# Prince William County

# Bacteria TMDL Action Plan

**Prepared in compliance with General Permit No. VA0088595**

## Draft

July 12, 2025

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# CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

| Name | Title | Date |
| --- | --- | --- |

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## Bacteria TMDL Action Plan

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# Prince William County, Virginia
## Bacteria TMDL Action Plan

## 1 Introduction

### 1.1 Purpose

This Bacteria TMDL Action Plan documents how Prince William County intends to meet the "TMDL Action Plans other than the Chesapeake Bay TMDL" in Part I.D.2 of its Phase I MS4 Permit (No. VA0088595). The County's most recent MS4 permit was issued by the Virginia Department of Environmental Quality (DEQ) effective January 12, 2024 and will expire January 11, 2029.

The County's MS4 permit requires the development of action plans for impaired streams where a total maximum daily load (TMDL) approved by the State Water Control Board assigns a waste load allocation (WLA) to the County. A TMDL establishes the maximum amount of a pollutant that can enter a water body without violating water quality standards.

Prince William County is subject to the following TMDLs for bacteria impairments specified in the following TMDL reports (see Table 2A for more detail on the impairments):

- Bacteria TMDLs for Cedar Run and Licking Run, Virginia;
- Bacteria TMDL for the Neabsco Creek, Prince William County, Virginia;
- Bacteria TMDLs for the Popes Head, Broad Run, Kettle Run, South Run, Little Bull Run, Bull Run and the Occoquan River, Virginia.; and,
- Bacteria TMDL Development for Tributaries to the Potomac River: Prince William and Stafford Counties.

All four TMDLs assign WLAs to the County for bacteria and were approved prior to permit issuance on December 17, 2014. The Bacteria TMDL Action Plan must be updated within 18 months of the most recent permit reissuance.

Contamination by fecal coliform bacteria is the most common cause of water quality violations in Virginia streams. According to DEQ and the United States Geologic Survey "Although fecal coliform bacteria are not necessarily dangerous to humans, their presence in streams indicates that the water is contaminated with fecal waste from warm-blooded animals. For this reason, fecal coliform bacteria are known as 'indicator organisms;' their presence in recreational waters indicates an increased risk to human health."[1] In Virginia, water quality standards for bacteria were changed in 2003 from more general fecal coliform bacteria to *E. coli* (*Escherichia coli*). *E. coli* is a subset of fecal coliform bacteria and is considered a better indicator of the pathogenic potential of contamination.

This plan addresses the requirements of the County's MS4 permit 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] "Identifying Sources of Fecal Coliform Bacteria in Accotink Creek," USGS and Virginia DEQ, undated.

# 2 Bacteria TMDL Action Plan

Prince William County is subject to four separate TMDLs that assign WLAs for discharges of bacteria to impaired waters. The WLAs are assigned in aggregate to multiple MS4 permit holders within Prince William County's geographic boundary. MS4 permit holders include: Prince William County, Prince William County Public Schools (VAR040100), Virginia Department of Transportation (VAR040115), and the Woodbridge Campus of Northern Virginia Community College (VAR040095). Each TMDL includes a different combination of aggregated MS4 permit holders. The details of each TMDL are provided in the following subsections.

## 2.1 TMDL Reports

This TMDL action plan addresses the TMDL reports summarized in Table 2.A.

***Table 2.A – Bacteria TMDLs with WLAs Assigned to Prince William County***

| TMDL Name | SWCB Approval | Streams | Cause |
|---|---|---|---|
| Bacteria TMDLs for Cedar Run and Licking Run, Virginia | 12/02/2004 | Cedar Run | *Escherichia coli* |
| Bacteria TMDL for Neabsco Creek, Prince William County, Virginia | 04/28/2009 | Neabsco Creek | *Escherichia coli* |
| Bacteria TMDLs for Popes Head Creek, Broad Run, Kettle Run, South Run, Little Bull Run, Bull Run, and the Occoquan River, Virginia | 07/31/2008 | Broad Run | *Escherichia coli* |
| | | Bull Run | *Escherichia coli* |
| | | Occoquan River | *Escherichia coli* |
| Bacteria Total Maximum Daily Load (TMDL) Development for Tributaries to the Potomac River: Prince William and Stafford Counties | 04/04/2014 | Powells Creek | *Escherichia coli* |
| | | Quantico Creek | *Escherichia coli* |
| | | North Branch Chopawamsic Creek | *Escherichia coli* |

## 2.2 Pollutant of Concern

Stream segments in the TMDLs were listed as impaired on Virginia's 303(d) TMDL Priority List and Reports because of violations of the state's water quality standards for *E. coli* and fecal coliform bacteria.

