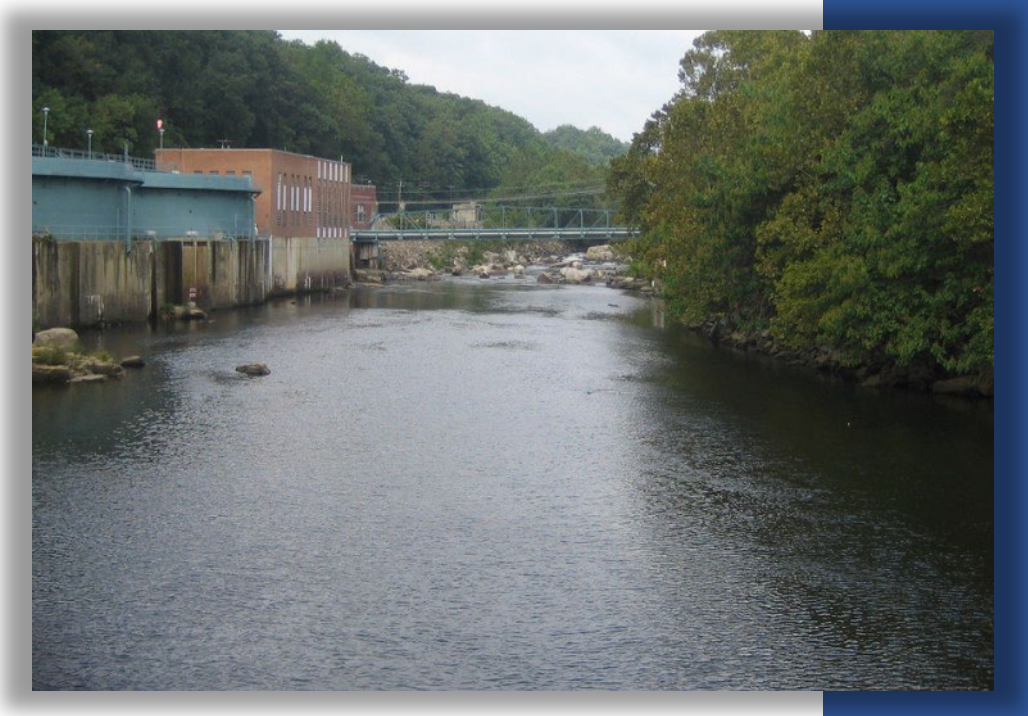
BULL RUN, LITTLE BULL RUN, BROAD RUN, AND OCCOQUAN RIVER BACTERIA TMDL ACTION PLAN

A Plan to Address PWCS' Assigned Wasteload Allocation for the Bull Run, Little Bull Run, Broad Run, and Occoquan River TMDL

Prince William County Public Schools



April 2025

This document addresses Part II B of the General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems. This document serves as a PWCS-specific TMDL Action Plan to identify the best management practices and other interim milestone activities to be implemented to address the bacteria wasteload allocation assigned to PWCS' regulated MS4 area in the *"The Primary Contact Use (Bacteriological) Impairments on Broad Run, South Run, Popes Head Creek, Little Bull Run, Bull Run, and the Occoquan River Watersheds Prince William and Fauquier Counties, Virginia"* approved by the Environmental Protection Agency on November 15, 2006. For the purposes of this Plan, the 2000 and 2010 Census Urbanized Areas were used to define PWCS' regulated MS4 area as defined in 9VAC25-890 Section 1.

PWCS
PRINCE WILLIAM COUNTY PUBLIC SCHOOLS
LAUNCHING THRIVING FUTURES

Wetland Studies and Solutions, Inc.
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EXECUTIVE SUMMARY

Prince William County Schools (PWCS) is authorized to discharge stormwater from its municipal separate storm sewer system (MS4) under the Virginia Pollutant Discharge Elimination System (VPDES) General Permit for Discharge of Stormwater from Small MS4s (MS4 General Permit). To maintain permit compliance, PWCS implements an MS4 Program Plan that includes best management practices (BMPs) to address six minimum control measures (MCMs) and special conditions for the Total Maximum Daily Loads (TMDL) in which PWCS has been assigned a wasteload allocation (WLA). The Environmental Protection Agency (EPA) describes a TMDL as a "pollution diet" that identifies the maximum amount of a pollutant the waterway can receive and still meet water quality standards. A WLA determines the required reduction in pollutant of concern loadings from the MS4s to meet water quality standards. The MS4 General Permit serves as the regulatory mechanism for addressing the load reductions described in the TMDL, predominantly through the requirement of a TMDL Action Plan.

