

FORT BELVOIR

FINAL SEDIMENT TMDL ACTION PLAN, LOWER ACCOTINK CREEK

VPDES Small MS4 General Permit
No. VAR040093



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ACRONYMS AND ABBREVIATIONS

AAFES	Army and Air Force Exchange Services
Ac	Acres
AEC	Aerostar Environmental and Construction LLC
AR	Army Regulation
BANCS	Bank Assessment for Non-point source Consequences of Sediment
BMP	Best Management Practice
CBP	Chesapeake Bay Program
CBPO	Chesapeake Bay Program Office
CWA	Clean Water Act
CGP	Construction General Permit
CUA	Census Urban Area
CAST	Chesapeake Bay Assessment and Scenario Tool
DC	District of Columbia
DECA	Defense Commissary Agency
DOD	Department of Defense
DPW	Directorate of Public Works
EISA	Energy Independence and Security Act
EMS	Environmental Management System
EOS	Edge of Stream
EPA	United States Environmental Protection Agency
ESC	Erosion and Sediment Control
FBNA	Fort Belvoir North Area
ft	feet
g	grams
GIS	Geographic Information System
GPS	Global Positioning System
ISW	Industrial Stormwater
IDDE	Illicit Discharge Detection and Elimination
L	liter
L2	Level 2

Lbs	Pounds
LID	Low Impact Development
MCM	Minimum Control Measures
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NMP	Nutrient Management Plans
NPDES	National Pollutant Discharge Elimination System
NEIEN	National Environmental Information Exchange Network
POC	Pollutants of Concern
RO	Representative Outfalls
RPA	Resource Protection Areas
RSC	Regenerative Stormwater Conveyance
SCF	SES Construction and Fuel Services LLC
SWPPP	Stormwater Pollution Prevention Plan
SWM	Stormwater Management
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
VADEQ	Virginia Department of Environmental Quality
VDOT	Virginia Department of Transportation
VPDES	Virginia Pollutant Discharge Elimination System
VSMP	Virginia Stormwater Management Program
WIP	Watershed Implementation Plan
WLA	Waste Load Allocation
WQGIT	Water Quality Goal Implementation Team

1. INTRODUCTION AND BACKGROUND

The U.S. Army Garrison Fort Belvoir is in southeastern Fairfax County, Virginia, approximately 15 miles southwest of Washington, DC, and 95 miles north of Richmond, Virginia. Fort Belvoir's military history dates to the early 1900s, when the facility was known as Camp Belvoir and used as an Army rifle range and training camp. The post was re-named Fort Humphreys in 1922 and became Fort Belvoir in 1935. Since 1935, Fort Belvoir has supported major U.S. military operations throughout the world. In recent years, Fort Belvoir has functioned primarily as an administrative and logistics support center for the Army and as a host for over 150 tenant organizations from various government branches (including all branches of the armed services). It currently employs more than 35,000 civilian and military personnel, and provides support services for over 207,000 military personnel, dependents, and retirees in the region.

Fort Belvoir consists of more than 7,700-acres on Main Post and an 806-acre detachment parcel, Fort Belvoir North Area (FBNA), located north of Main Post and west of Interstate 95 as shown in Figure 1. The Main Post is situated between Interstate 95 and Pohick Bay and Gunston Cove on the Potomac River. US Route 1 divides the Main Post into two distinct geographical areas, referred to as North Post and South Post.

All urbanized area (as defined by the 2020 census) of Fort Belvoir is covered under the General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4) Permit No. VAR040093. The current [MS4 General Permit](#) (9VAC25-890-40) was approved by the State Water Control Board and became effective on 1 November 2023. Part II.B of the permit covers requirements and TMDL special conditions as they relate to local TMDLs and calls for the permittee to update any previously approved TMDL Action Plans to meet the conditions of Parts II.B.4 and B.6, which cover the requirements for all TMDL Action Plans and those in relation to local sediment TMDLs. Additionally, The permit notes in Part II.B.2.a that updated plans should 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.*

Under the Clean Water Act (CWA), States are required to develop a list of impaired waters based on the State's established water quality standards. The Virginia Department of Environmental Quality (VADEQ) states,

"All Virginia waters are designated for the following uses: recreational uses, e.g., swimming and boating; the propagation and growth of a balanced, indigenous population of aquatic life, including game fish, which might reasonably be expected to inhabit them; wildlife; and the production of edible and marketable natural resources, e.g., fish and shellfish."

Virginia identified Accotink Creek as an impaired water based on benthic macro-invertebrate monitoring and assessments showing it did not support Aquatic Life Use. Following the listing, a stressor identification analysis was performed to determine the cause of the biological impairments in this waterbody, which identified chloride and sediment as the most probable pollutant stressors. Once the cause was identified, Virginia proceeded with the development of the TMDL entitled "Sediment TMDLs for the Accotink Creek Watershed, Fairfax County, Virginia" (TMDL Report) which was approved by the State Water Control Board on April 16, 2018, and the U.S. Environmental Protection Agency (EPA) on May 23, 2018.

Impaired segment A15R-01-BEN, referred to as lower Accotink Creek, is noted in the TMDL Report as beginning at the outlet of Lake Accotink and continuing downstream until the tidal waters of Accotink Bay. The majority of Fort Belvoir drains into the Accotink Creek, with all of FBNA and a portion of North Post, being direct sources of runoff to the designated impaired watershed covered by this TMDL.

The purpose of this 2025 Action Plan is to address the waste load allocation (WLA) assigned to Fort Belvoir for the Lower Accotink Creek Sediment TMDL in accordance with the special conditions in the MS4 General Permit. Fort Belvoir also holds VPDES Industrial Stormwater (ISW) Individual Major Permit No. VA0092771. The ISW permit covers industrial areas of Fort Belvoir, including approximately 300 acres within the Davison Army Airfield (DAAF), which is located within the Lower Accotink Creek Watershed.

The Sediment TMDL sets the aggregate allocated sediment load from five (5) MS4 sources in the Lower Accotink Watershed at 4,113 tons/year. The five MS4 sources contributing to the load include the Phase I permit for Fairfax County and the four Phase II permits for Virginia Department of Transportation (VDOT), Fairfax County Public Schools (now part of Fairfax County Permit), Northern Virginia Community College, and Fort Belvoir. As shown in Table 1, an aggregate WLA of 235 tons/year which represents 55% reduction from the baseline of 519 ton/yr for sediment within the Lower Accotink Creek Watershed has been assigned to Fort Belvoir's MS4 and VDOT.

Table 1: Summary of WLA and Reduction Requirements

Pollutant of Concern	Baseline Load ¹ (tons/yr)	WLA ¹ (tons/yr)	Percent Reduction
Sediment	519	235 ²	55%
¹ Aggregate WLA for Fort Belvoir and VDOT service areas within the Lower Accotink Creek, from Table ES-12 of the Volume II Sediment TMDLs for the Lower Accotink Creek Watershed			
² WLA could be considered at 245.5 based on reassignment of lands for the ISW Program to the MS4 with the reissuance of the 2025 ISW Permit			

The Industrial Stormwater permit addresses the WLA from the Sediment TMDL utilizing a benchmark concentration of 100 mg/l was also used to calculate the allocation. Fort Belvoir's Industrial permit service area was assigned a WLA of 48.98 tons/yr. Therefore, this plan does not consider loads from ISW permitted areas.

In the Accotink Creek Sediment TMDL, this facility was assigned a WLA of 48.98 tons of sediment per year based on an average flow of 0.322 MGD; the flow was based on results from the GWLF model and the WLA was calculated based on the acreages at the time for Outfalls 001, 002, 003, 009, 012, 031, and 032. Based on an updated total acreage of 289.81 for Outfalls 002, 003, and 012, the updated average flow is calculated to be 0.2525 MGD and the updated WLA is calculated to be 38.48 tons of sediment per year. The updated WLA for this facility is consistent with the assumptions and requirements of the Accotink Creek Sediment TMDL and was determined in accordance with DEQ Guidance Memo 14-2015, which outlines the requirements for TMDL WLA modifications in response to new, expanding, or relinquished discharges.

In addition to the evaluation of the previous Action Plan required under Part II.B.2 of the permit, this 2025 Action Plan includes all requirements found in Part II.B.4 and Part II.B.6 of the permit.

This Action Plan details Fort Belvoir's efforts and focus on meeting the reduction requirements in the current Volume II Sediment TMDLs for the Lower Accotink Creek. The Action Plan contains analyses on credits for existing BMPs, projects that are currently in the planning and design phase, potential strategies that may be implemented during the next permit cycle (2023-2028), and the proposed schedule for implementation.

1.1. SIGNIFICANT SOURCES

The goal of this Sediment 2025 TMDL Action Plan for the Lower Accotink Creek Watershed, herein referred to as the Action Plan, is to implement measures that will assist in restoring water quality in the impaired water body and to potentially de-list the impaired segments of the Accotink from the Virginia 303(d) List of Impaired Waters for sediment impairments.

In terms of this 2025 Action plan, The significant sources of pollutants considered are:

1. Operations where sediment deposition are most likely to occur including construction sites and storage areas. These activities are already managed through established processes in the current MS4 Program, as discussed in [Section 2](#). These processes include:
 - An established Education and Outreach Program under Minimum Control Measure (MCM) 1 which has Sediment as a High Priority Topic
 - An established pollution prevention and good housekeeping program under MCM 6 which designates storage and landscaping facilities as High Priority Facilities (HPFs) with a site-specific Stormwater Pollution Prevention Plans (SWPPPs).
 - Developed written pollution prevention fact sheets which target activities which have high potential for creating discharges containing pollutants that may affect water quality.
 - A developed employee training program which covers this Sediment TMDL and methods for preventing discharges with a wide range of training audiences including construction site operators, maintenance and public works facility personnel, HPFs, and road, street, and parking lot maintenance personnel
2. Impact of impervious surfaces, which are not a source of sediment themselves but, ease the transport and deposition of sediments as well increase peak flows which have a heavy impact on stream bank degradation. This Action Plan is focused on mitigating the impacts from these surfaces.

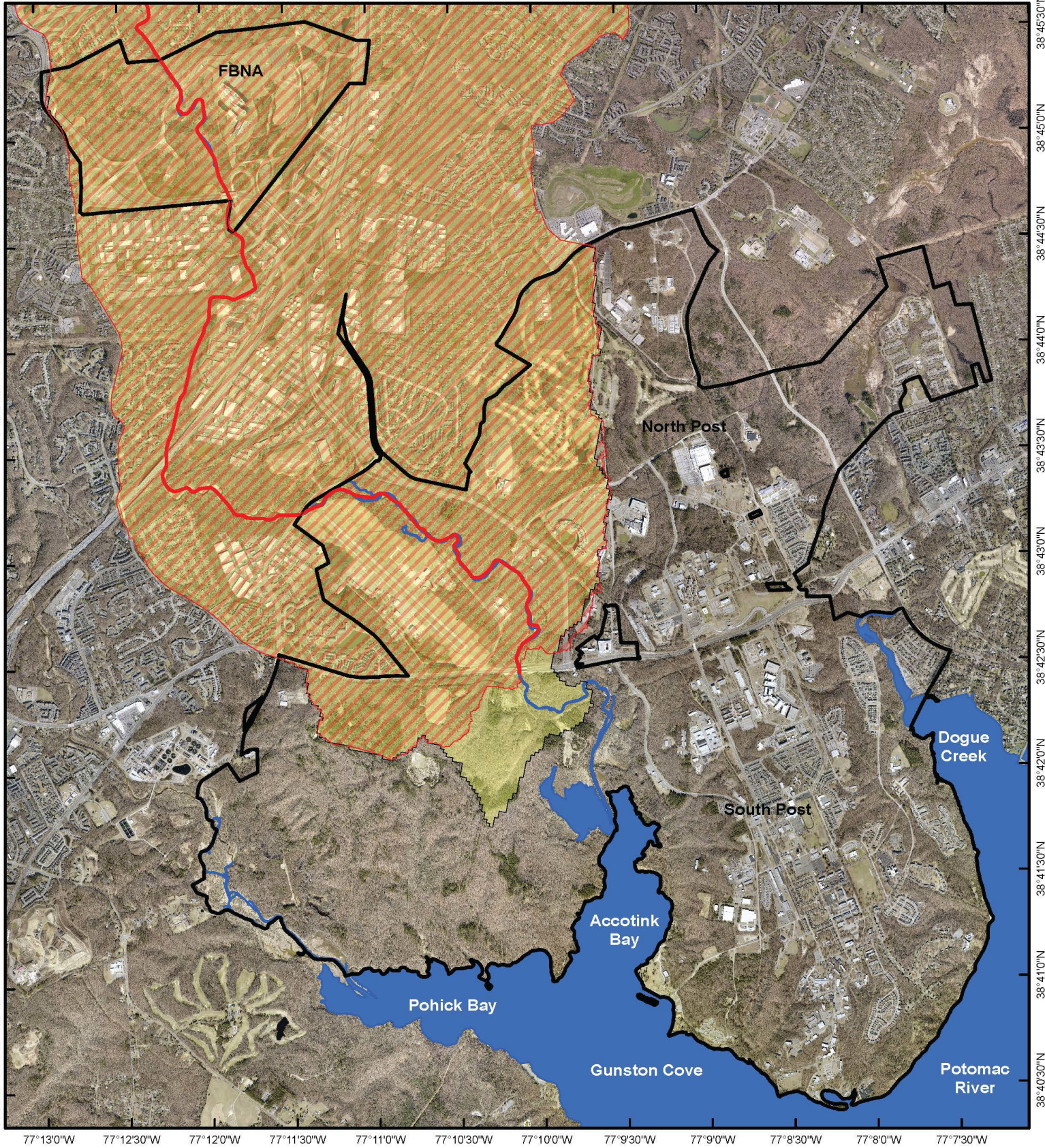
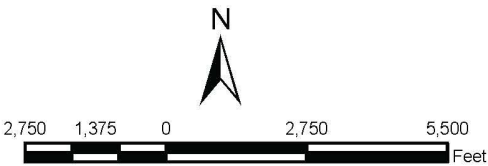


Figure 1:
Lower Accotink Watershed
and Fort Belvoir



Legend

- Fort Belvoir Boundaries
- Major Waterway
- Lower Accotink Watershed
- Impaired Watershed Drainage Area
- 303d Listed Stream Segment (VAN-A15R-01)

2025 Sediment TMDL Action Plan
Sources: Fort Belvoir, USEPA, Fairfax County



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1.2. PERMIT CROSSWALK

Table 2 below summarizes the requirements set forth within the permit and where in the Action Plan the requirement is addressed.