## 2.3 Bacteria TMDLs

This action plan applies to the areas covered under the bacteria TMDLs that drain to the County's regulated MS4. The MS4 regulated area is defined in the MS4 permit as a system that discharges to waters of the state that is owned or operated by the permittee. Map 2.A shows the Prince William County MS4 area and the bacteria TMDL watersheds.

### 2.3.1 Bacteria TMDL for Cedar Run and Licking Run

The Cedar Run and Licking Run sub-basins are part of the larger Occoquan River watershed. Total combined drainage for the two sub-basins is approximately 125,000 acres or 195 square miles. An aggregated WLA is assigned to two MS4 permit holders in the Cedar Run watershed. These include Prince William County and Prince William County Schools. No WLA was assigned for MS4 permittees in the Licking Run watershed. Table 2.B shows the allocated bacteria load contained in the TMDL. The aggregated existing bacteria load and target load reduction were not available in the TMDL document.

***Table 2.B – Cedar Run and Licking Run TMDL Aggregated Allocations to MS4s***

| Aggregated MS4s | Stream | Allocated *E.coli* Load (cfu/yr) |
|---|---|---|
| Prince William County<br>Prince William County Schools | Cedar Run | 4.52E+11 |

The TMDL examined several potential sources of bacteria within the watershed. These included permitted point sources, failed septic systems, forests, cropland, pasture, cattle through direct deposition, wildlife through direct deposition, and MS4s. Direct deposit from livestock to streams was found to be the predominant source of bacteria in these watersheds (65% of the existing load in Cedar Run). Feces directly deposited by wildlife in the stream constituted the next largest contribution at 26% of the mean daily *E. coli* concentration. Runoff from imperious areas contributed less than 1% of the mean daily *E. coli* concentration.

### 2.3.2 Bacteria TMDL for Neabsco Creek

The impaired portion of the Neabsco Creek watershed is located entirely in Prince William County and includes much of the Dale City area. An aggregated WLA is assigned to four MS4 permit holders in the Neabsco Creek watershed. These include Prince William County, Prince William County Schools, the Woodbridge Campus of Northern Virginia Community College, and the Virginia Department of Transportation. Table 2.C shows the aggregated existing and allocated bacteria loads contained in the Neabsco Creek TMDL.