The purpose of this Action Plan is to address the WLA assigned to PWCS within the "The Primary Contact Use (Bacteriological) Impairments on Broad Run, South Run, Popes Head Creek, Little Bull Run, Bull Run, and the Occoquan River Watersheds Prince William and Fauquier Counties, Virginia" approved by the EPA on November 15, 2006. The TMDL assigns PWCS WLAs for Escherichia coli (*E. coli*) equivalent to an 89% reduction in the existing conditions to meet water quality standards in Bull Run, 81% reduction in Broad Run, and 94% reduction in the Occoquan River. The expectation of the TMDL is for MS4 permittees, such as PWCS, to address the TMDL WLAs through the iterative implementation of programmatic BMPs. PWCS' stormwater program BMPs are described in this TMDL Action Plan, specifically to their application to reductions in *E. coli* discharges to the MS4. The Action Plan addresses *E. coli* in accordance with the special conditions of the MS4 General Permit and expectations of the TMDL by demonstrating that the iterative implementation of programmatic BMPs to reduce or eliminate *E. coli* to the maximum extent practicable. Compliance with the special conditions is demonstrated through:

- ✓ Summary of BMPs already included in the PWCS Program Plan that address *E. coli*;
- ✓ PWCS' MS4 Public Education and Outreach strategy and plan;
- ✓ An assessment of PWCS-owned and operated properties; and
- ✓ A methodology to measure Action Plan effectiveness through MS4 annual reporting.

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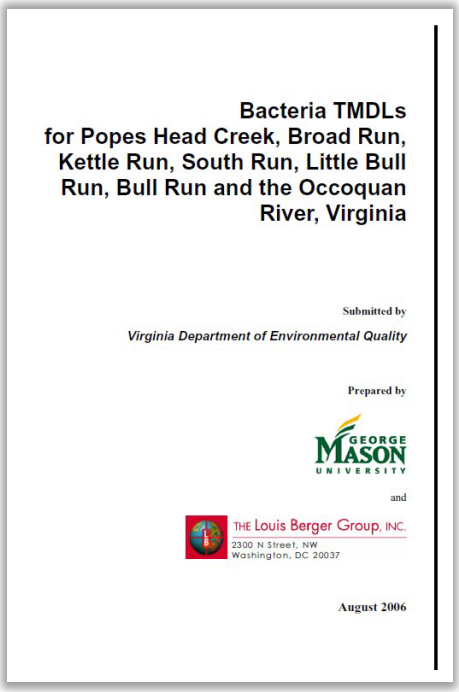
ACRONYMS

BMP	Best Management Practice
CATS	Custodial Advisory Training Sessions
CUA	Census Urbanized Area
CWA	Clean Water Act
DEQ	Virginia Department of Environmental Quality
E. coli	Escherichia coli
EPA	Environmental Protection Agency
I&I	Inflow and Infiltration
IDDE	Illicit Discharge Detection and Elimination
LA	Load Allocation
MEP	Maximum Extent Practicable
MCM	Minimum Control Measure
MOS	Margin of Safety
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
PWCS	Prince William County Schools
SOL	Virginia Standards of Learning
SWPPP	Stormwater Pollution Prevention Plan
SWM	Stormwater Management
TMDL	Total Maximum Daily Load
VSMP	Virginia Stormwater Management Program
WLA	Wasteload Allocation

1.0 INTRODUCTION AND PURPOSE



Mandated by Congress under the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) storm water program includes the Municipal Separate Storm Sewer System (MS4), Construction, and Industrial General Permits. In Virginia the NPDES Program is administered by the Virginia Department of Environmental Quality (DEQ) through the Virginia Stormwater Management Program (VSMP) and the Virginia Pollutant Discharge Elimination System (VPDES). Prince William County Schools (PWCS) is authorized to discharge stormwater from its MS4 under the VPDES General Permit for Discharge of Stormwater from Small MS4s (MS4 General Permit). As part of the MS4 General Permit authorization, PWCS developed and implements a MS4 Program Plan with best management practices (BMPs) to address the six minimum control measures (MCMs) and the special conditions for applicable total maximum daily loads (TMDL), as outlined in the MS4 General Permit. Implementation of these BMPs is consistent with the provisions of an iterative MS4 Program constituting compliance with the standard of reducing pollutants to the "maximum extent practicable."

In 1998, DEQ listed segments of the Broad Run, Bull Run, Little Bull run, and Occoquan River on their biennial 303(d) TMDL Priority List and Report due to violations of the state's water quality standard for fecal coliform bacteria, now expressed as *E. coli*. As a consequence, "The Primary Contact Use (Bacteriological) Impairments on Broad Run, South Run, Popes Head Creek, Little Bull Run, Bull Run, and the Occoquan River Watersheds Prince William and Fauquier Counties, Virginia," were developed and approved by the Environmental Protection Agency (EPA) on November 15, 2006.