Table 2: Permit Requirements Crosswalk

Reference	Requirement	Action Plan Location
Part II.B.2.a	For TMDLs approved by the EPA prior to 1 July 2018, and in which an individual or aggregate wasteload has been allocated to the permittee, the permittee 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.	Action Plan in its entirety
Part II.B.2.a. (1)-(2)	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.	Section 4: Reductions Achieved by Previous Plan
Part II.B.4.a	The TMDL project name.	Section 1: Introduction and Background
Part II.B.4.b	The EPA approval date of the TMDL.	
Part II.B.4.c	The wasteload allocated to the permittee (individually or in aggregate), and the corresponding percent reduction, if applicable.	
Part II.B.4.d	Identification of the significant sources of the pollutants of concern discharging to the permittee's MS4 and are not covered under a separate VPDES permit. For the purposes of this requirement, a significant source of pollutants 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.	Section 1.1: Significant Sources
Part II.B.4.e	The best management plans (BMPs) designed to reduce the pollutants of concern in accordance with Part II.B.6	Section 4: Reductions Achieved by Previous Plan
Part II.B.4.f	Any calculations required in accordance with Part II B.6	Section 6: BMPs Planned for 2023-2028 Permit Cycle
Part II.B.4.g	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.	Section 2: Current Program and Legal Authorities
Part II.B.4.h	A schedule of anticipated actions planned for implementation during this permit term.	Section 7: Implementation Schedule and Metrics

Reference	Requirement	Action Plan Location
Part II.B.6	The permittee shall reduce the loads associated with sediment, phosphorus, or nitrogen through implementation of one or more of the following: (1) One or more of the BMPs from the Virginia Stormwater BMP Clearinghouse or other approved BMPs found through the Virginia Stormwater BMP Clearinghouse. (2) One or more BMPs approved by the Chesapeake Bay Program. Pollutant load reductions generated by annual practices, such as street and storm drain cleaning, shall only be applied to the compliance year in which the annual practice was implemented; or (3) Land disturbance thresholds lower than Virginia's regulatory requirements for erosion and sediment control and post development stormwater management.	<u>Section 4: Reductions Achieved by Previous Plan</u> <u>Section 6: BMPs Planned for 2023-2028 Permit Cycle</u> <u>Section 2.2.9: MS4 Program Bulletins</u>
Part II.B.6.d	No later than 36 months after the effective date of this permit, the permittee shall submit to the department an update on the progress made toward achieving local TMDL action plan goals and the anticipated end dates by which the permittee will meet each wasteload allocation for sediment, phosphorus, or nitrogen. The proposed end date may be developed in accordance with Part II B 3.	<u>Section 7: Implementation Schedule</u>

2. CURRENT PROGRAM AND LEGAL AUTHORITIES

The MS4 Program strives to improve environmental compliance and quality within the MS4 Service Area through effective management and implementation of technical guidelines, criteria, and practices for stormwater management and erosion and sediment control. The collective efforts under the MS4 Program result in significant reduction of all pollutants that may be discharged from the regulated MS4. In addition, Fort Belvoir has specifically developed its MS4 Program and other support programs such as local TMDL Action Plans to address specific pollutants, including the pollutants of concern (POCs) of the Lower Accotink Creek Sediment TMDL (Sediment). Pollutant removal from the implementation of best management practices (BMPs) that address the six Minimum Control Measures (MCM) should be accounted for in the evaluation of goals for meeting waste load allocation (WLA) targets, including those reductions required by the Lower Accotink Creek Sediment TMDL. A review of the current MS4 Program Plan, dated June 2024, as well as existing, new, and modified legal authorities was conducted.

2.1. MS4 PROGRAM PLAN

As specified in the Local TMDL Special Condition of the MS4 General Permit Part II.A, the permittee shall include the means and methods that will be utilized to address discharges into the MS4 from new sources. Implementation of the following existing BMPs from Belvoir's MS4 Program Plan represents implementation to the maximum extent practicable (MEP) and demonstrates adequate progress for this permit cycle and Belvoir's ability to meet the Special Condition of the MS4 General Permit:

- Implementation of the MCMs in Part I.E.4 related to construction site stormwater runoff control in accordance with the MS4 Permit shall address discharges from transitional sources: BMPs 4.1 through 4.3 of the MS4 Program Plan address the controls in place in relation to construction site runoff.
- Implementation of the means and methods to address discharges from new sources in accordance with the MCMs in Part I.E.5 related to post-construction stormwater management in new development and development of prior developed lands: These controls are addressed in BMPs 5.1 through 5.2 of the Program Plan as well as in the Fort Belvoir General Plan for Stormwater Management Facility Inspection and Maintenance, dated September 2024.
- Implementation of Operational BMP Fact Sheets and Stormwater Pollution Prevention Plans (SWPPPs) in accordance with the minimum control measures in Part I.E.6 related to High Profile Facilities and pollution prevention/good housekeeping for operations and maintenance groups: The development of Operational BMP Fact Sheets and SWPPPs are addressed in BMP 6.1 and 6.2 respectively of the MS4 Program Plan.

In addition to these BMPs, the MS4 Program Plan identifies BMPs that assist in addressing Total Suspended Solids of the Lower Accotink Creek Sediment TMDL. Table 3 below provides a summary of BMPs found in the June 2024 MS4 Program Plan that are implemented at Fort Belvoir that are particularly effective in addressing discharges that may contribute to sediment and nutrient loads.

Table 3: Current MS4 Program BMP Description Summary

BMP	NAME	DESCRIPTION
BMP 1.1	Implement a Public Education and Outreach Plan	Distribution of educational materials regarding methods to reduce introduction of pollutants, including sediment, to stormwater runoff. Sediment is identified as a High Priority Stormwater issue in the education and outreach plan.
BMP 2.1	Maintain a webpage dedicated to the MS4 Program and Stormwater Pollution Prevention	Maintaining the webpage which includes MS4 Program documents, the Current Chesapeake Bay TMDL Action Plan, Developed Operational procedures, as well Stormwater specific policies and guidance to persons living and working on the installation. This establishes an avenue for the public to access information on sediment reduction goals and management practices found in Program Guidance documents, including bulletins.
BMP 3.1	Maintain an Accurate MS4 Map and Information Table	Maintain mapping data for all MS4 outfalls and stormwater management facilities. This mapping data assists Fort Belvoir in determining the spatial location of stormwater system components. The MS4 map includes MS4 outfalls discharging to surface waters, a unique identifier for each mapped item, name and location of receiving waters to which the MS4 outfall or point of discharge discharges, MS4 regulated service area and stormwater management facilities owned by Fort Belvoir. Accurate information tables assist in management of facilities to ensure long-term functionality.
BMP 3.2	Prohibit Unauthorized Non-Stormwater Discharges into the MS4	Maintain Fort Belvoir Policy prohibiting Illicit/Unauthorized Discharges into the MS4 and Waterways.
BMP 3.3	Maintain and Implement an Illicit Discharge Detection and Elimination (IDDE) Plan	Implementing an IDDE Program that includes written procedures to detect, identify, and address non-stormwater discharges
BMP 4.1	Communicate the Requirements of the MS4 Program	Distribute MS4 permit requirements to designers during initial planning phases of construction projects. All construction contract packages (including designs and specifications) shall incorporate a requirement to conform to the conditions of the MS4 Permit, MS4 Program Plan, and the Virginia Erosion and Stormwater Management Program (VESMP) Regulations. Require construction projects with land disturbance of an acre or greater to obtain a Construction General Permit (CGP) from VADEQ. Incorporate procedures under the utility clearance permit process to determine CGP applicability and verify existence of required erosion control plans prior to utility clearance permit approval. DPW Environmental conducts project review for projects that result in land disturbance equal to or greater than

BMP	NAME	DESCRIPTION
		2,500 square feet to assess any cumulative impacts, impacts to MS4 and Industrial Stormwater outfalls, and SMFs.
BMP 4.2	Conduct Erosion and Sediment Control Site Inspections	Conduct ESC inspections of all active construction sites that involve land disturbance of 10,000 square feet or greater with Virginia-certified ESC Inspectors on all construction projects with CGP to ensure adherence to the approved ESC plan and the CGP and to evaluate performance of BMPs and/or engineering controls.
BMP 4.3	Progressive Compliance Enforcement Strategy	Implement the compliance and enforcement strategy when construction contractors have repeated non-compliance findings on ESC inspections on an active construction site.
BMP 5.1	Conduct Annual Inspections and Maintenance of Stormwater Management Facilities (SMFs)	Conduct SWM inspections with Virginia-certified SWM Inspectors to assess the condition of all SMFs at least annually. Coordinate with ground maintenance contractor and tenant agencies to ensure maintenance is completed for any SMFs noted as deficient.
BMP 5.2	Maintain the SMF Tracking System	Maintaining an accurate database of SMFs is critical to the proper long-term management of the MS4 system as well as to maintaining credits achieved through installation of urban structural BMPs.
BMP 6.1	Written Procedures for Operations and Maintenance Activities	Developing and Maintaining BMP Fact Sheets covering various O&M activities containing guidelines that identify best management practices for stormwater pollution prevention, and maintenance, if required, and spill response procedures. Current fact sheets which cover the target POC, sediment include: ▪ Good Housekeeping ▪ Outdoor Storage and Handling of Materials and Waste ▪ Outdoor Storage and Handling of Raw Materials and Waste ▪ Wash Rack Usage Guide ▪ Waste Handling and Disposal ▪ Dewatering Activities ▪ Outdoor Pressure Washing ▪ Landscaping/Ground Maintenance
BMP 6.2	Implement Stormwater Pollution Prevention Plans (SWPPPs)	Implementation of the Fort Belvoir Master SWPPP and High Priority Facility (HPF) SWPPPs plays a critical role in minimizing discharges of sediments, especially at HPF where landscaping and grounds maintenance activities occur.
BMP 6.4	Implement Written Training Plan	TMDL information is included in both SWPPP required training and Stormwater General Awareness Training.

2.2. LEGAL AUTHORITIES

As specified in the Local TMDL Special Condition of the MS4 General Permit Part II.B, the permittee shall include the means and methods that will be utilized to address discharges into the MS4 from new sources. Implementation of the following existing legal authorities and Fort Belvoir Policies initiated as required by Part I.B represents implementation to the maximum extent practicable (MEP) and demonstrates adequate progress for this permit cycle and Belvoir's ability to meet the Special Condition of the MS4 General Permit.

2.2.1. SECTION 303(D) OF THE CLEAN WATER ACT (CWA) AND THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S (EPA'S) WATER QUALITY PLANNING AND MANAGEMENT REGULATIONS (40 CFR PART 130)

The CWA and EPA's Management regulations direct States to identify and list water bodies in which current required controls of a specified pollutant are inadequate to achieve water quality standards. For the Commonwealth of Virginia, Impaired Waters are outlined in the biennial Virginia Water Quality Assessment 305(b)/303(d) Integrated Report. The segment comprising Lower Accotink Creek was first listed as impaired for chloride on Virginia's 2018 305(b)/303(d) Water Quality Assessment Integrated Report.

States are then required to establish Total Maximum Daily Loads (TMDLs) for water bodies that are exceeding water quality standards. TMDLs represent the total pollutant loading that a water body can receive without violating water quality standards. The TMDL process establishes the allowable loading of a pollutant, or the waste load allocation (WLA), needed to achieve and maintain water quality standards. The Sediment TMDL for the Lower Accotink Creek Watershed was finalized on 30 August 2017. The EPA approved the TMDL on 23 May 2018, and the State Water Control Board approved the TMDL on 16 April 2018.

2.2.2. 42 USC 17094 - ENERGY INDEPENDENCE AND SECURITY ACT OF 2007 TITLE IV SUBTITLE C SECTION 438

The Energy Independence and Security Act of 2007 (EISA) was enacted by Congress to require federal agencies to reduce stormwater runoff from Federal development projects to protect water resources. The intent of Section 438 of the EISA is to require Federal agencies to develop and redevelop applicable facilities in a manner that maintains or restores stormwater runoff to the maximum extent technically feasible, as stated below:

"The sponsor of any development or redevelopment project involving a Federal facility with a footprint that exceeds 5,000 square feet shall use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow."

Federal agencies can comply with Section 438 by using a variety of stormwater management practices including the reduction of impervious surfaces, vegetative practices, porous pavements, cisterns, and green roofs (EPA, 2009).

2.2.3. 40 CFR §122.44 ESTABLISHING LIMITATIONS, STANDARDS AND OTHER PERMIT CONDITIONS APPLICABLE TO STATE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PROGRAMS

This permitting program was established by the EPA to comply with Section 402 of the CWA. The National Pollutant Discharge Elimination System (NPDES) program prohibits the discharge of pollutants through a point source into a water body of the U.S. unless a NPDES permit is obtained. The permit places limits on what can be discharged and includes monitoring and reporting requirements and other provisions to ensure that the discharge does not harm water quality or public health.

Section (d) (1) (vii) (B) requires that all new or revised NPDES permits must be consistent with assumptions and requirements of any applicable TMDL WLA. The Commonwealth of Virginia VADEQ regulates the management of pollutants carried by stormwater runoff under the Virginia Pollutant Discharge Elimination System (VPDES) program. VPDES regulations are contained in the Virginia Administrative Code (VAC) at 9VAC25-31.

2.2.4. US ARMY REGULATION (AR) 200-1, ENVIRONMENTAL PROTECTION AND ENHANCEMENT

The AR 200-1 defines the framework for the Army Environmental Management System (EMS). It implements Federal, State, and local environmental laws and DoD (Department of Defense) policies for preserving, protecting, conserving, and restoring the quality of the environment. This regulation addresses environmental responsibilities of all Army organizations and agencies. Specifically, this regulation applies to Active Army, Army National Guard, United States Army Reserve, as well as Tenants, contractors, and lessees performing functions on real property under the jurisdiction of the Department of the Army (for example, Army and Air Force Exchange Services (AAFES), Defense Commissary Agency (DECA)) (Army, 2007).

AR 200-1 requires in Chapter 4-2(a)(1) that these groups must:

“Comply with applicable Federal, State, and local laws and regulations regarding water resources management and permitting.”

(a) Assesses the installation watershed impacts as appropriate, considering upstream and downstream water quality data or other background levels, proximity to potentially designated impaired waters, and any effects on mission activities.

(b) Carries out Army activities consistent with EPA/State approved plans/strategies to restore impaired or threatened water bodies to their designated use.

(c) Controls soil erosion in accordance with applicable and appropriate Federal, State, or local requirements.

As well as in Chapter 4-2(a)(2):

“Obtain and comply with all required Federal, State, and local Clean Water Act (CWA), Coastal Zone Management Act (CZMA), and Safe Drinking Water Act (SDWA) permits.”

This regulation also states in Chapter 4-2(d)(1) that to implement (TMDL) regulations, all Army facilities should:

(d)(1)(a) Initiate and maintain contact with Federal and State water regulators concerning the process of setting TMDLs and allocations for water bodies located on or passing through Army installations.

(d)(1)(b) Integrate all aspects of CWA requirements, programs and available information (for example, the National Pollutant Discharge Elimination System (NPDES) program, 404 wetlands program, wellhead protection, storm water plans/projects, storm water construction permits, spill prevention, control, and countermeasures (SPCC) plans/projects, State CWA 319 requirements (State plans & strategies for reducing non-point source runoff)) with TMDL development and future planning. Ensure all of these programs are consistent with, and work together to attain compliance under, TMDL allocations once they are set by states.

(d)(1)(d) Ensure other programs that are or may have their activities affected by identification of impaired waters and new TMDL allocations are informed of the impacts and requirements (for example, facilities construction, master planning, National Environmental Policy Act (NEPA) requirements).

(d)(1)(g) Ensure that mission and non-mission activities and construction designs utilize best management practices (BMPs) to minimize TMDL impacts.

2.2.5. FORT BELVOIR GENERAL VPDES PERMIT FOR DISCHARGES OF STORMWATER FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4), MS4 GENERAL PERMIT NO. VAR040093

As required by Fort Belvoir's MS4 permit, TMDL WLAs are specifically addressed through the iterative implementation of programmatic BMPs. Only failure to implement the programmatic BMPs identified in this plan would be considered a permit noncompliance issue. The current regulations found in 9VAC25-890-40, effective 1 November 2023, state in Part I.B:

"The permittee shall develop a local TMDL action plan designed to reduce loadings for pollutants of concern if the permittee discharges the pollutants of concern to an impaired water for which a TMDL has been approved by the U.S. Environmental Protection Agency (EPA) as described in Part II.B.1.a and 1.b."