***Map 2.A – Prince William County MS4 Service Area and Bacteria TMDL Watersheds***

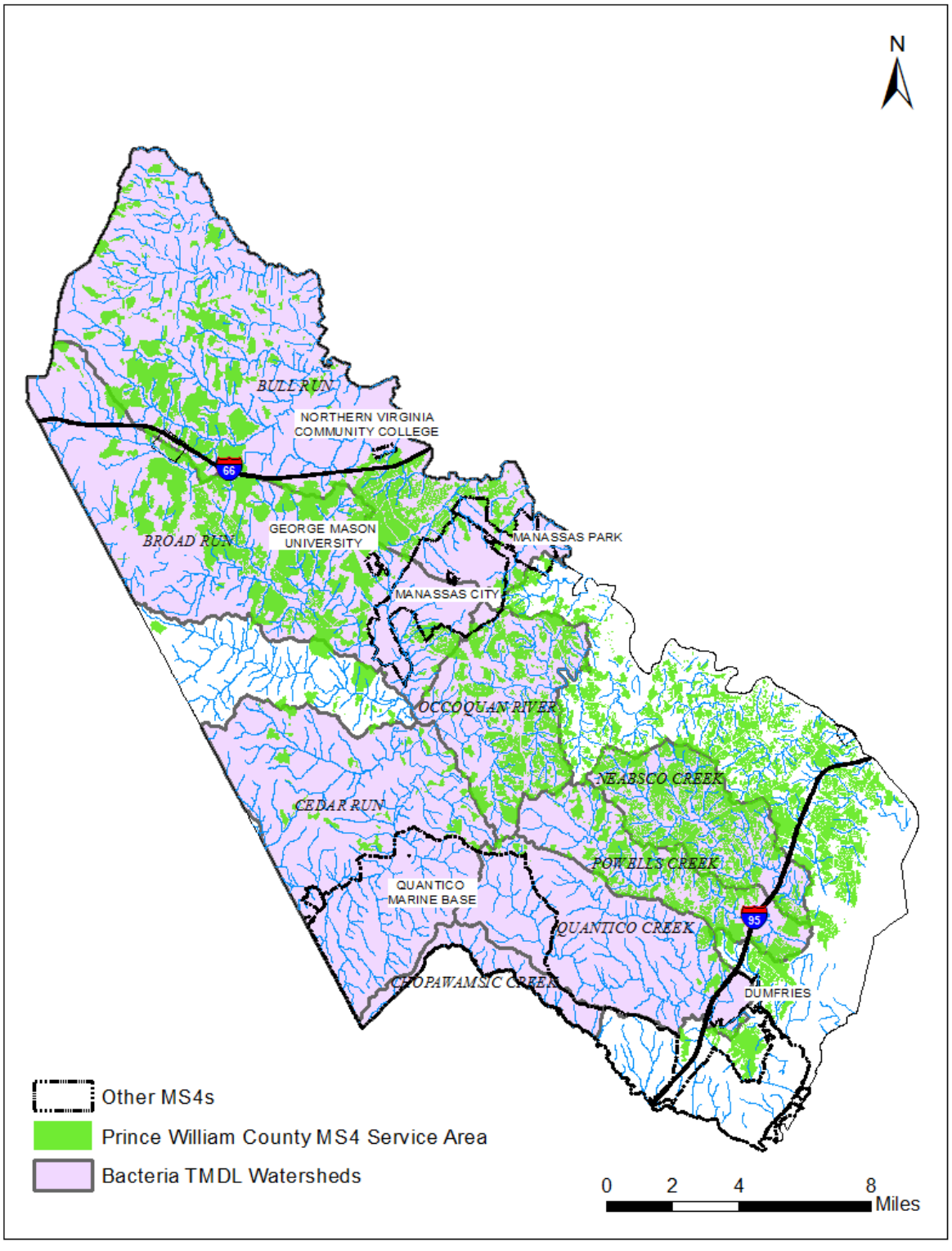

***Table 2.C – Neabsco Creek TMDL Aggregated Allocations to MS4s***

| Aggregated MS4s | Existing *E.coli* Load (cfu/day) | Allocated *E.coli* Load (cfu/day) | Reduction (%) |
|---|---|---|---|
| Prince William County<br>Prince William County Schools<br>Woodbridge Campus of Northern Virginia Community College<br>VDOT | 4.24E+12 | 1.05E+12 | 75% |

The TMDL examined several potential sources of bacteria within the watershed. These included permitted point sources, failed septic systems, forests, cropland, pasture, cattle through direct deposition, wildlife through direct deposition, and MS4s. The Biological Source Tracking (BST) data results indicate that the majority of bacteria are from wildlife populations in the watershed (79%). The remainder of bacteria are from pet sources (20%) and a small portion (1%) from livestock. There was also an insignificant (less than 1%) human signal present in the results. All urbanized, developed land within the watershed was classified as MS4 area and the land-based load corresponding to that urban area was included in the WLA.

2.3.3 Bacteria TMDLs for Popes Head Creek, Broad Run, Kettle Run, South Run, Little Bull Run, Bull Run, and the Occoquan River

Broad Run, Kettle Run, South Run, Popes Head Creek, Little Bull Run, Bull Run, and the Occoquan River all flow into the Occoquan Reservoir. The Occoquan Reservoir watershed includes portions of Prince William County, Fairfax County, Fauquier County, Loudoun County, the City of Fairfax, the City of Manassas, and the City of Manassas Park. Impaired streams within the Prince William County geographical area include Broad Run, Kettle Run, Little Bull Run, Bull Run, and the Occoquan River.

An aggregated WLA is assigned to MS4s in only three of the Prince William County watersheds. These are Broad Run, Bull Run, and the Occoquan River. For all three watersheds, the aggregated MS4 permit holders include Prince William County, Prince William County Schools, and the Virginia Department of Transportation. Table 2.D shows the aggregated existing and allocated bacteria loads for Broad Run, Bull Run, and the Occoquan River.