The TMDL assigned PWCS an aggregate wasteload allocation (WLA) for PWCS, Prince William County, and VDOT – Northern Urban Area for Escherichia coli (*E. coli*) of *1.60E+10* colony forming units per year (cfu/yr), representing an 89% reduction in the existing loads to meet water quality standards in Bull Run, a WLA of *5.55E+11* cfu/yr for *E. coli* equivalent to an 81% reduction in Broad Run, and a WLA of *1.72E+11* cfu/yr for *E. coli* equivalent to a 94% reduction in the Occoquan River. The WLAs represent the allowable bacteria load from PWCS' MS4 to prevent instances of exceedance of bacteria discharge water quality standards. The expectation from PWCS to address the WLAs is through iterative implementation of programmatic BMPs.

PWCS' programmatic BMPs applicable to the pollutant of concern are described herein and only failing to implement the BMPs would be considered a violation of the MS4 General Permit.

1.1 Total Maximum Daily Loads

A TMDL is the amount of pollutant a water body can assimilate and still meet water quality standards for its designated use. Typically, TMDLs are represented numerically in three main components:

- WLA for point source contributions and MS4 Permit operators
- Load Allocations (LA) for non-point source contributions and natural background sources
- Margin of Safety (MOS)

Point source pollution is any single identifiable source from which pollutants are discharged. If point source discharges, including a permitted MS4, are present in the TMDL watershed, then any allocations assigned to that permittee must be in the form of a WLA. PWCS' MS4 outfalls are defined as point source discharges and therefore fall under this category in the TMDL. Pollution that is not from an identifiable source, such as a pipe or a ditch, but rather originates from multiple sources over a relatively large area, are considered to be non-point source pollution. These sources are typically categorized into agricultural, livestock, and wildlife, with LAs assigned for each. The MOS is a required component that accounts for the modeling uncertainty in the response of the waterbody to loading reductions and is implicitly incorporated into a TMDL computation. The TMDL is expressed in the following equation:

$$TMDL = \sum WLA + \sum LA + MOS$$

The TMDL represents the sum of calculable sources plus a margin of safety that is required to not exceed the state water quality standard for recreation of a 30-day geometric mean of 126 cfu/100 ml and an instantaneous water quality standard of 235 cfu/100 ml. The cfu/ml unit represents a volumetric concentration of viable bacteria cells that can multiply under controlled conditions.

1.2 TMDL Special Conditions

PWCS operates its regulated MS4 within the Bull Run, Little Bull Run, Broad Run, and Occoquan River TMDL watersheds and is therefore subject to the TMDL WLAs assigned in the TMDL. The special conditions for the TMDL listed in the MS4 General Permit require PWCS to develop a TMDL Action Plan designed to reduce loadings for pollutants of concern where PWCS is given a WLA to an impaired water for which a TMDL has been approved by the EPA as described below:

- For TMDLs approved by the EPA prior to July 1, 2018, and in which an individual or aggregate wasteload has been allocated to PWCS, PWCS shall update the previously approved local TMDL action plans to meet the conditions of Part II B 4, B 6, B 7, and B 8 as applicable, no later than 18 months after the permit effective date and continue implementation of the action plan. Updated action plans shall include:

1. An evaluation of the results achieved by the previous action plan; and
2. Any adaptive management strategies incorporated into updated action plans based on action plan evaluation.

- For TMDLs approved by EPA on or after July 1, 2018, and prior to October 31, 2023, and in which an individual or aggregate wasteload has been allocated to PWCS, PWCS shall develop and initiate implementation of action plans to meet the conditions of Part II B 4, B 5, B 6, B 7, and B 8 as applicable for each pollutant for which wasteloads have been allocated to PWCS' MS4 no later than 30 months after the permit effective date.

PWCS shall complete implementation of the TMDL action plans as soon as practicable. TMDL action plans may be implemented in multiple phases over more than one permit cycle using the adaptive iterative approach provided adequate progress is achieved in the implementation of BMPs designed to reduce pollutant discharges in a manner that is consistent with the assumptions and requirements of the applicable TMDL. Each local TMDL action plan developed by PWCS shall include the following:

- The TMDL project name;
- The EPA approval date of the TMDL;
- The wasteload allocated to PWCS (individually or in aggregate), and the corresponding percent reduction, if applicable;
- Identification of the significant sources of the pollutants of concern discharging to PWCS' 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;
- The BMPs designed to reduce the pollutants of concern in accordance with Parts II B 5, B 6, B 7, and B 8;
- Any calculations required in accordance with Part II B 5, B 6, B 7, or B 8;
- For action plans developed in accordance with Part II B 5, B 6, and B 8, an outreach strategy to enhance the public's education (including employees) on methods to eliminate and reduce discharges of the pollutants; and
- A schedule of anticipated actions planned for implementation during this permit term.