As found at 9VAC-25-890-40 Part II.B.1.b:

"For TMDLs approved by EPA prior to July 1, 2018, and in which an individual or aggregate wasteload has been allocated to the permittee, the permittee shall develop and initiate or update as applicable the 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."

As outlined by 9VAC-25-890-40 Part II.B.1.b, the due date for this Sediment TMDL is May 1, 2025, 18 months after the permit effective date of November 1, 2023.

2.2.6. MS4 PROGRAM PLAN

The MS4 Program plan documents how Fort Belvoir intends to meet compliance with Part II B of the MS4 General Permit and was last revised June 2024. The Program Plan satisfies the requirements of this Part as well as the appropriate water quality requirements of the Clean Water Act and regulations.

The Plan includes six (6) minimum control measures as listed in Part I.E and details the implementation of best management practices to reduce pollutants, protect water quality, and ensure compliance with water quality standards.

As per Part II B.10 of the MS4 general permit, all approved Local TMDL Action Plans can be incorporated by reference into the current MS4 Program Plan. The new permit became effective on November 1, 2023, and the MS4 Program Plan is updated annually to reflect any changes to the program. Part.II.B.10 of the 2023 Permit states:

“Local TMDL action plans may be incorporated by reference into the MS4 program plan provided that the program plan includes the date of the most recent local TMDL action plan and identification of the location where a copy of the local TMDL action plan may be obtained.”

2.2.7. FORT BELVOIR CHESAPEAKE BAY TMDL ACTION PLAN

The Fort Belvoir Chesapeake Bay TMDL Action Plan addresses the requirement to minimize the pollutants of concern by identifying legal authorities, Best Management Practices (BMPs) and measurable goals for achieving compliance with the approved Phase II Chesapeake Bay TMDL Implementation Plan in accordance with 9VAC25-890-40, Part I.C. Special Conditions for the Chesapeake Bay TMDL of the General VPDES Permit for Discharges of Stormwater from Small MS4s, Permit VAR040093. As per Part II.B.5.b of the current MS4 permit:

“The permittee may meet the local TMDL requirements for sediment, phosphorous, or nitrogen through BMPs implemented to meet the requirements of the Chesapeake Bay TMDL in Part II.A as long as the BMPs are implemented in the watershed for which local water quality is impaired.”

The Chesapeake Bay TMDL Phase III Action Plan was recently completed and submitted to VADEQ on November 1, 2024, and included multiple BMPs within the Lower Accotink Watershed.

2.2.8. FORT BELVOIR GARRISON POLICY MEMORANDUM #25, PROHIBITION OF ILLICIT/ UNAUTHORIZED DISCHARGES TO THE MUNICIPAL SEPARATE STORM SEWER

Fort Belvoir Policy Memorandum #25 *Prohibition of Illicit/ Unauthorized Discharges to the Municipal Separate Storm Sewer* can be found in full in [Appendix A](#). An installation-wide Stormwater Pollution Prevention policy was developed to address compliance with the MS4 Permit, the ISW Major Permit, the Clean Water Act and other stormwater regulations, as well as the Hazardous Waste Minimization and Management Plan. The policy outlines proper protocols for minimizing stormwater pollution during activities that directly and indirectly impact water quality of the receiving waters. Section 5 of this policy states:

Fort Belvoir is committed to protecting water quality of waterways on and surrounding Fort Belvoir to ensure that human health, ecosystem health, and the ability to conduct recreational opportunities are not impacted by stormwater pollution.

Section 5.a. specifically prohibits illicit discharges/illegal dumping at Fort Belvoir, including but not limited to:

Sanitary sewer overflows, trash, paint, grease, motor oil or other lubricants, fuel, cooking oil, salt, fertilizer, pesticides chemicals, liquid materials, lawn wastes (grass clippings and leaves), mulch, cigarette butts, sand, soil, construction materials, wash waters containing soaps, detergents and degreasers of any kind, fire hydrant and water line flushing and potable water tank discharge without prior de-chlorination, and pet/animal waste.

Section 5.b. addresses material storage:

Personnel responsible for bulk storage areas for items such as salt, mulch, and soil stockpiles will implement best management practices to ensure that material does not enter storm sewer during a storm event.

This policy provides an avenue of enforcement for requirements set forth by Fort Belvoir's CWA permits.

2.2.9. FORT BELVOIR DIRECTORATE OF PUBLIC WORKS MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PROGRAM BULLETINS #1 AND #4

Fort Belvoir's Bulletin #1 provides details on the procedures for SWM and ESC Plan design, review, and approval as well as compliance requirements for SWM and ESC during land disturbing activities. Because Fort Belvoir lies within direct drainage of the Chesapeake Bay the Bulletin takes into consideration the additional requirements set forth in the Chesapeake Bay Preservation Act. The Bulletin is provided to any persons proposing construction activities within Fort Belvoir and provides DPW-Environmental the ability to perform project reviews and enforce requirements as shown in Table 4.

Table 4: Plan Review Requirements Based on Land Disturbance

Required Plans for Land Disturbance		
<i>Land Disturbance Thresholds</i>	<i>Plans Required</i>	<i>Plan Review and Approval Authority</i>
Less than 2,499 square feet	None	DPW-Environmental Division
Between 2,500 and 9,999 square feet	ESC and SWM Plans	DPW-Environmental Division
Between 10,000 and 43,559 square feet	ESC and SWM Plans	VADEQ (for ESC portion only)
Greater than or equal to one (1) acre	ESC and SWM Plans	VADEQ (for ESC & SWM)

Fort Belvoir Erosion & Sediment Control Technical Bulletin #4 covers stormwater pollution prevention requirements for small projects. This bulletin is applicable to Garrison, Tenant and Contractor Operations for small construction projects that involve less than 2,500 sq.ft. of land disturbance and building renovation projects. This establishes requirements for erosion and sediment controls for projects below thresholds under the Virginia's regulatory requirements. The Bulletin states:

Erosion and Sediment Control (ESC) practices over the course of work prevent discharges of sediment laden water to the storm sewer system. The following ESC practices are required to be implemented, when applicable.

- *Install and maintain erosion and sediment control measures to ensure disturbed ground does not leave the work site. These measures will be left in place until final stabilization has been achieved.*
 - *Silt fence (VESCH STD. & SPEC. 3.05) should be installed on the downslope side of any disturbed area, and along walkways or roadways (see attached).*
 - *Inlet protection (VESCH STD. & SPEC. 3.07) should be installed on all inlets nearby and immediately downstream of the project site (see attached).*
- *Removing all excavated materials not required from the work site once the work has been completed.*
- *Grading the area once the work has been completed.*
- *Seeding and/or mulching the disturbed area to bring to final stabilization.*

The current Bulletins can be found in full on the [Environmental Webpage](#) under Programs and Documents, MS4 Stormwater Program.

2.2.10. OPERATION AND MAINTENANCE CONTRACT

The Operations and Maintenance (O&M) activities for the Installation are contracted through the Mission and Installation Contracting Command (MICC). The MICC issued contract that incorporates any needed work for O&M of the installation which is also referred to as the BaseOps Contract. The BaseOps Contract specifies all requirements and standards, work management, and personnel qualifications.

The Defense Acquisition Regulations prescribes Clauses that are incorporated in the Base Ops Contract, which specify compliance measures. The Overarching Performance Work Statement (PWS) specifies the overarching contract requirements that apply for all Attachments and Technical Exhibits (TEs). The PWS requires on Contract Line Item 2.21.2 Environmental Compliance:

“The Contractor shall comply with all Federal, State, local and installation environmental laws, rules, and plans.”

Requirements for Applicable to maintenance of credits required to achieve reductions noted throughout this Plan are addressed in Attachment #4 – 408 Pavement Clearance, Attachment #5 Facility Maintenance – Vertical, and Attachment #6 – 420, Facility Maintenance Horizontal. Associated with these contract attachments are TEs that specify the details of each aspect of the work, which includes, but are not limited to applicable BMPs, inspection forms and plans, maps, requirements, and deliverables. These attachments and TEs cover activities such as:

- Inspection and maintenance of structural stormwater controls such as hydrodynamic separation units (swirl concentrators), catch basins, stormwater management facilities (SMFs), and oil/water separators.
- Storm sewer cleaning to remove build-up of sediment and debris that can block water flow.
- Street sweeping to remove large and small debris and pollutants that collect on city streets as well as snow removal to treat parking lots, roadways, and sidewalks, or other paved surfaces.

The contract is directly overseen by the Contracting Officer Representative (COR) and Contract Performance Specialists (CPS) that monitor contract performance and deliverables as their primary duty. The COR is in frequent contact with the Contracting Officer (KO) at the MICC for contract performance reporting and to discuss issues with the contract. Contract Deliverables must be received and performed work must be accepted for payment to be made.

The CPSs inspect randomly selected lots and can reject the entire lot, if work on one or more of the samples of the lot is unacceptable. The COR can submit Contractor Deficiency Reports (CDRs) if work is not being performed in accordance with the contract which are being submitted to the Contracting Officer for further action.

Deliverables are also being submitted to the MS4 Program Manager (PM) for review and acceptance. If they are acceptable, then the PM will notify the COR that the deliverables were accepted. If they are found to be deficient, the PM will contact the COR to request and obtain compliant information, data, and revised deliverables. The ultimate enforcement of the contract is through the KO at the MICC.

3. FORT BELVOIR MS4 SERVICE AREA IN THE LOWER ACCOTINK

Fort Belvoir's MS4 permit requires implementation of BMPs including the structural stormwater management facilities (SMFs) found in the Virginia Stormwater BMP Clearinghouse or approved by the Chesapeake Bay Program; or by lowering land disturbance thresholds for erosion and sediment control and post development stormwater management to reduce sediment loads. It also allows for using SMFs that were previously acquired if they are implemented within the impaired watershed. Therefore, the first step in understanding the load reduction requirements was to define the size and extent of the MS4 service area as well as determine the impervious and pervious areas which defined the baseline loads for Fort Belvoir the TMDL.

To complete this analysis, Aerostar started with the installation's jurisdictional boundary and refined the areas as follows:

1. Delineated the portion of Fort Belvoir within the Lower Accotink impaired drainage area
2. Identified the MS4 Service Area based on census data
3. Identified areas covered under a separate VPDES permit
4. Compared available information to that in the TMDL model to determine major differences and potential impacts to required reductions.

To perform the analysis, local ArcGIS data, aerials, and calculation tools were utilized where available. The sections and figures below describe findings from this assessment.

3.1. TOTAL JURISDICTIONAL BOUNDARY

Fort Belvoir is broken into two separate land masses known as the Main Post and the Fort Belvoir North Area (FBNA) as discussed in the [Introduction and Background](#). Based on computed GIS data rounded to the nearest acre, the Main Post covers approximately 7,743 acres while the FBNA covers an additional 806 acres for a total of 8,549 acres of land within the Fort Belvoir Jurisdictional Boundary.

This jurisdictional boundary is smaller than what was defined in the sediment TMDL, which also included areas of land owned and operated by the U.S Army Corp of Engineers (USACE), known as Humphreys Engineer Center (HEC). This difference was found to have no impact on the TMDL or this Action Plan, as the entirety of HEC is outside of the Accotink Creek Watershed.

3.2. AREAS WITHIN THE LOWER ACCOTINK IMPAIRED DRAINAGE AREA

To further refine the MS4 area where the Sediment TMDL is applicable, Aerostar used watershed data made available from EPA watershed reports and overlaid the impaired water segments and catchments over the overall jurisdictional boundary described above and as shown in Figure 1. It was determined that 2,365 acres of Fort Belvoir is within the drainage area for the Lower Accotink that is identified as impaired, including 802 acres at FBNA and 1,563 acres on Main Post.

This finding closely aligns with the acres presented in tables 2-7 of the Sediment TMDL which considered 2,348 acres within the Lower Accotink Creek Watershed. The slight difference of 17 acres is likely due to GIS data not being available for Fort Belvoir during development of the TMDL. This difference was found to have a minimal impact on any TMDL calculations for baseline loads.

3.3. MS4 SERVICE AREA

Guidance Memo No. GM-16-2006, *TMDL Action Planning for Local Total Maximum Daily Loads as Required in the Small MS4 General Permit (VAR04)* defines an MS4 Service Area and Unregulated Land:

Service Area (also known as Regulated Land) – The conveyances and drainage area served by the permittee’s MS4. For Phase II MS4s the service area is a delineation of the conveyances and drainage area that fall within a Census Defined Urbanized Area.

Unregulated Land - means those acres that are not owned or operated by the MS4 permittee AND are located outside the permittee’s regulated land.

Under this portion of the analysis, Aerostar reviewed the 2000, 2010, and 2020 Census Defined Urban Area for the Washington, DC Metropolitan Area. GIS layers for the 2000, 2010, and 2020 Census data designating urbanized areas within the Fort Belvoir Jurisdictional Boundary were mapped over Fairfax County Aerial Photography from both 2009 and 2024 (Fairfax, 2024).

Comparing census data with aerial photography, it was clear that the urbanized areas designated by the Census were inconsistent and not accurately representative of land use on Fort Belvoir over time, as shown on Figure 2.

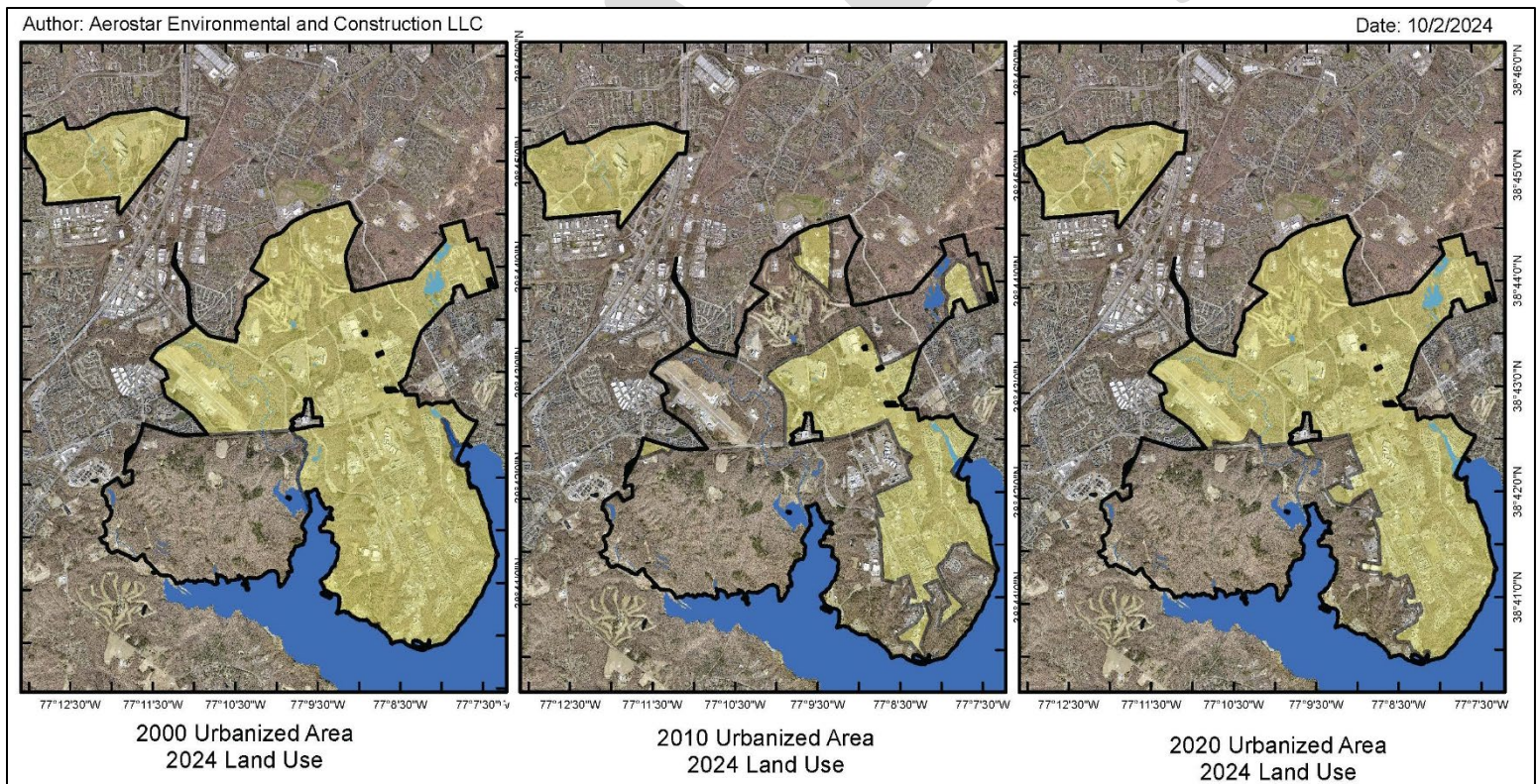


Figure 2: Change in Urbanized Land Over Time

A summary of findings from this comparison is as follows:

- The 2000 urbanized area covered FBNA and most of Main Post, except the southwest training area. Many of the areas covered were largely undeveloped forested land; wetlands, and open waters that could be excluded from the regulated MS4 service area. This is believed to be due to specific criteria used for census blocks on military installations for the 2000 Census.
- With changes made to urban area criteria for the 2010 Census, urbanized area on Fort Belvoir covered FBNA and the eastern portion of Main Post, excluding the southwest training area, Davison Army Airfield (DAAF), the golf course, the National Museum of the US Army (NMUSA), Alexander T. Augusta Military Medical Center (Hospital Complex), and some portions of the southern peninsula. This aligned more closely to land use and was found to be highly representative of where the Belvoir population was (i.e. housing areas) but excluded areas which should be considered developed lands.
- The 2020 Census urbanized area covered FBNA, the entire area north of Route 1 on Main Post, and the eastern portion of Main Post south of Route 1. Essentially, this is a more refined version of the 2000 census data and balances out the missing developed lands omitted from the 2010 data. Although this still covers some undeveloped forested land; wetlands, and open waters that could be excluded from the regulated MS4 service area, it was found to be the most representative of land use on Fort Belvoir and therefore, was used in any further analysis.

Based on the 2020 Census data, a total of 2,108 acres on Fort Belvoir were found to be within census-defined urban areas and within the impaired portion of the Lower Accotink watershed, including 802 acres at FBNA and 1,306 acres on Main Post.

The 257 acres of land removed from the MS4 service area based on census data included forested areas south of DAAF and portions of Route 1, as shown in Figure 3. These forested areas would not be considered a significant source of sediment to the watershed and Route 1 is covered under a separate VPDES permit as discussed below. Effectively, this difference was found to have a minimal impact on any TMDL calculations for baseline loads.

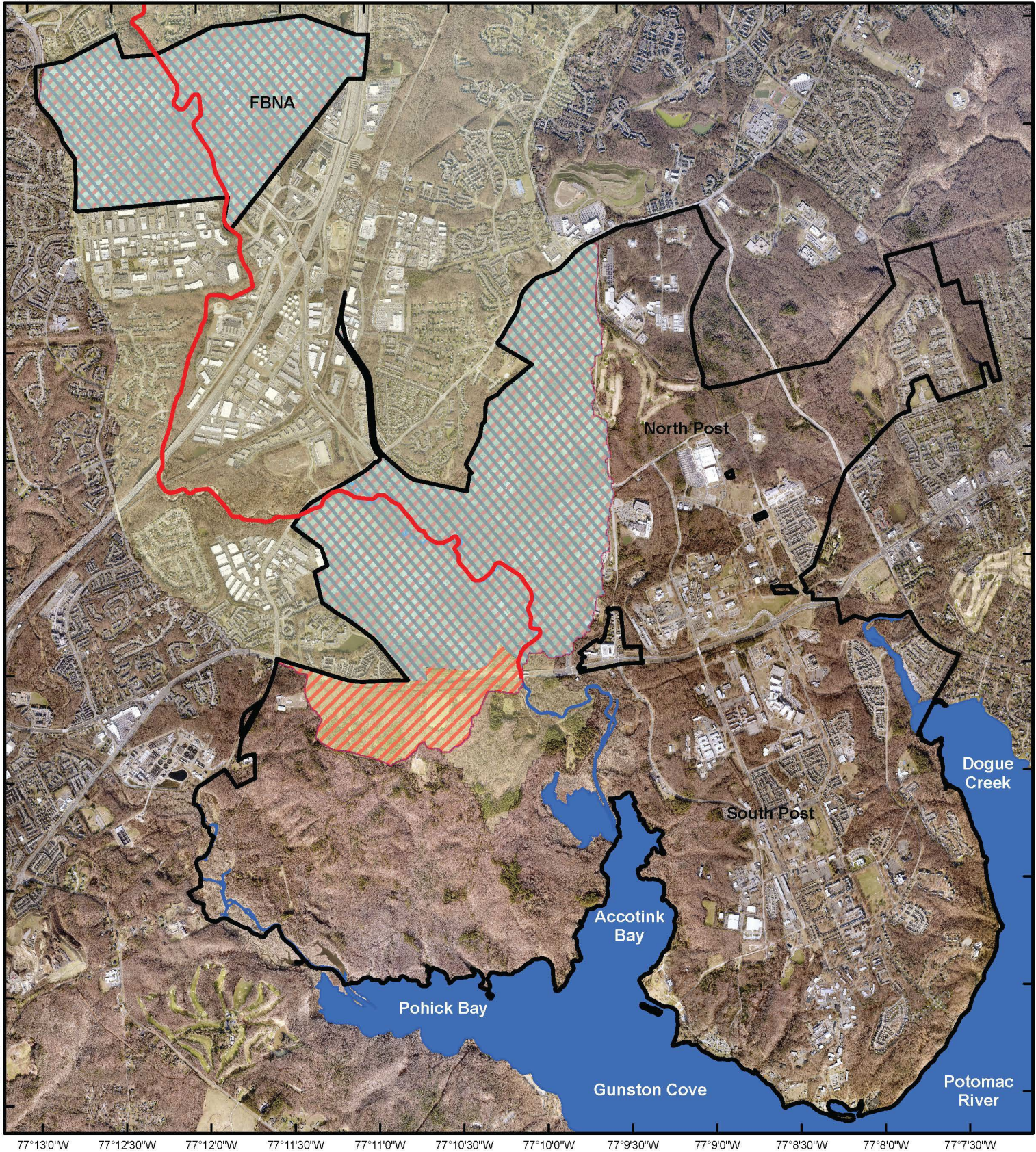


Figure 3:
2020 Census Urbanized Area
Within Impaired Watershed

Legend

- Fort Belvoir Boundaries
- Major Waterway
- Lower Accotink Creek Watershed
- Impaired Watershed Drainage Area
- 2020 Census Urban Area
- 303d Listed Stream Segment (VAN-A15R-01)

2025 Sediment TMDL Action Plan
Sources: Fort Belvoir, USEPA, Fairfax County



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3.4. AREAS COVERED UNDER A SEPARATE VPDES PERMIT

Guidance Memo 16-2006 states that the TMDL should assess significant sources of pollutants from facilities owned or operated by the MS4 permittee that are not covered under a separate VPDES permit. Therefore, to properly assess significant sources of Sediment that could contribute to the loads draining to impaired segments, Aerostar reviewed other state stormwater permits under the VPDES program and determined areas where separate permits cover discharges that are within the census-defined urban area described above. Two (2) other VPDES permits were found to cover areas within the census-defined urban area and within the impaired portion of the Lower Accotink watershed, as shown in Figure 4.

- The Virginia Department of Transportation (VDOT) operates under VPDES Permit No. VA040115 and holds easements for multiple portions of roads within the jurisdictional boundary. VDOT easements cover approximately 194 acres within the areas considered in this TMDL Action Plan, to include sections of Route 1, Fairfax County Parkway, Rolling/Barta Roads, and Interstate 95 (I95).

Although portions of the Main post are covered under the VDOT permit, the WLA is aggregate for both VDOT and the Fort Belvoir MS4, therefore would not influence the presented baseline of WLA assigned to MS4s. Fort Belvoir is aware of approximately eight (8) VDOT owned and operated urban structural BMPs within the watershed but does not have information to calculate reductions from these facilities.

- Fort Belvoir currently holds a separate Individual Major Permit for Stormwater Discharges from Industrial (ISW) Activities Permit No. VA0092771. The 2017 ISW permit had 31 representative outfalls covering discharges from these outfalls and their significantly identical outfalls. The area drained totals 762.5 acres - approximately 751 acres on the Main Post and 11.5 acres at FBNA. This permit covered approximately

The ISW permit is currently in the process of renewal and is expected to be reissued in April 2025. Fort Belvoir is expecting a significant reduction of areas covered by the ISW permit with the reissuance and, therefore, only areas that will continue to be covered under the new ISW permit as per the currently available Draft Permit, such as DAAF, are shown in Figure 4. This change is expected to result in the ISW permit covering 0 acres in FBNA and approximately 290 acres on Main Post. The Permit Fact Sheet notes that:

this facility [Fort Belvoir] was assigned a WLA of 48.98 tons of sediment per year based on an average flow of 0.322 MGD; the flow was based on results from the GWLF model and the WLA was calculated based on the acreages at the time for Outfalls 001, 002, 003, 009, 012, 031, and 032. Based on an updated total acreage of 289.81 for Outfalls 002, 003, and 012, the updated average flow is calculated to be 0.2525 MGD and the updated WLA is calculated to be 38.48 tons of sediment per year.

While the Industrial permit is given a separate WLA in the Sediment TMDL, as noted in the new ISW Permit Fact Sheet, this was based on the acreages covered at the point in time. Therefore, with the permit reissuance effectively expanding the MS4 area while the ISW area would be relinquishing coverage from the same areas. It would be reasonable to say that the 10.5 ton/yr difference in WLA could potentially be added to aggregate WLA assigned to Fort Belvoir's MS4 and VDOT in the TMDL, but the baseline loads would also differ. Therefore, without the ability to rerun the TMDL model, Fort Belvoir will assume that the WLA and reduction requirements for the MS4 will remain unchanged due to the new ISW permit. Notation of the difference in progress towards meeting WLA will be provided in footnotes of progress tables for comparison.

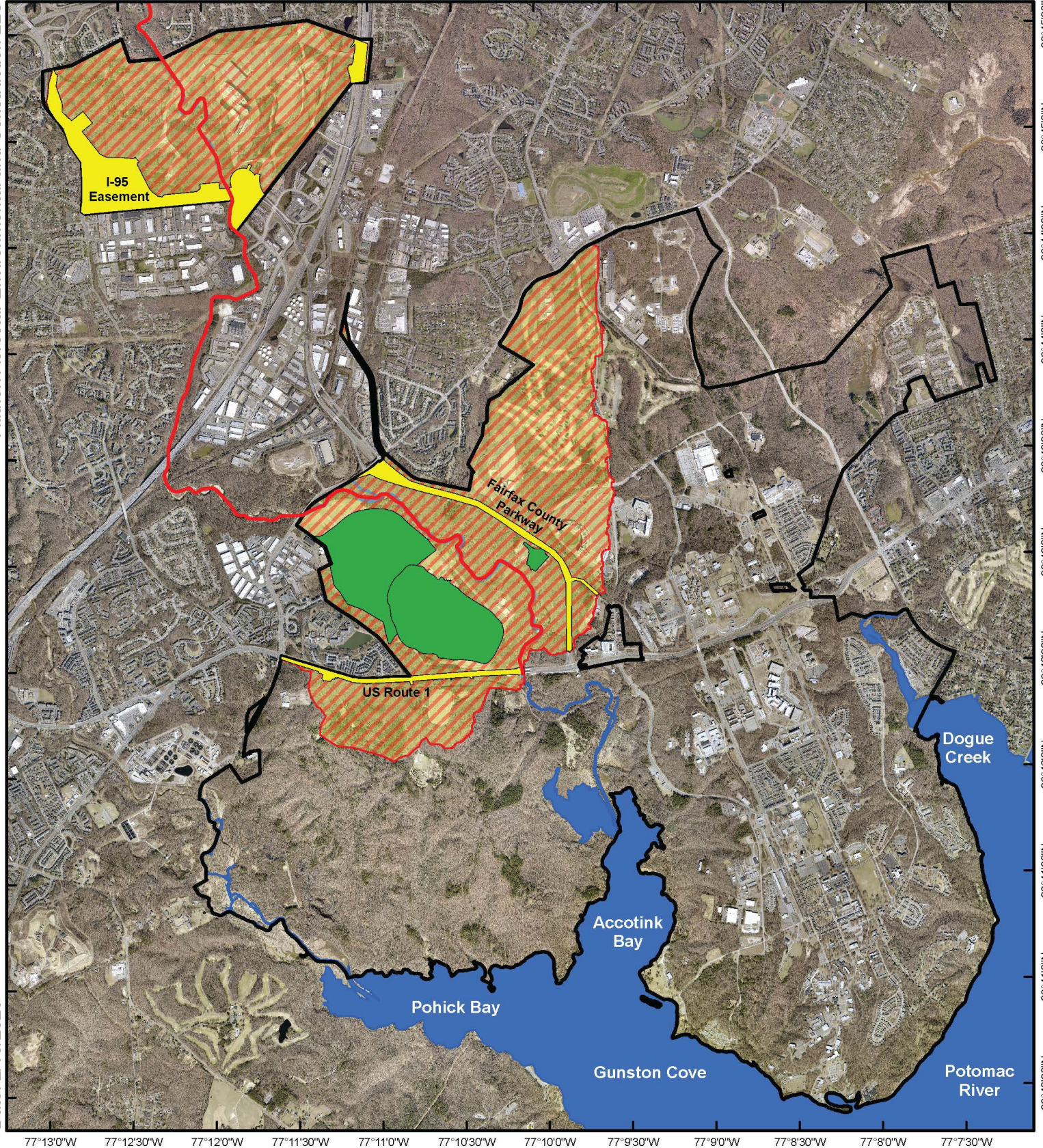
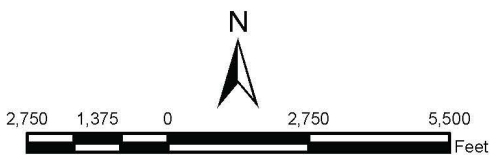


Figure 4:
Other VPDES Permits Within
Impaired Drainage Area



Legend

- Fort Belvoir Boundaries
- Major Waterway
- VDOT Permit No. VA040115
- ISW Permit No. VA0092771
- Impaired Watershed Drainage Area Within Fort Belvoir
- 303d Listed Stream Segment (VAN-A15R-01)

2025 Sediment TMDL Action Plan
Sources: Fort Belvoir, USEPA, Fairfax County



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Lorton, Virginia 22079

3.5. CONCLUSIONS

Calculation of existing loads, or a baseline, for Sediment was needed to determine management strategies to meet the overall Lower Accotink Creek sediment pollution reduction requirements. From the Volume II Sediment TMDLs for the Lower Accotink Creek Watershed, the baseline loads, modeling, and WLA were completed considering the total area within the watershed of 2,348 acres which included permitted areas by VDOT (VA0092975), and Fort Belvoir's MS4 (VAR040093) and ISW (VA0092771). Although the changes expected from the ISW permit could shift the model, it was found impractical and would likely only result in an overall change of approximately 1% towards meeting reduction goals.. Therefore, no change to the baseline or WLA are considered due to the change in permitted areas.