***Table 2.D – Bacteria TMDLs for Broad Run, Bull Run, and the Occoquan River Aggregated Allocations to MS4s***

| Aggregated MS4s | Stream | Existing *E.coli* Load (cfu/day) | Allocated *E.coli* Load (cfu/yr) | Reduction (%) |
|---|---|---|---|---|
| Prince William County<br>Prince William County Schools<br>VDOT Urban Area | Broad Run | 2.88E+12 | 5.55E+11 | 81% |
| Prince William County<br>Prince William County Schools<br>VDOT Urban Area | Bull Run | 1.43E+11 | 1.60E+10 | 89% |
| Prince William County<br>Prince William County Schools<br>VDOT Urban Area | Occoquan River | 2.72E+12 | 1.72E+11 | 94% |

BST data indicated bacteria sources from human, livestock, wildlife, and pet sources within the affected watersheds. The potential sources of fecal coliform include run-off from livestock grazing, manure applications, industrial processes, residential, and domestic pets waste.

### 2.3.4 Bacteria TMDL for Tributaries to the Potomac River

Tributaries of the Potomac River in Prince William County affected by this TMDL include Powells Creek, Quantico Creek, and North Branch Chopawamsic Creek. Aggregated WLAs are assigned to MS4s in each of these watersheds. It is important to note that although Prince William County is assigned a WLA for the North Branch Chopawamsic Creek, the entire watershed is within the Quantico Marine Corps Base. Quantico Marine Corps Base has a separate MS4 permit, and therefore the WLA is not applicable to the County. Table 2.E shows the aggregated existing bacteria load, allocated bacteria load, and target load reduction contained in the Powells Creek, Quantico Creek, and North Branch Chopawamsic Creek TMDL.

***Table 2.E – Powells Creek/Quantico Creek/North Branch Chopawamsic Creek TMDL Aggregated Allocations to MS4s***

| Aggregated MS4s | Stream | Existing *E.coli* Load (cfu/yr) | Allocated *E.coli* Load (cfu/yr)* | Reduction (%) |
|---|---|---|---|---|
| Prince William County<br>Prince William County Schools<br>VDOT | Powells Creek | 8.40E+13 | 3.08E+12 | 96.3% |
| Prince William County<br>Prince William County Schools<br>VDOT | Quantico Creek | 4.62E+13 | 3.48E+12 | 92.1% |
| Prince William County** | North Branch Chopawamsic Creek | 1.27E+13 | 3.76E+11 | 97% |

* From Table 4-4: MS4 WLA for E. coli

** Entire watershed is within the Quantico Marine Base, which is a separate MS4 permittee. There is no Prince William County MS4 in the watershed, therefore the WLA is not applicable to the County.

The potential sources of bacteria in the watersheds were identified and characterized. The dominant land uses in Powells Creek watershed are forest (47%) and developed (31%). Potential key sources of E. coli include runoff from residential waste and wildlife sources. The dominant land uses in the Quantico Creek watershed are forest (85%) and developed (7%). Potential key sources of E. coli include runoff from residential waste and wildlife sources. The dominant land uses in this watershed are forest (84%) and wetland (12%). Potential key sources of E. coli include runoff from wildlife sources.

## 2.4 Evaluation of Significant Sources of Bacteria

The MS4 permit requires Prince William County to evaluate significant sources of bacteria from facilities of concern. This is defined in the permit as "a discharge where the expected pollutant loading is greater than the average pollutant loading for the land use identified in the TMDL." As described in the TMDLs, the primary sources of bacteria as follows:

- Cedar Run: livestock (65%), wildlife (26%) upland pervious land (9%), impervious (<1%)
- Neabsco Creek: wildlife (79%), pet sources (20%), livestock (1%)
- Broad Run: cattle – direct deposition (44%), residential, commercial, industrial (41.5%), wildlife – direct deposition (6.4%)
- Bull Run: cattle – direct deposition (56%), wildlife – direct deposition (30%), residential, commercial, industrial (13%)
- Occoquan River: residential, commercial, industrial (85.7%), wildlife – direct deposition (9.2%)
- Powells Creek: urban – developed land (87%)
- Quantico Creek: urban – developed land (94%)

For this action plan, Prince William County has focused on the sources most likely to enter and be discharged from the MS4. This includes pet waste, sanitary sewer cross-connections, and malfunctioning septic systems. The TMDLs state that reductions from wildlife are not the intended goal of a TMDL.