1.3 PWCS' Bull Run, Little Bull Run, Broad Run & Occoquan River TMDL Action Plan

The purpose of PWCS' Action Plan for Bull Run, Little Bull Run, Broad Run, and Occoquan River bacteria TMDL is to address each of the Local TMDL special conditions listed in Part II B. As an adaptive and iterative approach to meet surface water quality goals, the Action Plan may be revised from time to time to reduce *E. coli* discharges from PWCS' MS4 to the maximum extent practicable. The Action Plan is incorporated, by reference, into PWCS' MS4 Program Plan, which outlines the BMPs that address the entirety of the conditions set forth in the MS4 General Permit.

2.0 Bull Run, Little Bull Run, Broad Run, and Occoquan River Bacteria TMDL

Broad Run, Little Bull Run, Bull Run, and the Occoquan River all flow into the Occoquan Reservoir. The impaired segments of Broad Run are situated within Prince William County, with the upstream portion located in Fauquier County and the downstream portion in Manassas City. Impaired segments of Bull Run, Little Bull Run, and the Occoquan River are also located within Prince William County. MS4-regulated PWCS properties in Prince William County discharge into the Bull Run [PL43, PL44, PL46 HUC], Little Bull Run [PL43 HUC], Broad Run [PL32, PL33, PL34 HUC], and Occoquan River [PL41, PL47 HUC] watersheds. The bacterial impairment is attributed to violations of water quality standards for E. coli. These particular bacteria are typically found in the lower intestines of warm-blooded organisms. Certain strains of the bacteria can be harmful and can survive for a limited amount of time outside of a host. Fecal contamination from these organisms, if ingested by another host, can cause serious poisoning. A WLA was calculated for existing point sources, including MS4 permit operators, along with LAs and the MOS to meet the water quality standard and reduce the risk of waterborne illness. The TMDL was established based on scenarios where no violations of either the *E. coli* geometric mean standard or the instantaneous *E. coli* standard would occur. The selected TMDL scenario for establishing WLAs included reductions from sources as shown in Table 1.

2.1 Wasteload Allocation

The TMDL considered potential sources of *E. coli* bacteria from the sources identified in Table 1.

Table 1: Load Reduction Required to Meet *E. coli* Standards

Broad Run (VAN-A19R-01)					
Failed Septic & Pipes	**Direct Livestock**	**Non-point Source (Agricultural)**	**Non-point Source (Urban)**	**Wildlife**	**MS4s**
100%	100%	85%	85%	0%	81%
Bull Run (VAN-A23R-01)					
Failed Septic & Pipes	**Direct Livestock**	**Non-point Source (Agricultural)**	**Non-point Source (Urban)**	**Wildlife**	**MS4s**
100%	100%	90%	90%	83%	88.8%
Occoquan River (VAN-A20R-01)					
Failed Septic & Pipes	**Direct Livestock**	**Non-point Source (Agricultural)**	**Non-point Source (Urban)**	**Wildlife**	**MS4s**
100%	100%	95%	95%	0%	94%

Sources identified in Table 1 can be summarized as the following:

- Failed Septic Systems and Pipe – This category includes failed septic systems and "straight pipes" that directly discharge sewage to surface waters.
- Direct Livestock – Livestock inventory within the TMDL watershed consists of cows, hogs & pigs, sheep & lambs, and horses & ponies. Whereas indirect wildlife sources are those that are carried to the stream from the surrounding land via rain and runoff events, direct sources are those that are directly deposited into the stream.
- Non-point Source (Agricultural) – Agricultural sources of *E. coli* include land application of manure and biosolids to pastures and are therefore considered an indirect source.
- Non-point Source (Urban) – This category includes MS4s as the nonpoint source runoff that ultimately discharges through the MS4. *E. coli* sources incorporated into the TMDL within the urban area include pet waste, primarily cats and dogs.
- Wildlife – Potential sources of bacteria include run-off from wildlife sources.
- MS4 – MS4 locations reflect weighted average of the reductions required from forest and urban land.

3.0 PWCS CHARACTERIZATION IN THE TMDL WATERSHED

A review of the TMDLs, PWCS' MS4 Program Plan and a field investigation of PWCS-owned and operated properties resulted in the characterization related to potential *E. coli* sources described in the following sub-sections.

3.1 Potential PWCS Sources of *E. coli* and Implemented Measures

E. coli is a bacteriological organism that is found in the intestinal tract of warm-blooded animals such as 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 PWCS 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 depicts PWCS properties within the watersheds of the TMDL and within the Census Urbanized Area.