As shown in the Volume II Sediment TMDLs for the Accotink Creek Watershed, Fort Belvoir and VDOT had a calculated aggregate base load of 519 tons/year and has been assigned a Waste Load Allocation (WLA) of 235 tons/year for the Lower Accotink Creek for Sediment, requiring a 55% target load reduction. As discussed above, VDOT owns and operates approximately 194 acres of land within the impaired drainage area for the Lower Accotink Creek and operates about eight (8) urban structural BMPs. In the TMDL they are considered under the 'transportation' category which accounted for only approximately 3% of the Baseline Loads. Fort Belvoir portion of the watershed was said to account for the remaining 97% of baseline loads. Therefore, in every practical effect, the entire WLA is the Fort Belvoir's responsibility.

Table 5 below gives a summary of the information presented within the Volume II Sediment TMDLs for the Lower Accotink Creek including the aggregate baseline load, WLA, and target reductions.

Table 5: Lower Accotink Creek TMDL Aggregate Allocations for MS4s

Pollutant of Concern	Aggregate MS4s	Baseline Load (tons/yr.)	Waste Load Allocation (tons/yr.)	Target Load Reduction Required	Required Reduction (tons/yr.) (lbs./yr.)
Sediment	VDOT Fort Belvoir	519	235	55%	284 (568,000)¹
¹ With additional WLA from change in the Industrial Permit the Required Reductions would be 547,400					

4. REDUCTIONS ACHIEVED BY PREVIOUS PLAN

Permit Part II.B.2.a.(1) requires the permittee to provide an evaluation of the results achieved by the Previous Plan. Since the methods to achieve sediment reductions requires permittees to implement BMPs as presented in the Virginia Stormwater BMP Clearinghouse or those approved by the Chesapeake Bay Program, this section focuses on providing a list of BMPs implemented to meet reductions, as of July 1, 2024 – the end of the 2023-2024 permit cycle. To meet the required sediment reduction of 568,000 lbs./yr or 55% Fort Belvoir has used a mix of the following strategies:

- **Urban Structural SMFs:** Constructing local stormwater facilities when new development, re-development, and retrofits are considered.
- **Urban Stream Restoration:** Urban streams restored using one of the four expert panel report methodologies, as adjusted to account for the unregulated baseline load.
- **Street Sweeping:** Removing nutrients and sediment from roadways before transported offsite in stormwater flows.
- **Land Use Change:** Credit for lands converted to a land use with a lower associated pollutant load.

Each of these strategies are detailed in the following sections to include under what condition credits are earned, the date of implementation, the load reduction achieved. Table 6 below summarizes the achieved reductions by BMP type, as of July 1, 2024.

Table 6: Reductions Achieved Through Implementation of Previous Plan

POC	BMP	Required Reduction ¹ (lbs./yr)/ (tons/yr)	Reductions Achieved (lbs./yr)
Sediment	Urban Structural SMFs	568,000 (284)	100,321
	Stream Restoration		5,114
	Street Sweeping		11,245
	Land Use Change		19,901
Total Suspended Solids Reduction Achieved			136,581
¹ With additional WLA from change in the Industrial Permit the Required Reductions would be 547,400			

4.1. URBAN STRUCTURAL BMPs

Fort Belvoir maintains a current inventory of SMFs that have been built to meet Virginia water quality requirements or that have been implemented as retrofits. Data collected from field assessments are used to maintain the Fort Belvoir SMF Database. The SMF Database serves as a tracking and record keeping tool and can also be used to determine the pollutant reductions provided by implementing various SMFs. When Fort Belvoir implements additional stormwater SMFs, the database is expanded and used to manage urban SMFs over time.

As of July 1, 2024, Fort Belvoir has installed approximately 64 urban SMFs within the impaired portion of the Lower Accotink Watershed, 34 at the FBNA and 30 on Main Post, since the impaired stream segment A15R-01-BEN got listed in 2010. Table 7 below provides a summary of all SMF types installed and Figure 5 shows their location within the impaired portion of the watershed. A list of current facilities registered in the BMP Warehouse and included in this plan is included in [Appendix B](#).

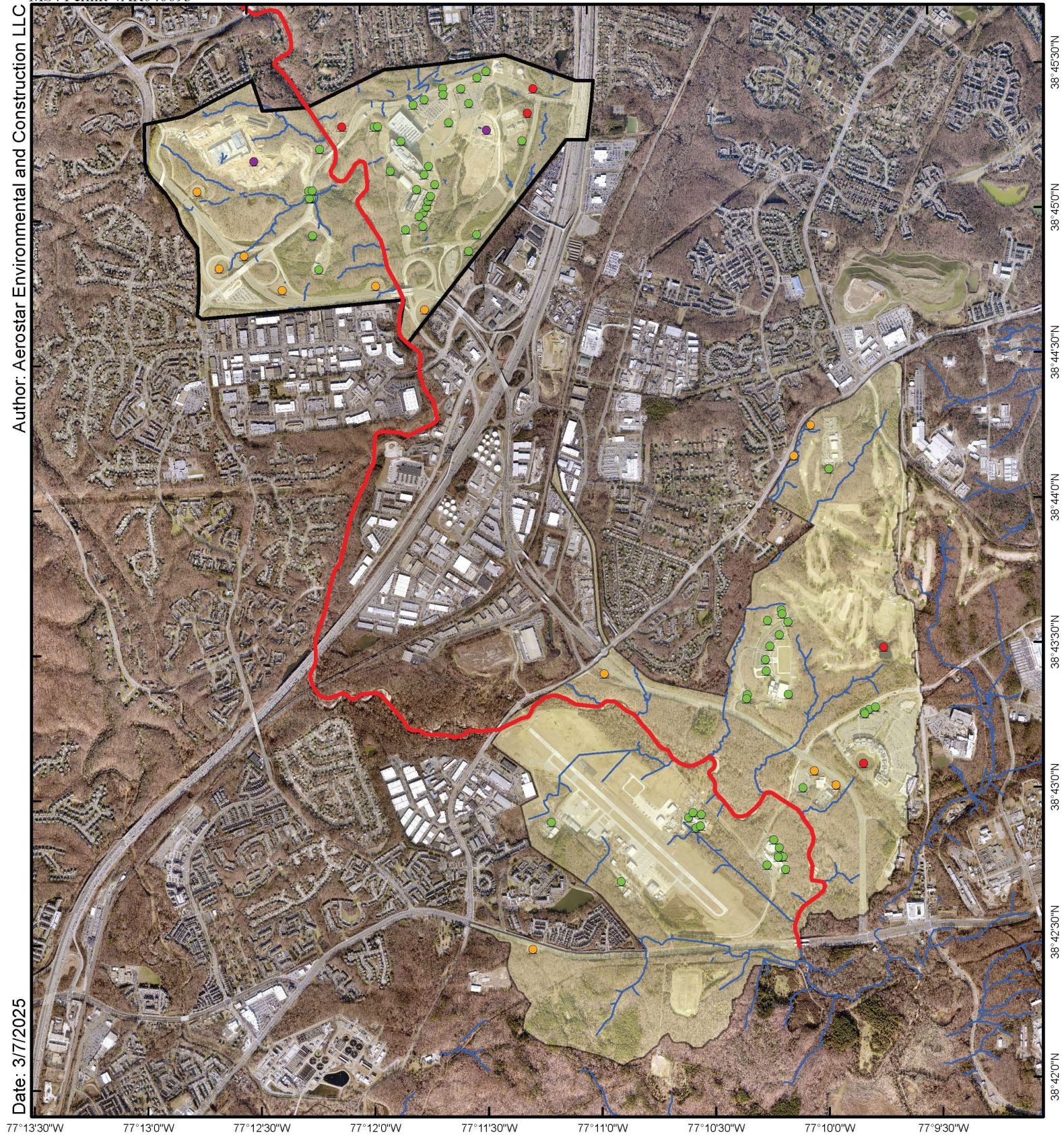


Figure 5:
Urban Structural SMFs
Installed Pre-2025



2,000 1,000 0 2,000 4,000
Feet

More SMFs are being installed regularly to meet Virginia's Water quantity and quality requirements for new development and redevelopment projects. Credits attributed to these BMPs are reported via the VADEQ BMP Warehouse as well as secondarily reported through the annual DoD Chesapeake Bay Data Call.

Table 7: Urban SMF Inventory for the Impaired Portion of the Lower Accotink Creek

BMP Type	Practice Description	Number of Practices Implemented		Total Practices	Total Acres Treated
Basins (P-BAS)	Extended Detention Pond	Level 1	12	15	111.7
	Wet Pond	Level 1	2		20.6
	Rainwater Harvesting	N/A	1		0.85
Filtration and Infiltration Practices (P-FIL)	Vegetated Roof	Extensive	1	28	0.14
		Intensive	1		0.69
	Permeable Pavement	Level 1	4		9.12
	Bioretention	Level 1	11		41.2
		Level 2	10		28.3
	Filter Strips w/ Compost Amendment	Level 1	1		2.93
	Infiltration Practices (Basins, Trenches, Underground Detention w/ Infiltration, etc.)	Level 1	11	13	23.0
		Level 2	2		4.38
Conveyances (P-CNV)	Grassed Channels	N/A	2	4	0.45
	Dry Swales	Level 1	1		0.08
		Level 2	1		2.24
Manufactured Treatment Devices (P-MTD)	Filtering/Biofiltering Devices	N/A	4	4	1.23
Total Number of Installed SMFs and Acres Treated				64	247

Credits described in this section were only applied to the SMFs that were installed after 2010, have been accepted by the VADEQ BMP Warehouse, have been assigned a BMP Warehouse ID, have received adequate inspections and maintenance, and are continuing to function as designed as of July 1, 2024.

The SMFs' efficiency can be translated into pounds by first calculating what the site's sediment loading would be without the facility being installed. This is done by using the 2009 Edge of Stream (EOS) loading rates, acquired within Permit Table 3b for the Potomac River Basin. Table 8 summarizes the existing loads from lands treated by these SMFs.

Table 8: Baseline loads for Areas treated by SMFs

Pollutant of Concern	Land Use	Acres Treated	2009 EOS Loading Rate (lbs./ac./yr.)	Load per Land Cover (lbs. /yr.)	Total Existing Load (lbs. /yr.)
Total Suspended Solids	Impervious	106	1,171.32	124,160	148,961
	Pervious	141	175.8	24,788	
	Total	247	-	-	

According to the Chesapeake Bay TMDL Special Condition Guidance, there are no established efficiencies for TSS in the Virginia Stormwater BMP Clearinghouse. Therefore, to calculate the TSS reductions, the Sediment Reduction Efficiencies from the Sediment TMDL (Table 3-14). The TMDL sites the following sources of efficiency information:

- Virginia TMDL Implementation Plan Guidance (DEQ, 2003)
- Chesapeake Bay Program (CBP, 2006)
- Chesapeake Bay Program Efficiencies (DEQ, 2015)
- Virginia Assessment Scenario Tool (VAST)
- International Stormwater BMP Database (ISBMP)
- Minnesota Pollution Control Agency (MPCA, 2015)
- Nashua Regional Planning Commission (NRPC)
- Pennsylvania Stormwater BMP Manual (PADEP, 2006)

Table 9 summarizes the TSS reduction efficiencies used in the calculations.

Table 9: Summary of Efficiencies used in Credit Calculations

BMP Type	Practice Description	TSS ¹
Basins (P-BAS)	Extended Detention Pond	60
	Wet Pond	60
	Rainwater Harvesting	100
Filtration and Infiltration Practices (P-FIL)	Vegetative Roofs	85
	Permeable Pavement	70
	Bioretention ²	55/80
	Filter Strips w/Compost Amendment	85
	Infiltration Practices (Basins, Trenches, Underground Detention w/ Infiltration, etc.)	95
Conveyances (P-CNV)	Grassed Channels	85
	Dry Swales	70
Manufactured Treatment Devices (P-MTD)	Filtering/Biofiltering Devices (Tree box Filter)	82
¹ From Table 3-14: BMP Sediment Reduction Efficiencies of the Sediment TMDL unless otherwise noted		
² Assumes 80% removal efficiency for Level 2 facilities and 55% efficiency for level 1 facilities		

Applying the efficiencies noted in Table 9 to the existing baseline loads calculated for the area serviced by an SMF the total achieved reductions were calculated and are summarized by SMF Type in Table 10, below. Detailed calculations are presented in [Appendix B](#).

Table 10: Reductions Achieved through Urban SMF Implementation

Practice Description	Number of Practices Implemented		Total Acres Treated	TSS Reduction Achieved (lbs./yr)
Extended Detention Pond	Level 1	12	111.7	37,593
Wet Pond	Level 1	2	20.6	9,755
Rainwater Harvesting	N/A	1	0.85	149
Vegetated Roof	Extensive	1	0.14	21
	Intensive	1	0.69	687
Permeable Pavement	Level 1	4	9.12	3,032
Bioretention	Level 1	11	41.2	12,889
	Level 2	10	28.3	12,917
Filter Strips w/ Compost Amendment	Level 1	1	2.93	438
Infiltration Practices (Basins, Trenches, Underground Detention w/ Infiltration, etc.)	Level 1	11	23.0	17,358
	Level 2	2	4.38	3,474
Grassed Channels	N/A	2	0.45	135
Dry Swales	Level 1	1	0.08	35
	Level 2	1	2.24	1,244
Filtering/Biofiltering Devices	N/A	4	1.23	594
Totals		64	247	100,321

4.2. URBAN STREAM RESTORATION

Stream restoration is a carefully designed intervention to improve the hydrologic, hydraulic, geomorphic, water quality, and biological condition of degraded urban streams. According to Appendix V.J of the Guidance, urban stream restoration projects that have been installed on or after January 1, 2006 may receive credit using the following four (4) protocols:

1. Prevented Sediment during Storm Flow
2. In-Stream and Riparian Nutrient Processing During Base Flow
3. Floodplain Reconnection Volume
4. Dry Channel Regenerative Stormwater Conveyance (RSC) as an Upland Stormwater Retrofit

Each protocol has certain requirements that need to be met to qualify. As the completed stream restoration projects at Fort Belvoir are stream restoration practices that prevent channel or bank erosion that would otherwise be delivered downstream from an actively enlarging or incising urban stream, Protocol 1 is most applicable.

All streams that are candidates for restoration, the U.S. Environmental Protection Agency Rapid Bio Assessment Protocol is used for evaluation. Since 2013, Fort Belvoir has also used the Bank Assessment for Non-point source Consequences of Sediment (BANCS) method to quantitatively predict stream bank erosion rates for each stream evaluation. Natural stream design is employed and takes into consideration the site conditions and any known proposed changes in flows. All urban stream restoration projects completed prior to July 1, 2024, obtained the appropriate Section 404 permits and have maps clearly identifying the project area including drainage areas, photographs of the project area demonstrating the degraded nature of the project area; and proposed verification activities such as periodic visual inspections to demonstrate ongoing performance of the project. at a minimum these projects are originally monitored per the approved permit to ensure proper establishment and then enter a long-term verification cycle described in [Section 5](#) of this plan.

All urban stream restoration was completed prior to the 2021 guidance document and therefore not all specific data needed is not readily available, for completion of calculations under Protocol 1. Guidance Memo 20-2003, issued in 2021, after the most recent project, allows for:

“Completed projects previously approved by DEQ that use established crediting methods in place at that time, will continue to receive those credits.”