Pet waste can enter the MS4 when it is left on a surface that drains to a storm sewer. Off-leash dog parks, dog kennels, and veterinary facilities are examples of specific land uses with a potential high risk for bacteria to enter into the MS4. Prince William County has identified eight of these facilities located within the County MS4 in a watershed subject to a bacteria TMDL (see Table 2.F); however, none of these are owned or operated by the County.

***Table 2.F – Private Pet Related Facilities in the MS4 and in Watersheds Subject to a Bacteria TMDL***

| Name | Address | Watershed | Facility Type |
|---|---|---|---|
| Dominion Valley Animal Hospital | 5371 Merchants View Sq, Haymarket | Bull Run | Animal Hospital |
| Fetch! Pet Care | 4265 Exeter Dr, Dumfries | Quantico Creek | Pet Sitter |
| Independent Hill Veterinary | 13444 Dumfries Rd, Manassas | Occoquan River | Animal Hospital |
| KNK Pet Sitting | 7608 Amherst Dr, Manassas | Bull Run | Pet Sitter |
| Petcalls Mobile Vet Clinic | 14023 Flagtree Pl, Manassas | Powells Creek | Animal Hospital |
| Price Michele DVM | 9030 Sainsbury Ct, Bristow | Broad Run | Veterinarian |
| Staples Mill Animal Hospital | 5548 Staples Mill Plaza, Woodbridge | Powells Creek | Animal Hospital |

Other potential areas where bacteria from pet waste could be concentrated include those areas where owners are likely to walk their pets. This includes walking trails, public parks and open space, and private open space such as community association common areas. Prince William County offers over 84 miles of trails, bikeways, and sidewalks and 57 parks that could be used for pet walking.

Potential human sources of bacteria identified in the TMDL include failing septic systems and sanitary sewer cross-connections, spills, or leaks. The majority of the County is connected to public sanitary sewer. The sanitary sewer system is maintained and operated by Prince William Water (formerly known as Prince William Service Authority) and Virginia American Water. Both entities operate under their own VPDES permits. Prince William Water (PWW) is a public authority, while Virginia American Water is a completely private entity. Prince William County is not responsible for the inspection and maintenance of the sanitary sewer system. However, the County works closely with PWW to identify and correct deficiencies within the sanitary sewer network.

PWW's ongoing program for identifying and correcting defects in the County's sanitary sewer systems is described in the County's MS4 Program Plan and summarized below:

- Overseeing new construction and conducting quality assurance inspections for all sanitary sewer mains, laterals and manholes.
- Closed Circuit Television (CCTV) inspection of all new sanitary sewer mains and manholes prior to acceptance.
- CCTV inspection of existing sanitary sewer systems.
- Performing detailed engineering studies to locate defects in the gravity sewer system and recommend corrective action.

- Preparing construction documents for repair of the identified defects.
- Constructing necessary improvements.

These efforts are augmented by the County's Dry Weather Monitoring and Stream Restoration programs. The Dry Weather Monitoring program is designed to detect and then eliminate potential sources of illicit discharges, including sanitary sewer cross connections. While the Stream Restoration program is largely a means of achieving nutrient and sediment reductions to meet the Chesapeake Bay TMDL and local sediment TMDLs, the County also uses these projects to work cooperatively with PWW to identify and protect vulnerable sanitary sewer infrastructure.

The Prince William Health District implements the requirements for the construction and maintenance of septic systems. The County amended Section 23-40 and Section 23-48 of the County Code in accordance with the Chesapeake Bay Preservation Area Designation and Management Regulations to minimize the potential for failed septic systems to affect water quality. Section 23-40 requires a 50% or 100 % reserve capacity for all drain fields depending on the percolation rate of the property. Section 23-48 requires all onsite sewage disposal systems not requiring a VPDES permit to be pumped out at least once every five years and for sewage handlers to report pump-outs to the Health District on a biweekly basis.

There are two County owned or operated properties with septic systems within the County MS4 in a watershed subject to a bacteria TMDL. These are summarized in Table 2.G. Both sites comply with Chesapeake Bay Preservation Area Designation and Management Regulations regarding maintenance and pump-outs.