Table 2: PWCS Properties in the TMDL Watershed and CUA

Property Name		
Alvey ES	Lake Ridge ES	Sinclair ES
Antietam ES	Lake Ridge MS	Springwoods ES
Battlefield HS	Loch Lomond ES	Sudley ES
Bennett ES	Marshall ES	Transportation Center West
Bristow Run ES	Marsteller MS	Tyler ES & Pace West
Buckland Mills ES	McCuin Transportation Center	Unity Braxton MS
Bull Run MS	Mountain View ES	Unity Reed HS & Ellis ES
Cedar Point ES	Mullen ES	Victory ES
Chris Yung ES	Old Bridge ES & Woodbridge HS	West Gate ES
Gainesville HS	Osbourn Park HS	Westridge ES
Gainesville MS	Parkside MS	Woodbine PSC
Glenkirk ES	Piney Branch ES	Yorkshire ES
Haymarket ES	Rosemount and Innovation ES	13011 Telegraph Road, Woodbridge
Jenkins ES	Signal Hill ES	

Per the 2006 Bacteria TMDL for Broad Run, Little Bull Run, Bull Run, and the Occoquan River, forested land (38.3%) is the largest land cover in the impaired watershed area followed by agricultural (32.4%) and developed (26.5%) land. Possible significant sources of *E. coli* include wildlife, manure applications, and failed septic systems. Significant bacteriological sources are unlikely on PWCS properties in the watershed but may include pet waste from field areas, leaking or malfunctioning sanitary sewer piping, wildlife, and temporary portable toilets at construction sites.

3.1.1 Pet Waste

Waste from service animals is regulated under General School Administration Regulation 271-2, Service Animals, Section V.B.3 Provision Once Access Granted. Under this provision, a "pet area" will be designated somewhere on the school grounds to which the primary handler takes the service animal to urinate or defecate. The handler must correctly dispose of any solid waste produced by the service animal.

There are no current regulations excluding pets from exterior areas of PWCS properties. Per Prince William County Parks and Recreation's Guidelines Governing Use of PWC Park and School Facilities, all animals on school grounds must be restrained. There are no current regulations addressing non-service animal pet waste at PWCS properties.

3.1.2 Sanitary Sewers

PWCS employs maintenance personnel who are trained to quickly address clogged sewer systems and prevent sewer backups. They follow strict housekeeping and pollution prevention procedures to ensure minimal environmental impact during their work. Any discharges that occur during maintenance activities are promptly reported to DEQ in compliance with the MS4 Permit requirements. This proactive approach helps maintain both the efficiency of the sewer system and environmental safety.

3.1.3 Portable Toilets

Portable toilets are commonly used on construction sites to provide sanitation for workers. These units require regular maintenance and must be emptied to prevent the discharge of anthropogenic bacteria into the environment. PWCS routinely monitors the condition of portable toilets during construction site Stormwater Pollution Prevention Plan (SWPPP) inspections. This ensures that sanitation practices comply with environmental standards and prevent contamination of surrounding areas. In addition, some schools have portable toilets to accommodate students and staff. PWCS ensures the placement of portable toilets are at adequate distances from storm drains. Portable toilets are visually inspected once a year; however, no formal inspection record is kept.
In addition, some schools have portable toilets to accommodate students and staff. These are visually inspected at least once a year. However, PWCS understands the necessity to have a formalized inspection process that is documented. Therefore, PWCS will formally inspect these facilities once a year which is included in the schedule of this action plan.

3.1.4 Dumpster

Dumpsters can be a significant source of bacteria, especially when they contain organic waste, food scraps, or liquids that can decompose and create a breeding ground for harmful microorganisms. As waste breaks down, it can release moisture that fosters bacterial growth, and if dumpsters are not properly maintained, they can become a source of contamination to the surrounding environment. Leaking dumpsters further exacerbate this issue by allowing waste, liquid, and bacteria to escape, potentially polluting the soil and nearby water sources. To prevent

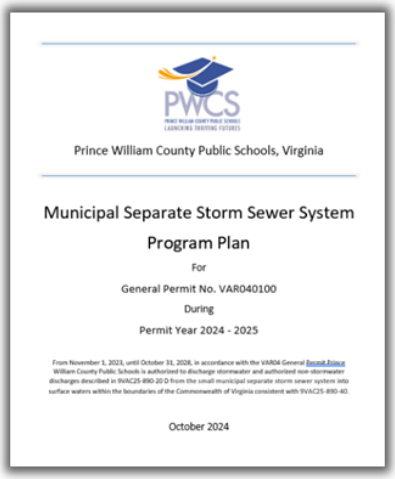
these risks, dumpsters should always be kept tightly covered to contain any waste and prevent rainwater or other liquids from entering. Regular maintenance, including cleaning and timely disposal, is essential to ensure that dumpsters do not leak and do not become a source of bacterial contamination. PWCS currently inspects dumpsters annually.