As such, the interim approved removal rates which were applied at the time will continue to be used for stream restoration projects reported during the 2021 Action Plan. This allows for a more conservative and consistent approach in calculating credits. These rates are presented in the Table 11 below.

Table 11: Default Removal Rates in 2014 Expert Panel Report

Credits	TN	TP	TSS
Mass Reduction/length (lbs./linear foot)	0.075	0.068	44.88 <i>non-coastal plain</i> 15.13 <i>coastal plain</i>

Not all projects qualify for credits when it comes to nutrient and sediment load reductions. The Expert Panel report defining removal rates from individual restoration projects states that any sections that are tidally influenced or projects that are primarily designed to protect public infrastructure by bank armoring or rip rap do not qualify for credit. The following qualifying conditions for acceptable stream restoration credit are as follows:

- An entire urban stream reaches greater than 100 ft in length that is still actively enlarging or degrading in response to upstream development.
- Comprehensive stream restoration design, involving the channel, banks, and floodplain using state approved design methods.
- Special consideration is given to projects that are explicitly designed to reconnect the stream with its floodplain and/or create in stream habitat features known to promote nutrient uptake and/or de-nitrification.
- Pre- and post-project monitoring may be required to substantiate bank/channel erosion rates, using bank pins, cross-sectional surveys, or other methods to be eligible for credits under all protocols above. (Schueler & Stack, 2014)

As of July 1, 2024, two (2) stream restoration projects have been completed on within the impaired portion of the Lower Accotink Creek Watershed after 2010, prior to February 2021 (when the new guidance 20-2003 was published). All completed projects qualified for the conditions of Nationwide Permit, Aquatic Habitat Restoration, Establishment and Enhancement Activities (USACE, 2016). In addition, all completed projects were located completely within the regulated MS4 service area defined in [Section 3](#) and consisted of over 100 linear feet of project area. The stream restoration projects considered towards meeting reduction targets are shown in Table 12 below, Figure 6 shows the location of these projects.

Table 12: Completed Stream Restoration Projects

Project Site	Type	Master Plan EIS Site #	Year Completed	Linear Feet (LF)	Considered for Credits?
North Area	Natural Channel Design	9	2011	128	Yes
NMUSA Stream	Natural Channel Design	25	2019	210	Yes
Total Projects Considered for Credits:				338	2

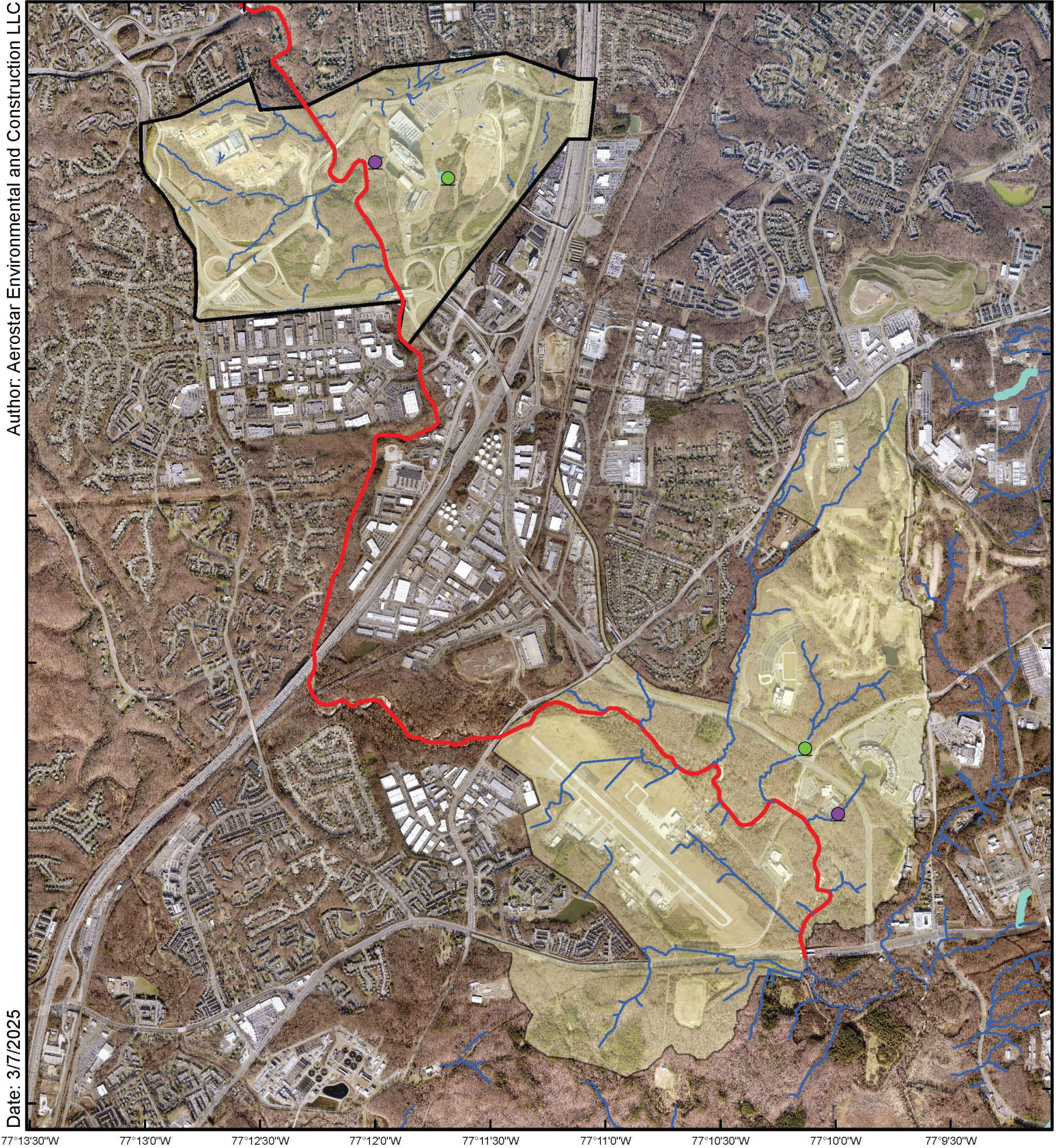


Figure 6:
Stream Restoration Projects

Legend

-  Fort Belvoir Boundaries
-  Impaired Watershed Drainage Area
-  303d Listed Stream Segment (VAN-A15R-01)
-  Streams
-  Completed Stream Restoration (2010-2024)
-  Potential Stream Restoration Areas



2,000 1,000 0 2,000 4,000
Feet

2025 Sediment TMDL Action Plan
Sources: Fort Belvoir, USEPA, Fairfax County



7217 Lockport Place, Suite 201
Lorton, Virginia 22079

A total of 338 linear feet of streams have been restored between 2010 and 2024 for which may qualify for credits. As of July 1, 2024, all have continued to meet design performance standards and qualify for credits. All permit closeout certifications, continued verification inspections, mapping, etc. are kept by DPW-Environmental and available upon request. Details on credits maintenance for urban stream restoration projects are further discussed in [Section 5.2](#).

Appendix V.J of the Guidance (GM20-2003) was used to determine the achieved reductions from stream restorations to include the adjustments for unregulated lands. The Guidance states that permittees may receive the following adjusted credits from:

1. **Regulated Urban Acres:** The full reduction credits for the portion of the project that receives drainage from regulated acres.
2. **Unregulated Acres:** An adjusted reductions credit for the portion of the project that receives drainage from unregulated acres. Either half of the total credit calculated from the chosen protocol, or the difference between the calculated credits minus the required L2 reductions, whichever is less.
3. **Forested or Agricultural Acres:** The full reduction credits for the portion of the project that receives drainage from forested lands as there is no baseline requirement for these lands.

Table 13 below summarizes the reductions achieved as of July 1, 2024, from the qualifying urban stream restoration projects. Fort Belvoir Main Post is located within the Coastal Plain while North Area is on the Piedmont Upland Region. Since only a small portion of stream has been considered for credits within the Piedmont Region, a conservative approach was taken and only the smaller removal rate for the coastal plain of 15.13 is used in all calculations. Additionally, due to the locations of the restored stream channels no adjustments for unregulated portions of land were required.

Table 13: Reductions Achieved from Urban Stream Restoration Projects

POC	Linear Feet Restored (ft)	Removal Rates (lbs./ft/yr)	Reduction Achieved (lbs./yr)
Total Suspended Solids	338	15.13	5,114

4.3. STREET SWEEPING

Street sweeping is an effective strategy of removing nutrient and sediment loads prior to them being transported in stormwater runoff, making frequent sweeping of prioritized areas an effective strategy to receive pollutant reduction credits to meet the Sediment TMDL targets. Formerly, there were two approaches for calculating pollutant removal: the mass loading approach and the qualifying street lanes method. These methods are being phased out and are no longer accepted as a crediting method.

The revised street cleaning approach uses the Windows Source Loading and Management Model (WinSLAMM), to determine allowable street cleaning credit. This revised method is outlined in Appendix V.G of the Chesapeake Bay TMDL Special Condition Guidance and is now used to calculate load reductions. The process by which this was implemented is as follows:

1. Determine which street cleaning scenario your program falls under.
2. Calculate loading rate associated with the impervious area swept.
3. Calculate your load reductions.

Table 14 below summarizes the street sweeping practices available for credit, according to Appendix V.G of the Chesapeake Bay TMDL Special Condition Guidance.

Table 14: Street Cleaning Practices Available for Credit

	Practice #	Description	Passes/Year (approx.)	% TSS Removal	% TN Removal	%TP Removal
Advanced Sweeping Technology (vacuum or regenerative air sweeping technologies)	SCP-1	2 passes per week	100	21	4	10
	SCP-2	1 pass per week	50	16	3	8
	SCP-3	1 pass every 2 weeks	25	11	2	5
	SCP-4	1 pass every 4 weeks	10	6	1	3
	SCP-5	1 pass every 8 weeks	6	4	0.7	2
	SCP-6	1 pass every 12 weeks	4	2	0	1
	SCP-7	Seasonal scenario 1 or 2	15	7	1	4
	SCP-8	Seasonal scenario 3 or 4	20	10	2	5
Mechanical Broom Technology	SCP-9	2 passes per week	100	1.0		
	SCP-10	1 pass per week	50	0.5		
	SCP-11	1 pass every 4 weeks	10	0.1		
Seasonal scenarios are defined as follows:						
S1: Spring – One pass every week from March to April. Monthly otherwise.						
S2: Spring – One pass every other week from March to April. Monthly otherwise.						
S3: Spring and Fall – One pass every week (March to April, October to November). Monthly otherwise.						
S4: Spring and Fall – One pass every other week during the season. Monthly otherwise.						

Fort Belvoir has an existing street sweeping program executed by a contractor already in place. The Operation and Maintenance Contractor uses a regenerative vacuum sweeper (TYMCO Model 600) to conduct sweeping on roads and parking lots once a month. Areas where street sweeping occurs within the Lower Accotink Creek Watershed are shown in Figure 7.

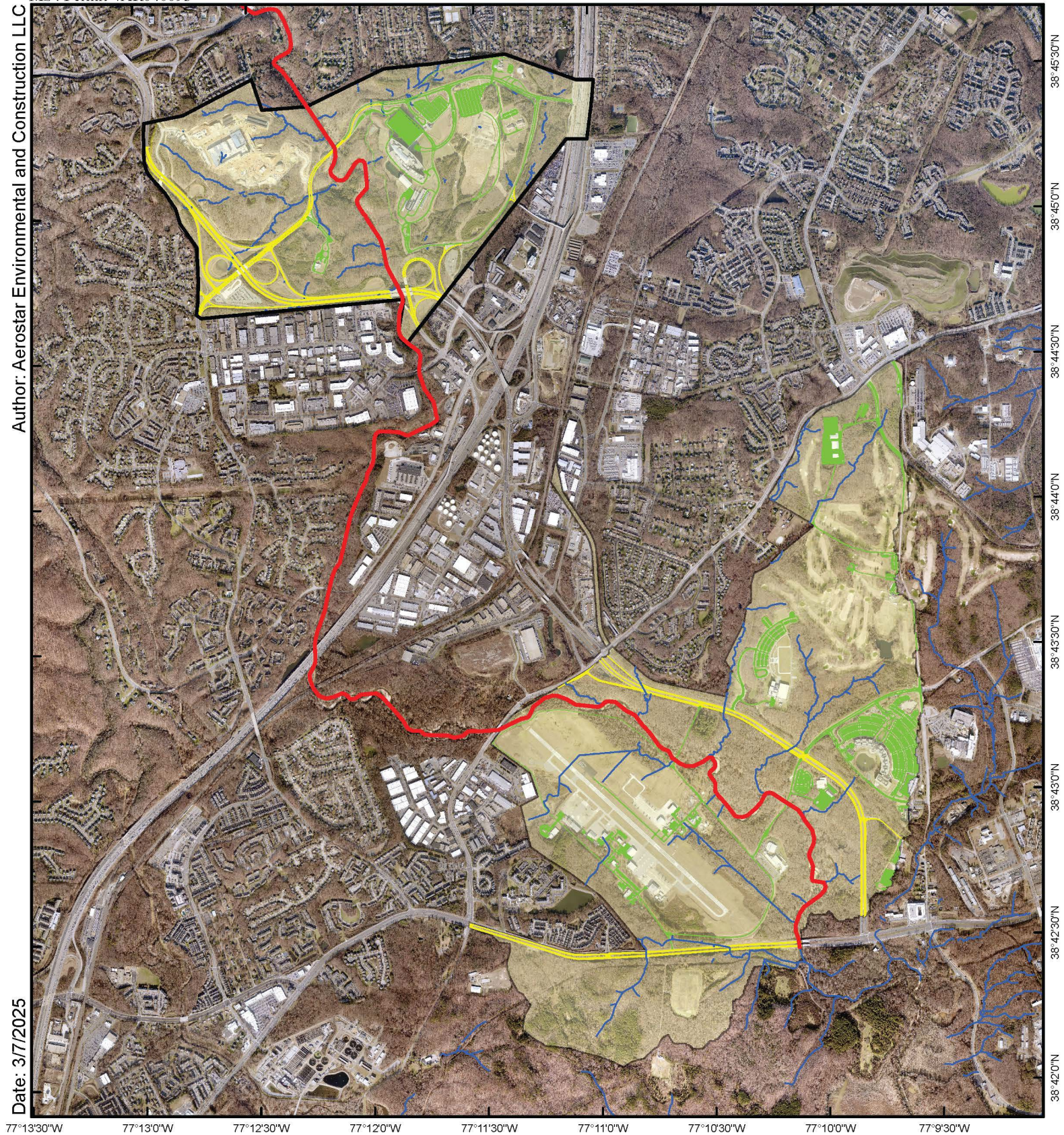


Figure 7:
Street Sweeping Areas

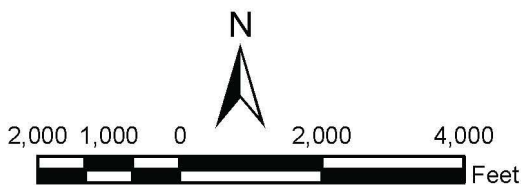
Legend

- Fort Belvoir Boundaries
- Impaired Watershed Drainage Area
- 303d Listed Stream Segment (VAN-A15R-01)
- Streams
- Street Sweeping Operational Areas**
- Fort Belvoir
- VDOT

2025 Sediment TMDL Action Plan
Sources: Fort Belvoir, USEPA, Fairfax County



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The 2021 Plan utilized contract specification for calculating area swept within the Lower Accotink Creek Watershed. During this 2025 Action Plan update GIS data was used to analyze the impervious surfaces to provide a more accurate view of the amount of area swept. This analysis showed that a total of approximately 160 acres (6,959,612 sq. ft.) of roads and parking areas exist within the impaired portion of the Lower Accotink.