***Table 2.G – County Properties with Septic in the MS4 and in Watersheds Subject to a Bacteria TMDL***

| Site | Address and Tax Map PIN | Watershed | In County MS4? |
|---|---|---|---|
| Howison Park | 14716 Minnieville Road, Woodbridge (8091-25-3681) | Powells Creek | Partially |
| Silver Lake Regional Park | 16198 Silver Lake Road, Haymarket (7198-99-4945) | Broad Run | Partially |

## 2.5 Existing and Planned Management Controls

The County has in place a rigorous program aimed at preventing the discharge of bacteria from the MS4. Table 2.H summarizes the County's current bacteria management controls.

***Table 2.H – Prince William County Strategies for Bacteria Reduction***

| Source | Strategies (BMP's) | Implementation |
|---|---|---|
| Illicit Discharges to the MS4 | The permit requires that discharges to the MS4 not authorized by the permit shall be effectively prohibited. | The County will continue to implement and enforce relevant parts of the Prince William County Code, including Fire Protection, Zoning, Building Development, and Stormwater Management. Unlawful discharges to the County's MS4 are specifically addressed in Chapter 23.2, Article II, Stormwater Pollution. |
| Illicit Connections | The permit requires the County to continue implementing a program to minimize the exfiltration from the sanitary system to the MS4. | Prince William County is not responsible for the inspection and maintenance of the sanitary sewer system; however, the County works closely with the PWW to identify and correct deficiencies within their sanitary sewer network. Prince William County will continue to work with PWW personnel to identify and mitigate sanitary sewer issues. PWW provides applicable reporting measures to the County. |
| Illicit Discharges to the MS4 | The permit requires the County to locate and eliminate illicit discharges through periodic inspection programs, public outreach initiatives, and staff training. | The County implements a program to locate and eliminate illicit discharges as documented in the IDDE Program Manual, located in Appendix 14 of the MS4 Program Plan. The manual also documents the procedures for post-inspection track-down and enforcement. |
| Illicit Discharges to the MS4 | The permit requires the County to promote the reporting and identification of illicit discharges and enhance public education on pollutants of concern. | The County's Clean Water Program is a public outreach initiative with the goal of improving water quality within Prince William County through public outreach initiatives encouraging public awareness of water quality and environmental issues. More information is in Appendix 12 of the MS4 Program Plan. |

| Source | Strategies (BMP's) | Implementation |
|---|---|---|
| All Sources | The permit requires the County to increase public participation in local water quality improvement projects. | The County works with volunteer organizations to promote public involvement in water quality improvement projects as detailed in the Clean Water Program in Appendix 12 of the County's MS4 Program Plan. Through this program, Public Works provides funding to the Occoquan Watershed Monitoring Lab for water monitoring programs. |
| Domestic Pets | The permit requires the County to promote and publicize the proper disposal of pet waste. | The County implements education on proper disposal of pet waste throughout the permit cycle, including the distribution of pet waste educational handouts. |
| Illicit Discharge to the MS4 | The permit requires that the County, on a biennial basis, train all applicable staff in the identification and reporting of illicit discharges, good housekeeping practices, and spill prevention and response. | The County implements a training program in good housekeeping and pollution prevention practices, as well as, illicit discharge recognition and reporting. This is detailed in Appendix 10 and 11 of the MS4 Program Plan. |
| Dry Weather Urban Flows | The permit requires the County to inspect 25% of all outfalls discharging to the County's MS4 within the permit cycle. | The County currently implements a Dry Weather Monitoring program designed to detect the presence of illicit connections and unauthorized discharges. |
| Illicit Discharge to the MS4 | The permit requires the County to investigate areas that may be contributing excessive levels of pollutants to the MS4 during rain events through a Wet Weather Screening Program. | The County is implementing a Wet Weather Screening program as required in the permit. |
| All Sources | The permit requires the County to develop an in-stream monitoring program. | The County will continue to monitor in-stream water quality at representative sites throughout the County. This monitoring includes testing for *E. coli*. |

| Source | Strategies (BMP's) | Implementation |
|---|---|---|
| Septic Systems | The Prince William Health District regulates the requirements for the construction and maintenance of septic systems. | The County requires Section 23-48 of the Prince William County Code:<br>• Onsite sewage disposal systems not requiring a VPDES permit shall have pump-out accomplished at least once every five years.<br>• The owner of each such system shall cause a maintenance pump-out of the septic tank of each system owned to be performed by a sewage handler permitted by the Virginia Department of Health at least once every five years.<br>• Sewage handlers must report all pump-outs to the Health District on a biweekly basis. The sewage handler shall provide to the homeowner a copy of the information reported to the Health District.<br>The Health District evaluates compliance with this section and with related state and County codes. When indicated by the facts, a violation of this article may be charged. |
| Domestic Pets | Sec. 4-11 of the County Code: Prohibition on animals urinating or defecating. | This ordinance states that "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." |