3.1.5 Wildlife

Wildlife can be a source of E. coli at PWCS. Specifically, groundhogs, feral cats, and various species of birds are assumed to present an increased loading of E. coli as they migrate towards stormwater management facilities and roam the campus. However, PWCS has not identified wildlife a major source of bacteria to focus effort at this time. However, this source is inherently addressed partially through dumpster inspection which can be a food source for wildlife.

4.0 MS4 PROGRAM APPLICABLE OVERVIEW

PWCS' MS4 Permit covers stormwater discharges from areas included within census urbanized areas. PWCS' collective efforts, as described in the PWCS MS4 Program Plan, result in significant reduction of pollutants that may be discharged from its regulated MS4.


Prince William County Public Schools, Virginia

Municipal Separate Storm Sewer System

Program Plan

For

General Permit No. VAR040100

During

Permit Year 2024 - 2025

October 2024

4.1 Minimum Control Measures

The General Permit requires the Program Plan to include BMPs to address the requirements of six MCMs described in Part I E of the General Permit. BMPs already included in the PWCS Program Plan that address *E. coli* are summarized below.

4.1.1 MCM 1 Public Education and Outreach on Stormwater Impacts

The PWCS MS4 Program includes, by reference, a Public Education and Outreach Program (PEOP) that incorporates educational information about TMDL pollutants of concern, including E. coli. The PEOP efforts communicate that E. coli is a major contributor of concern and includes, as part of the relevant message for identifying methods to reduce introduction of E. coli into stormwater runoff. PWCS 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. Students and faculty learned about their local stormwater system and how they can take action to keep their waterways clean. PWCS promotes awareness of where stormwater goes once it leaves PWCS property by labeling storm drains.

PWCS also provides Custodial Advisory Training Sessions (CATS) on the impact of dumping chemicals and cleaning solutions on PWCS properties. This makes custodial staff aware of the sources and consequences of stormwater pollution.

4.1.2 MCM 2 Public Involvement and Participation

PWCS will post this Action Plan on their stormwater pollution prevention webpage at the https://www.pwcs.edu/departments/facilities/facilities_management/environmental_staff_and_services/stormwater_management. Availability of the Action Plan will increase awareness of the TMDL with web page visitors.

4.1.3 MCM 3 Illicit Discharge Detection and Elimination

PWCS' MS4 Program includes an IDDE Program with written procedures to detect, identify, and address non-stormwater discharges, including illegal dumping, to the small MS4 with policies and procedures for when and how to use legal authorities. PWCS prohibits non-stormwater discharges

into the storm sewer system through language provided within the Prince William County Illicit Discharge Ordinance. The IDDE Program includes a proactive approach to reduce illicit discharges with annual outfall screenings to detect and eliminate non-stormwater discharges into the MS4.

4.1.4 MCM 4 Construction Site Stormwater Runoff Control

PWCS' Construction Program includes mechanisms to ensure compliance and enforcement on regulated construction sites that are enforced through the PWC stormwater management (SWM) and Erosion and Sediment Control (ESC) Ordinances that are consistent with the Virginia Erosion and Sediment Control and SWM Laws and Regulations and includes:

- Required plan approval prior to commencement of a regulated land disturbance activity;
- Construction site inspections and enforcement; and
- Certification of post-construction SWM facilities

Through inspections and enforcement, especially in regard to construction SWPPP inspections, potential for *E. coli* discharges (i.e. port-a-johns) is minimized. MCM 4 BMPs in the PWCS MS4 Program Plan describes construction site runoff control BMPs.

4.1.5 MCM 5 Post-Construction Stormwater Management

PWCS' MS4 Program includes a Post-Construction SWM Program that ensures water quality criteria in the Virginia Stormwater Management Regulations have been achieved on new developments and developments on prior developed land through implementation of the Prince William County SWM Ordinance. Included within the ordinance are requirements for as-built certifications for SWM BMPs and long-term maintenance covenants to ensure that SWM facilities are designed and installed in accordance with appropriate law and regulations. Although the facilities are designed to achieve target phosphorus reductions, many water quality BMPs also are effective at *E. coli* removal. MCM 5 in the PWCS MS4 Program Plan describes post-construction stormwater management BMPs.

4.1.6 MCM 6 Pollution Prevention/Good Housekeeping for Operations

PWCS' MS4 Program includes a Pollution Prevention/Good Housekeeping Program that includes policies and procedures to ensure that day-to-day operations minimize the exposure of pollutants to rainfall on PWCS-owned and operated properties to the maximum extent practicable. The program is supported with PWCS' Pollution Prevention & Good Housekeeping Manual and training for applicable staff. MCM 6 in the PWCS MS4 Program Plan describes pollution prevention and good housekeeping BMPs.