When this was compared to the data used in the previous plan, it was noted that calculations were completed assuming that there was 1,317 acres (6,376,212 sq. yd.) – this error may be attributed to incorrect units being used since the 2025 GIS analysis produced similar impervious areas in sq. ft. vs sq. yd. This GIS analysis also showed that all potential surfaces to be swept on the installation amounted to approximately 670 acres, including areas that remain un-swept such as unpaved roads, motorpools, storage areas, etc. or areas that are maintained by separate entities such as housing areas, confirming the unit utilization error.

Therefore, in this 2025 Action Plan, calculations for street sweeping will be done using the contracted obligation of 13,000,481 **sq.ft.** (299 ac.) of land that should be swept monthly, because this is an enforceable contractual requirement. With there being 160 acres or 54% of which fall within the impaired portion of the Lower Accotink.

The following steps were taken to determine reductions from the street sweeping:

1. Determine which street cleaning scenario your program falls under: Current contract specifications requires that roadways and parking lots be swept once per month. Due to this, sweeping will occur on a basis of one pass every four weeks, meeting Practice SCP-4.
2. Calculate loading rate associated with the impervious area swept: Multiplying the acres of impervious surfaces including roads and parking areas as determined using the 2025 GIS layers and by the pre-sweeping loading rates for urban impervious cover within the Potomac River Basin is the next step. The pre-sweeping loading rates were acquired from the MS4 Permit Part II.A.3, Table 3b. This calculation is summarized in Table 15 below.

Table 15: Calculate drain Loading Rate for the Potomac River Basin

POC	Curb-Lane Miles Swept (ac)	Pre-Sweeping Load (lbs./ac/yr)	Pre-Sweep Baseline Load (lbs./yr)
TSS	160	1,171.32	187,411

3. Calculate your load reductions: The last step is to determine reductions from street sweeping by multiplying the loading rate by the removal rate for SCP-4 shown in step 1. This calculation is summarized below in Table 16 .

Table 16: Reductions Achieved Through Street Sweeping

POC	Pre-Sweep Baseline Load (lbs./yr)	Removal Rate Percentage	Reduction Achieved (lbs./yr)
TSS	187,411	0.06	11,245

Although this is an annual operational BMP, it is assumed that the minimum reduction credits shown below will be effective for the life of the permit. Actual amount swept will be reported on an annual basis in the MS4 annual report.

4.4. LAND USE CHANGE

As part of the “all of the above” approach, Fort Belvoir looks for opportunities to receive credit for land use change conversions and apply the appropriate credit as per Appendix V.H of the Guidance. This may include converting impervious to forest, impervious to mixed open, impervious to turf, turf to forest, turf to mixed open, or mixed open to forest. Upon completion of a land use change BMP, Table V.H.1 Land Use Change Conversion Efficiency table found in the Guidance can be used to calculate the reductions. The Guidance goes on to define the land uses as:

1. Forest – must meet the tree density per acre as described in the Virginia Department of Forestry’s Land Use Tax Assessment Standards.
2. Mixed Open – herbaceous cover that is minimally disturbed (periodically bush hogged, meadows, etc.) and is unmanaged (i.e., no nutrient application).
3. Turf – managed grass or lawns.

The conversion efficiencies for the Potomac River Basin are presented in Table 17, below.

Table 17: Land Use Change Efficiencies for the Potomac River Basin

Original Land Use	Post Conversion Land Use	EOS Reductions TN (lbs./ac/yr)	EOS Reductions TP (lbs./ac/yr)	EOS Reductions TSS (lbs./ac/yr)
Impervious	Forest	9.85	0.80	1797
Impervious	Mixed Open	9.55	0.48	877
Impervious	Turf	4.27	0.00	1240
Turf	Forest	5.58	1.46	557
Turf	Mixed Open	5.28	1.15	0
Mixed Open	Forest	0.30	0.32	920

Multiple sites across Fort Belvoir were considered for the land use change credits, to include sites at Belvoir North Area and on the Main Post. Each site was reviewed to see which category of conversion it would fall under. The sites considered, the acreage converted prior to July 1, 2024, and the conversion status are presented in Table 18 below.

Table 18: Sites Considered for Land Use Changes

Site	Acres	Notes	Original Land Use	Post Conversion Land Use
Belvoir North – West	23.71	500 seedlings/acre	Turf	Forest
Belvoir North – East	2.88	300 seedlings/acre	Impervious	Mixed Open
NCE Parking Lot	2.32	500 seedlings/acre	Impervious	Forest

The projects above were all considered as land use changes with the potential for credits. It should be noted that while the Belvoir North – East project planted 300 seedlings/acre, this does not meet the minimum of 400 seedlings/acre tree density to qualify as a change to forest as described in Virginia Department of Forestry’s Land Use Tax Assessment Standards and was thus taken credit as a change to mixed open instead. Table 19 below summarizes the total reductions achieved through changes in land cover.

Table 19: Reductions Achieved Through Land Use Changes

Original Land Use	Post Conversion Land Use	Total Acres Converted	Reduction TSS (lbs./yr)
Impervious	Forest	2.32	4,169
Impervious	Mixed Open	2.88	2,526
Impervious	Turf	0.00	-
Turf	Forest	23.71	13,206
Turf	Mixed Open	0.00	-
Mixed Open	Forest	0.00	-
<i>Total Reductions Achieved:</i>			<i>19,901</i>

5. MAINTENANCE OF CREDITS

The MS4 Permit Part II.B.6 requires that Fort Belvoir reduce the loads associated with sediment, through implementation of one or more of the following:

(1) One or more of the BMPs from the Virginia Stormwater BMP Clearinghouse listed in 9VAC25-875-590 or other approved BMPs found through the Virginia Stormwater BMP Clearinghouse;

(2) One or more BMPs approved by the Chesapeake Bay Program. Pollutant load reductions generated by annual practices, such as street and storm drain cleaning, shall only be applied to the compliance year in which the annual practice was implemented.

Most structural BMPs implemented become impacted over time due to stormwater runoff and neighboring activities. Therefore, maintenance of reductions achieved is critical for continued compliance. Some BMPs are operational in nature and therefore credits achieved may differ from year to year depending on implementation. The MS4 Permit Part II.B.11 requires that implementation status to include a summary of actions conducted to implement each local TMDL action plan is provided in the MS4 annual Report.

The sections below describe the processes and procedures required for maintaining credits based on BMP type.

5.1. URBAN STRUCTURAL SMFS

To maintain credits associated with any urban stormwater BMP, a regular inspection and maintenance schedule must be followed. The Fort Belvoir Stormwater Management Facility Long Term Operation and Maintenance Plan (Long-term SMF O&M Plan) dated 2024 specifies all requirements for maintenance of credits associated with Urban structural SMFs. This plan dictates the inspection schedule for each type of facility with a minimum occurrence of once every five years, consistent with the Virginia Stormwater BMP Clearinghouse and Virginia Handbook. If an inspection indicates that the SMF performance has been diminished, corrective actions are required to be completed within one year to ensure credits are maintained. If corrective actions are not completed within the timeframe, credits associated with the SMF unit will be lost until the facility is restored to full performance.

The MS4 Permit (VAR040093) requires Fort Belvoir to report all SMFs, including the status and inspection dates, to the Virginia BMP Warehouse located at: <https://apps.deq.virginia.gov/BMP/>. A list of current facilities registered in the BMP Warehouse and included in this plan is included in [Appendix B](#). From the Warehouse, the SMF data is then loaded into the National Environmental Information Exchange Network (NEIEN). The NEIEN then processes the data that assigns nutrient and sediment reductions to DoD in the Phase 6 Model via Chesapeake Bay Assessment and Scenario Tool (CAST).

Credits will only continue to apply if the facility remains functional. Credits currently applied should be assessed yearly to determine if continuing credits may be taken for each SMF. The SMF Condition Rating System, detailed in the 2024 Long-term SMF O&M Plan is used to determine a practices' functionality and whether it can continue to receive credits. Per the Long-term SMF O&M Plan – inspections are performed by Virginia Stormwater Management Certified Inspectors. Based upon the results of the field inspections, an overall rating is assigned to each SMF. These ratings assist Fort Belvoir in prioritizing maintenance and improvement activities for each stormwater BMP.

A description of the facility rating system is provided in Table 20 below, facilities rated as failing lose credits towards reduction credits accounted for in this plan. The annual assessment results will be included in the MS4 annual report.

Table 20: Urban SMF Inspection Rating System

Rating	Description
Excellent	The stormwater facility is functioning as designed with no problem conditions identified. No signs of impending deterioration. Routine preventive maintenance has been conducted in accordance with this SMF Plan or BMP Clearinghouse specifications, whichever is more stringent.
Average	Minor problems observed; however, the stormwater facility is functioning as designed and no critical parameters have problem conditions. <u>Needed repairs can be achieved through routine maintenance.</u>
Below Average	Moderate problems are observed, and the stormwater facility has small changes in functionality that do not change the water level or impact its structural integrity. Routine maintenance may address some of the required repairs, but <u>some non-routine repairs are necessary.</u>
Failing	Major/Severe problems are observed, and the stormwater facility <u>is not functioning as designed</u> with critical parameters requiring immediate repairs. Conditions associated with the facility have compromised its performance and/or raised the water level, potentially impacting the structural integrity. The facility shows signs of impending deterioration with potential for failure. <u>Deficiencies require repair and restoration..</u>

Additional SMFs installed on Fort Belvoir property may be included within this Action Plan as updated, once accepted to the VADEQ BMP Warehouse, and assigned a BMP Warehouse ID. As additional SMFs are constantly being installed at Fort Belvoir to meet water quantity and water quality requirements, this is expected to occur Annually. Per the MS4 Permit Part III, no later than October 1 of each year the Fort Belvoir shall electronically report new SMFs implemented and inspected as applicable between July 1 and June 30 of each year into the BMP Warehouse which formally accounts for credits from SMFs in this Action Plan. New BMPs implemented will be included in the MS4 Annual Report including:

- (a) *The BMP type and a description of the location for each BMP;*
- (b) *The estimated reduction of pollutants of concern achieved by each BMP and reported in pounds of pollutant reduction per year; and*
- (c) *A confirmation statement that the permittee electronically reported BMPs using the DEQ BMP Warehouse in accordance with Part III B 3.*

In the DEQ BMP Warehouse, Per Permit Part III.C.7 each new BMP added should designate:

Whether or not the BMP is part of the permittee's Chesapeake Bay TMDL action plan required in Part II A or local TMDL action plan required in Part II B, or both;

5.2. STREAM RESTORATION

Verification of the initial and long-term performance of stream restoration projects is critical to ensuring that the nutrient and sediment reduction is met. According to the Chesapeake Bay Program Stream Restoration Workgroup's BMP Verification Guidance, the following should be maintained to keep the load reduction credits associated with each project above:

- Length of qualifying stream projects completed each year.
- Post construction certification that the stream restoration practices were installed properly for each project reach and are working as designed.
- Maintain project files for each site for the lifetime of the project.
- Duration of the credit is 5 years but can be renewed if field inspection indicates the stream restoration project is still meeting its design objectives. (CSN, 2011)

The length of each qualifying stream length for which Fort Belvoir is receiving credit is shown in Table 12 and post construction certifications are kept by DPW-Environmental. Inspections of stream restoration projects will occur two (2) years after initial construction and once every five (5) years afterwards. This inspection schedule shall occur for the lifetime of the project to ensure that individual projects are still capable of removing nutrients and sediment. If a field inspection indicates that the original design criteria has been diminished, Fort Belvoir will have one (1) year to take corrective actions and restore the stream to its original design capacity. If corrective actions are not taken within the required timeframe, the BMP credits will be eliminated but can be credited once again after restoring to its original performance. (Workgroup, Stream Restoration BMP Verification Guidance, 2014)

Table 21 below provides a summary of all credit verification inspections completed and presents the next inspection due date. Detailed findings are discussed below.

Table 21: Summary of Urban Stream Restoration Credit Verification Inspections and Results

Project Site	Year Completed	Year Last Verified	Next Inspection Due	Original Linear Feet (LF) Restored	Linear Feet (LF) Currently Qualifying for Credits ¹
North Area	2011	2025	2030	128	128
NMUSA Stream	2019	2023	2028	210	210
Total LF Considered for Credits:					338
¹ As of February 1, 2025					

Verifications of the long-term performance of the urban stream restorations are completed using Fort Belvoir Stream Assessment Form 1, Form 2, and the associated Habitat Assessment Field Data every 100 feet for stream restorations of less than 1,000 linear feet and every 200 linear feet for stream restoration sites that exceed 1,000 linear feet, were used to assess the functionality of the stream restoration projects. The effort provided updated data on restored length and verified the long-term performance of the restoration to maintain any associated credits for the next five (5) years. As of February 1, 2025, verification inspections have been completed as follows:

- Re-verification of the North Area stream segment was completed during the 2018-2019 reporting period and again during the 2024-2025 reporting period. Re-verification will be necessary within the next five years.
- NMUSA Stream completed its initial 5-year monitoring plan, in accordance with their Section 401 permits during the 2023-2024 reporting period. Re-verification will be necessary within the next five years.

Below is a summary of the conclusions for the verified projects; the full reports are available upon request.

North Area: In 2019, a stream and habitat assessment was conducted of the North Area Stream Restoration Project. The North Area Stream Restoration restored 128 linear feet of stream restoration along an unnamed tributary to Accotink Creek completed in 2011. Field assessments indicate the stream restoration is preventing erosion within the restored area successfully. The restoration project is functioning as expected and should continue to generate credits for the next five (5) year cycle, with the next assessment due in 2024. The stream Segment was reassessed in January 2025 and the report indicated that the restoration area has created sufficiently vegetated and stable stream banks. The riparian zone protection is sufficient to prevent erosion. Therefore, this segment should continue to generate credits for the next five (5) year cycle, with the next assessment due by 2030.

NMUSA Stream: In 2023, Year 5 of the initial monitoring phase was completed to determine if the project was functioning as intended. It was found that the woody stem, physical form, and structure success criteria was met and that the restored channel was not eroding or shifting. Although some invasive species were noted, the establishment of the riparian buffer was considered successful with the native trees healthy and growing. The restoration project is functioning as expected and should continue to generate credits for the next five (5) year cycle, with the next assessment due in 2028.

5.3. STREET SWEEPING

Street sweeping is considered an operational BMP and verification is done by ensuring that it is being conducted appropriately. This verification process will involve the submittal of monthly reports by the contractor performing the work as well as inspections and approval from the Contract Performance Specialist (CPS) prior to payment for services.

Fort Belvoir relies on information within the Technical Exhibit of the Base Operations (BaseOps) Contract for determining the contractually required street sweeping areas used in calculations. A new BaseOps contract that is scheduled to be awarded in 2025 may change the frequency and number of areas expected to be swept. These changes should be accounted for in any future street sweeping calculations.

Annually, monthly street sweeping records will be reviewed to determine the total number of acres swept within the MS4 service areas, as well as the appropriate street sweeping practices based on actual sweeping completed, equipment used, and number of passes, according to Appendix V.G of the Chesapeake Bay TMDL Special Condition Guidance. Actual acres swept, the frequency at which sweeping occurred, type of technology used, and the reduction achieved will be reported as an annual practice in the MS4 annual report.

5.4. LAND USE CHANGES

On site monitoring during the first three years after a land use conversion is and shall be conducted to ensure stabilization of the change. Land use change projects are designed to minimize long-term maintenance and can be assumed to be maintained in perpetuity.