### 2.6 Legal Authorities

The County prohibits all illicit discharges to the storm sewer system in Chapter 23 of the County Code. With regard to pet waste, failure to remove dog excrement is specifically addressed in Section 4-11 of the County Code. Violations of this section constitute a Class 4 misdemeanor, which is punishable with a fine of not more than $250. With regard to septic systems, Chapter 23, Article III of the County Code covers use of individual sewage disposal systems. The County has not identified the need for additional legal authorities at this time.

### 2.7 Enhanced Education, Outreach, and Training

The County'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. As previously noted, education and outreach on proper disposal of pet waste is a requirement of Section I.B.2.j.1.e of the MS4 permit. The County will review the effectiveness of its pet waste education annually and make changes as warranted. The County also proposes to enhance its program by providing brochures for distribution at the facilities listed in Table 2.F as described in Sections 2.5 and 2.8. Further, the County's training program addresses all potential sources of illicit discharges, including bacteria. Implementation is documented in annual reports to DEQ. The County believes that these education and outreach efforts meet the requirements for an enhanced program.

### 2.8 Previous Permit Cycle Strategies

The County will continue the existing program in accordance with Table 2H and the MS4 Program Plan. Additional actions identified in Section 2.5 have been implemented as part of the previous permit cycle.

***Table 2.I – Previous Permit Cycle Program Enhancements***

| Program Element | Description | Implementation Mechanism and Schedule | Responsible Party |
|---|---|---|---|
| Pet Waste Brochure Distribution | The County provided pet waste brochures for distribution at the private facilities listed in Table 2.H. | Brochures were offered to each facility by July 31, 2018 and then at least once annually after that time. | Department of Public Works, Environmental Management |
| Pet Waste Clean-Up Signage | The County assessed the trail system within the MS4 portion of affected watersheds for opportunities to install signage reminding pet owners to clean up pet waste. | The County conducted the assessment in 2018 and installed signage. | Department of Parks and Recreation |

## 3 Assessment of 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.[2]

The County will assess the effectiveness of its efforts by reviewing the measures in Table 2.H as part of the annual report submitted to DEQ. The measure of effectiveness will be that any particular property should not be a significant source of bacteria. In accordance with the MS4 permit, a significant source of bacteria means "…a discharge where the expected pollutant loading is greater than the average pollutant loading for the land use identified in the TMDL." Should the review indicate that waste deposits are higher on a County owned or operated property than what would be expected for similar land use (for example, a similarly situated parkland or institutional use), then the County will implement incrementally more aggressive bacteria reduction controls and update this plan accordingly.

The previous program enhancements, listed in Table 2.I, were developed to strengthen the County's bacteria reduction strategies, listed in Table 2.H. The County implemented both pet waste brochure distribution and clean-up signage as part of its efforts to reduce bacteria pollution and meet MS4 public education requirements. Brochures were shared with private facilities to raise awareness among pet owners and promote responsible pet waste disposal. While difficult to measure directly, this outreach supported broader behavior change goals and helped reinforce the importance of clean water. Signage installed along trails in key areas provided timely reminders to clean up after pets and likely encouraged more consistent compliance. Together, these strategies contributed to a more informed public and supported long-term efforts to reduce bacteria pollution.

The County plans to continue to implement pet waste brochure distribution to relevant businesses and entities throughout Prince William County during the current permit cycle. The County will also continue to evaluate areas that may benefit from the installation of pet waste clean-up signage and install where necessary.

# 4 Measurable Goals

The County's measurable goal will be to reduce bacteria loads to the watersheds listed in Section 2.1 in accordance with the TMDLs through implementation of the existing and planned management controls in Section 2.5 in accordance with the schedule and milestones provided in Section 2.8. Progress toward implementing the actions in this plan will be reported annually to DEQ in each MS4 permit annual report.

[2] The Neabsco Creek TMDL contains the statement "Ambient instream monitoring would not be an appropriate means of determining permit compliance. Ambient monitoring would be appropriate to determine if the entire TMDL is being met by all attributed sources. This is in accordance with EPA guidance."