No new policies and procedures or modifications to existing policies and procedures were identified as necessary to meet the requirements of the special conditions.

4.1.7 Legal Authority

As a school system, PWCS does not have regulatory authority and must rely on Prince William County to develop and enforce ordinances. Therefore, the primary tool for preventing the discharge of *E. coli* bacteria to the storm sewer system within Prince William County is Chapter 23.2 Article 2 of the Prince William County Code of Ordinances. Section 23.2-4.3 of this ordinance states,

> *"If any activity listed in subsection 23.2-4.1(b) of this chapter is found by the director to be a source of pollutants to waters of the United States, the director shall serve a written notice on the party responsible for the activity which orders that the activity be ceased or conducted in a manner that will avoid the discharge of pollutants to the stormwater system. The notice shall state the date by which the activity shall cease or be conducted without pollution.*
>
> *Failure to comply with any such order within the time stated in the notice shall constitute a violation. For any violations of this chapter, the owner must comply with the director's orders within the time specified in the notice. Failure to comply with such order shall constitute a violation of this chapter.*
>
> *In addition to any penalty imposed for each violation, a judge hearing the case may direct the person responsible to remediate or correct, and each day's default in such remediation or correction shall constitute a violation of and a separate offense under this section." (Ordinance 03-87, 9-16-03)*

The Prince William County Code of Ordinances directly addresses pet waste in Chapter 4.

> *Chapter 4 – Animals and Fowl Article 1 Section 4-11 – Allowing animals to urinate or defecate: "It shall be unlawful for any person knowingly or willingly to allow any animal belonging to that person to urinate or defecate on any public property, or the property of another without the consent of the owner of the property, or his agent, provided that it shall not be unlawful to allow urination or defecation by such animal within the curb or gutter area of a public street or roadway, and provided further that defecation by an animal on public property shall not be unlawful if the owner of the animal removes the animal's excrement immediately and disposes of it in a public trash receptacle or in a public sanitary sewer, or on the owner's own property in a lawful manner." (Ordinance Number 85-17, 2-19-85)*
>
> *Chapter 4 – Animals and Fowl Article 3 Section 4-26 – Urinating or defecating on property of others or public property: "It shall be unlawful for the owner of a dog to allow such dog to urinate or defecate on the private property of other persons or on publicly owned property, except parts of parks posted as dog run areas. For the purposes of this section, private property shall include townhouse, condominium or RPC property held in common." (Code 1965, 3-17.3; Ordinance Number 77-43-32, 11-29-77)*

Even though PWCS does not have regulatory authority, PWCS has developed policies to reduce the discharge of pet waste from their properties. Regulation 271-2 V.B.3 General School Administration dated June 12, 2019, for service animals states that once the request for a service animal is approved, the principal should establish "a designated "pet area" somewhere on the school grounds to which the primary handler takes the animal to urinate or defecate. The handler must correctly dispose of any solid waste produced by the service animal."

5.0 IMPLEMENTATION OF THE STRATEGY TO REDUCE BACTERIA

In an effort to detect and eliminate bacteriological loads from anthropogenic sources, PWCS has incorporated the detection of sewage odors into MS4 annual outfall inspections and Illicit Discharge Detection and Elimination (IDDE) program. The PWCS properties within the impaired watersheds are inspected manually as part of the MS4 program 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.

To reduce bacteriological loads from pet waste sources, PWCS implemented and enforced additional requirements addressing pet waste at PWCS properties. New guidelines state that service animal caretakers are responsible for cleaning up pet waste on PWCS grounds. PWCS will continue to implement and update its IDDE inspections as needed to address bacteriological discharges from properties within the impaired watersheds.

PWCS is a nontraditional MS4 permittee; therefore, PWCS shall select at least one strategy listed in Table 3 below designed to reduce the load of bacteria to the MS4 relevant to sources of bacteria applicable within the MS4 regulated service area. Selection of the strategies shall correspond to sources identified in Part II B 5 b of the General Permit. These strategies will be included in the annual MS4 Program Plan update and implementation will be reported during the annual MS4 reporting process.

Table 3: Strategies for Bacteria Reduction Stormwater Control/Management Strategy

Source	Strategies (provided as an example and not meant to be all inclusive or limiting)
Domestic pets (dogs and cats)	Provide signage to pick up dog waste, providing pet waste bags and disposal containers. Adopt and enforce pet waste ordinances or policies, or leash laws or policies. Place dog parks away from environmentally sensitive areas. Maintain dog parks by removing disposed of pet waste bags and cleaning up other sources of bacteria. Protect riparian buffers and provide unmanicured vegetative buffers along streams to dissuade stream access.

Urban wildlife	Educate the public on how to reduce food sources accessible to urban wildlife (e.g., manage restaurant dumpsters and grease traps, residential garbage, feed pets indoors). Install storm drain inlet or outlet controls. Clean out storm drains to remove waste from wildlife. Implement and enforce urban trash management practices. Implement rooftop disconnection programs or site designs that minimize connections to reduce bacteria from rooftops Implement a program for removing animal carcasses from roadways and properly disposing of the same (either through proper storage or through transport to a licensed facility).
Illicit connections or illicit discharges to the MS4	Implement an enhanced dry weather screening and illicit discharge, detection, and elimination program beyond the requirements of Part I E 3 to identify and remove illicit connections and identify leaking sanitary sewer lines infiltrating to the MS4 and implement repairs. Implement a program to identify potentially failing septic systems. Educate the public on how to determine whether their septic system is failing. Implement septic tank inspection and maintenance program. Implement an educational program beyond any requirements in Part I E 1 though E 6 to explain to citizens why they should not dump materials into the MS4.
Dry weather urban flows (irrigations, car washing, powerwashing, etc.)	Implement public education programs to reduce dry weather flows from storm sewers related to lawn and park irrigation practices, car washing, powerwashing and other nonstormwater flows. Provide irrigation controller rebates. Implement and enforce ordinances or policies related to outdoor water waste. Inspect commercial trash areas, grease traps, washdown practices, and enforce corresponding ordinances or policies.
Birds (Canadian geese, gulls, pigeons, etc.)	Identify areas with high bird populations and evaluate deterrents, population controls, habitat modifications and other measures that may reduce bird-associated bacteria loading. Prohibit feeding of birds.

Other sources	Enhance maintenance of stormwater management facilities owned or operated by the permittee. Enhance requirements for third parties to maintain stormwater management facilities. Develop BMPs for locating, transporting, and maintaining portable toilets used on permittee-owned sites. Educate third parties that use portable toilets on BMPs for use. Provide public education on appropriate recreational vehicle dumping practices.

5.1 Evaluation of the Results Achieved by the 2018 - 2023 Action Plan

During the 2018 - 2023 MS4 Permit cycle, PWCS selected at least one strategy from the list in Table 3 to further reduce the load of bacteria to the MS4. Because leaking dumpsters were deemed a potential source of E. coli, PWCS included inspections of dumpsters in the strategy. Based on an evaluation of the results of the strategy employed for the 2018 - 2023 permit cycle, PWCS has met the 2018 – 2023 action plan goals to the maximum extent practicable.

5.2 Adaptive Management Strategies for the 2023 – 2028 Action Plan

Similarly, PWCS plans in future permit years, at a minimum, to continue to select one strategy from the table above. This proposed strategy will be included in the annual MS4 Program Plan update, and implementation will be reported during the annual MS4 reporting process.

In future permit years, PWCS plans to develop a formalized annual portable toilet inspection program that is documented, and records are maintained. In addition, PWCS plans to develop a sanitary sewer overflow maintenance and operations procedure for the Good Housekeeping and Pollution Prevention manual that includes best management practices. PWCS may also consider additional strategies for implementation in future permit years.

If additional sources of pollution or contamination are identified, PWCS will adapt its strategies to address these new challenges. This may involve revising current methods, adopting new technologies, or integrating additional best management practices to mitigate emerging risks. These adaptive strategies will ensure that PWCS remains proactive in maintaining compliance with the MS4 Permit and continues to improve its pollution prevention efforts over time.

6.0 SCHEDULE

PWCS will implement the practices and controls described in Section 4 and 5 to reduce the potential of *E. coli* discharged to surface waters to the maximum extent practicable. PWCS will complete implementation of the TMDL action plan with the schedule in Table 4. The method of assessment is implemented through the annual reporting process with the review of the effectiveness of each MS4 Program Plan BMP.

Table 4: Schedule of Anticipated Actions Planned for Implementation of Bacteria Reduction

Strategies	Method	Timeframe
Dumpster Inspections	PWCS staff or contractors will inspect dumpster areas for potential issues including illicit discharges, lids are closed, dumpsters are not leaking, and dumpsters are in good condition to prevent urban wildlife access to food sources. Dumpsters will be replaced as necessary.	Completed and ongoing
Portable Toilet Inspections	PWCS will develop an inspection checklist to document the portable toilet inspections annually.	By June 30, 2026, and inspected annually thereafter
Sanitary Sewer Overflow Standard Operating Procedures	PWCS will develop and implement a Sanitary Sewer Overflow SOP to be incorporated in the Good Housekeeping and Pollution Prevention Manual	June 30, 2027
Bacteria TMDL Training	Incorporate information concerning the dumpster inspections, portable toilet inspections, and sanitary sewer overflow SOPs into the biennial MS4 training.	June 30, 2028