Credits have been taken for all land use changes within the Lower Accotink; however, if these areas are redeveloped in the future these credits will be lost. These sites should be assessed annually to determine if credits may still be applied.

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6. BMPs PLANNED OR PROPOSED FOR 2023-2028 PERMIT CYCLE

As discussed in Section 4, Fort Belvoir has implemented multiple strategies to reduce sediment loads within the Lower Accotink Creek Watershed. Table 22 below summarizes the reductions achieved prior to this 2025 Action Plan update. Although there has been progress made, Fort Belvoir still has not met the required reductions for the Sediment TMDL.

Table 22: Cumulative Reductions Achieved and Progress towards Reduction Goals

POC	BMP	Required Reduction (lbs./yr)	Reductions Achieved By 2025 (lbs./yr)	Cumulative Load Reduced vs. Required
Sediment	Urban Structural SMFs	568,000 ¹	100,321	18%
	Stream Restoration		5,114	1%
	Street Sweeping		11,245	2%
	Land Use Change		19,901	4%
Total Suspended Solids Reduction Achieved			136,581	24% ¹
¹ With additional WLA from change in the Industrial Permit the Required reductions would be 547,400 and Fort Belvoir would have met 25% of required reductions				

The following sections describe additional projects are planned and locations that are recommended for assessment in order to meet pollutant reduction goals for the Sediment TMDL.

6.1. URBAN STRUCTURAL BMPs - PLANNED

In a continued effort towards meeting required reductions, Fort Belvoir will continue to promote both new SMFs and retrofits to older SMFs within the Lower Accotink Creek Watershed. 100% of future sediment load reductions achieved from strategies aimed at reducing sediment from land-based sources, such as stormwater retrofits and BMP construction, will be applied towards the required sediment load reductions.

Currently, the following additional SMFs shown in Table 23 are proposed or under construction within the Lower Accotink Creek Watershed. Credits for these SMFs will be taken upon completion of construction and approval within the BMP Warehouse. The Potential credits were calculated using the same methodology for the existing SMFs, as described in Section 4.2.

Table 23: Proposed Urban Structural BMPs (2023-2028)

SMF type	Project	SMF Types	Acres Treated	Impervious Acres Treated	Potential Sediment Reduction (lbs./yr)
New	NMUSA	Permeable Grass Pavement (W9)	0.82	0.00	79.29
New	Distro Center	13 x Bioretention – Level 1	28.6	11	8,565.54
New	Distro Center	9 x Bioretention – Level 2	19.31	7.37	5,902.42
New	Distro Center	Cistern, Underground Detention Basin - UCB	8.17	7.50	8,902.69
New	Distro Center	2 Green Roofs	1.78	1.78	1,772.21
New	DIA Annex	2 x Dry Swale	3.55	1.97	1,809.69

SMF type	Project	SMF Types	Acres Treated	Impervious Acres Treated	Potential Sediment Reduction (lbs./yr)
New	DIA Annex	4 x Bioretention	13.3	5.37	4,226.25
Potential Retrofit	FBNA - Fire	Wet Pond (built pre-2006)	12.9	5.36	4,562.28
Potential Retrofit	FBNA - CDC	Wet Pond (built pre-2006)	14.6	2.51	3,039.26
Potential Retrofit	FBNA - Barta	Wet Pond (built pre-2006)	17.6	6.11	5,506.02
Potential Retrofit	DLA Pond	Wet Pond (built pre-2006)	59.6	50.66	36,546.43
Potential Retrofit	Golf Course Pond	Wet Pond (built pre-2006)	30.9	3.96	5,624.69
Total Acreage			211.13	103.59	86,536.77

6.2. STREAM RESTORATION - PLANNED

Fort Belvoir streams are periodically evaluated for stability and potential impacts to future development including stormwater management issues, contamination issues, and constructability. The evaluations are used to rank the streams systems for potential and priority restoration prior to being submitted for design funding and construction. Streams where rapid erosion is occurring and/or is potentially adversely impacting vital infrastructure (i.e., water and wastewater lines, roads, facilities, and other utilities) are ranked higher than other streams. The evaluation includes photographic documentation of the stream systems, evaluation of watershed influences, and identification of potential impacts to vital infrastructure.

In addition to the already completed stream restoration projects on Fort Belvoir, multiple other sites have been identified for potential restoration and are in different stages of design, construction, and funding. The projects, shown in the Table 24 below, were not considered in the load reduction totals achieved as of July 1, 2024, but may be implemented prior to the permit cycle ending in 2028 or during future implementation. For these projects to receive credit, one of the newer four protocols discussed in [Section 4.2](#) will need to be utilized.

Table 24: Potential Stream Restoration Projects and Reductions

Project Site	Status	Linear Feet (ft) ¹	Potential Reduction on TSS (lb/yr)
West Patrol Road Drainage Repairs (ENV24-224)	Planning Stages	800	12,104
Mosby Reserve Stream Segment	Needs Evaluation	900	13,721
Totals		-	25,721
¹ Estimated Linear Feet as the areas presented have not undergone assessment but were identified as potential areas for consideration for future projects			

The proposed projects shown in Table 24 show an approximate linear footage as site conditions have not yet been assessed and may change throughout Action Plan implementation from assessment to design to construction. Additionally, without details on the protocols used for each project, the default removal rates from the 2014 Expert Panel, shown in Table 11, are used here to calculate as estimated reduction.

Once projects are further along in implementation and more specific data is available, a nutrient reduction study based on the BANCs assessment may be done along with design Bank Erosion Hazard Index (BEHI) and Near Bank Stress (NBS) to develop a site-specific efficiency rate which can be used to calculate actual reductions. Actual stream restoration linear footage will be reported within the MS4 Annual Report. The MS4 Annual Report will document the following for each individual stream restoration project installed:

- Type, length, and width of the project
- Location coordinates
- Year of installation and maximum duration of credits
- 12-digit watershed in which it is located
- Protocol(s) used
- Projected sediment, nitrogen, and phosphorus reductions

6.3. STORM DRAIN CLEANING - PLANNED

Storm Drain Cleaning is another effective method at removing sediment from stormwater systems prior to being transported to water bodies. Sediment reduction credits are provided for solids that are directly removed from catch basins, within storm drainpipes, or captured at the storm drain outfalls. Credits also apply to sediment removal from concrete-lined conveyance channels but does not apply to sediment removal during ditch maintenance along open section roads.

The following three qualifying conditions should be observed to achieve credits for the storm drain cleaning as follows:

1. *To maximize reduction, efforts should target catch basins that trap the greatest organic matter loads, streets with the greatest overhead tree canopy and/or outfalls with high sediment or debris loads.*
2. *The loads must be tracked and verified using a field protocol to measure the mass or volume of solids collected within the storm drain system. The locality must demonstrate that they have instituted a standard operating procedure (SOP) to keep track of the mass of the sediments and/or organic matter that are removed.*
3. *The material collected and measured for the credit must be properly disposed so that it cannot migrate back into the watershed.*

According to Appendix V.G.2, the first step is to determine the pounds of solids and organic matter that is collected or removed from catch basins, storm drainpipes, at the storm drain outfall, or from within concrete-line conveyance channels. This credit is conducted on an annual basis and all solids collected are combined for a single-year value. From there, the initial wet mass may be converted to dry weight.

Although storm drain cleaning is being conducted, Fort Belvoir has yet to develop a formal procedure in place that allows for tracking, verification, or reporting of this type of operational BMP that would require annual reporting. As noted in section 5.3, a new BaseOps contract that is scheduled to be awarded in 2025 which may change processes and procedures which could allow for additional reductions in the future.

To determine an estimated reduction for this BMP some historical data was reviewed and the average dry weight material for the entirety of Fort Belvoir was reported in 2018 as 137,680 pounds or 68.84 tons. If at least half of that can be collected under this program annually – equating to approximately 70,000 lbs. of sediment, organic debris, and leaf litter from the MS4 System and then adjusted for the Lower Accotink (approximately 45% of the total MS4 Service Area). Once a tracking and reporting program is put in place, Fort Belvoir could conservatively see an additional reduction of 9,450 lb./yr of sediment from this practice, as shown in Table 25.

Table 25: Potential Storm Drain Cleaning Reductions

Dry Weight (lbs./yr.)	Dry Weight (lbs/yr) Lower Accotink Creek	TSS Nutrient Enrichment Factor	Reductions Achieved (lbs/yr)
70,000	31,500	0.3	9,450

The actual reduction would have to be evaluated annually to determine how much weight was disposed in the previous year for reporting purposes.

7. IMPLEMENTATION SCHEDULE AND METRICS

Fort Belvoir intends to demonstrate its progress on implementation of this Action Plan by tracking, monitoring, and reporting on BMP progress in its MS4 Program Annual Report that is submitted to DEQ on October 1st of each permit year. In the Annual Report, Fort Belvoir will provide updates on the status of each of the BMP activity listed in this 2025 Action Plan. In accordance with the adaptive iterative approach, referenced in this Action Plan, Fort Belvoir may modify/replace BMPs, as necessary, to achieve the most effective plan for reducing the discharge of sediment loads and meeting the assigned TMDL WLA.

As of 2025, Fort Belvoir has not yet met the required sediment TMDL reductions for the Lower Accotink Creek with the already implemented strategies accounting for approximately 25% of overall reduction goals, as shown in Table 6. As shown in Table 26, through the implementation of the planned BMPs described in Section 6 of this plan, Fort Belvoir foresees reaching approximately 45% of the required total reductions if all projects are implemented by the end of the 2023-2028 permit cycle.

Table 26: Cumulative Reductions Achieved and Progress towards Goals

POC	BMP	Required Reduction (lbs. /yr.)	Reductions Achieved (lbs. /yr.)	Percent of total Reductions Achieved
Total Suspended Solids	Urban Structural BMPs	568,000 ¹	186,857.59	30%
	Stream Restoration		30,835.00	3%
	Street Sweeping		11,244.67	2%
	Storm Drain Cleaning		19,901.27	4%
	Land Use Change		9,450.00	2%
Total Sediment Reduction Achieved with Proposed Projects known for the 2023-2028 permit cycle.			258,288.53	45% ¹
1With additional WLA from change in the Industrial Permit the Required reductions would be 547,400 and Fort Belvoir would have met 47% of required reductions				

It should be noted that the potential sediment removal through storm drains cleaning and street sweeping described in this 2025 Action Plan, are based on current practices and may differ once the new Base Operations contract gets awarded and tracking practices are fully established. These are expected to results in higher reductions then presented here. Additionally, stream restoration projects identified in section 6.2 are still in the early stages of assessment and may not be completed prior to the end of the cycle.

The MS4 Permit Part II.B.3 requires that Action Plans address and implementation schedule but also allows them to be implemented in phases that may take more than one permit cycle. It states:

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.

Therefore, This 2025 focuses on all BMPs already implemented and those that have already been identified. Fort Belvoir will continue to track reductions achieved and adjusts methods as needed while also ensure that credits achieved are maintained through long-term management of facilities. Throughout the 2023-2028 permit term, DPW- Environmental staff will continue promoting sediment reduction methods and identifying locations that can be targeted for future retrofits.

Permit Part II.B.6.d states that:

No later than 36 months after the effective date of this permit, the permittee shall submit to the department an update on the progress made toward achieving local TMDL action plan goals and the anticipated end dates by which the permittee will meet each wasteload allocation for sediment, phosphorus, or nitrogen. The proposed end date may be developed in accordance with Part II B 3.

Therefore, by November 1, 2026, Fort Belvoir will be required to submit an updated to implementation of this plan and along with anticipated end date for achieving the full reduction requirements. As shown in Table 6, the total actual reduction to-date for Fort Belvoir equals 136,581 lbs/year, or approximately 25% of the total required reduction. But also has enough projects planned for this current permit term to achieve about 45% of the required reduction by 2028, if they are all implemented.

Assuming a similar pace of investment (approximately 15,000 lbs/year) and mix of projects, it will take approximately 20 years to achieve the full target reduction. As a result, the current anticipated end date for meeting the Accotink Creek TMDL is 2045, plus or minus a few years depending on actual project implementation.

Guidance Memo 16-2006 requires a schedule of interim milestones and methods to assess effectiveness of TMDL Action Plans in reducing pollutants. The BMPs and Metrics for reporting under this 2025 Action Plan are described below.

7.1. TSS.1 IMPLEMENTATION OF SEDIMENT ACTION PLAN

An annual assessment of progress made towards meeting required reductions is critical to the iterative implementation of this 2025 Action Plan. Additionally, management of current credits is of continued importance to prevent backsliding. As part of the adaptive iterative approach to maintain and identify BMPs that can reduce sediment loads in the Lower Accotink Watershed. Fort Belvoir will:

Measurable Goals: In Permit years 2025-2028, Implement the Sediment TMDL Action Plan to ensure credits are maintained including:

1. Inspection and maintenance of Urban Structural BMPs located within the Lower Accotink Creek Watershed, where deficiencies noted during inspections are addressed within one (1) year.
2. Inspections and verification of the stream restoration projects considered in the plan shall occur once every five (5) years and deficiencies noted during inspections are addressed within one (1) year.
3. Perform and document street sweeping as per the O&M Contract at a minimum of one (1) time per year.
4. Perform and document Storm Drain Cleaning as per the O&M Contract.
5. Continue to evaluate areas for stream-restoration for potential in-stream sediment reduction and identification of older Urban Structural BMPs for retrofit

- **Reporting and Record Keeping:**

In the annual report:

- Report new Urban BMPs, Stream Restorations, or Land Use Changes within the Lower Accotink Creek Watershed and the achieved reductions.

- Report the amount of street sweeping within the Lower Accotink Creek Watershed, the frequency, and the achieved reductions.
- Report the Storm Drain Cleaning reductions achieved from the nutrient enrichment factor based on the dry weight of sediment removed during the reporting cycle within the Lower Accotink Creek Watershed.

7.2. TSS.2 IMPLEMENT EDUCATION AND OUTREACH STRATEGY

Educational programs work best when they increase the level of environmental awareness in the target audience and convey a clear link between people's activities and stormwater quality impacts. A program should raise awareness, increase knowledge, and prompt needed changes in operational practices. In this case, educational programs aim to promote responsible sediment management practices.

- **Measurable Goals:** Maintain, develop, and distribute education and outreach materials in accordance with the Education and Outreach Strategy as required by Part II.B.8.a. and b. of the 2023-2028 MS4 Permit. This includes those items developed under MCM 1: Public Education and Outreach Program and/or MCM 6: Pollution prevention and good housekeeping - which include information on the Sediment TMDL, strategies and tips for the proper handling and storage, and targeted training for High-Priority Facilities and construction projects – Including:
 1. Publish one (1) article annually that discusses the sediment transport and water quality issue, proper ESC measures, reporting information, and steps that can be taken to reduce sediment sources.
 2. Continuing to provide Stormwater Pollution Prevention Plan Training (Levels 1 and 2) to facilities considered to be High Priority Facility which covers general Sediment TMDL information and management strategies
 3. Continuing to provide Pre-construction Training (Levels 3) which covers proper construction site ESC and Fort Belvoir specific requirements for sediment management
 4. Maintaining BMP Fact Sheets covering *Outdoor Storage and Handling of Raw Materials and Waste, Dewatering Activities, Outdoor Pressure Washing, and Landscaping and Ground Maintenance* on the [Fort Belvoir Webpage](#), distributing as necessary
- **Reporting and Record Keeping:**

In the annual report:

 - Provide a summary of the audiences reached via the training program.
 - Provide a list of the education and outreach activities conducted during the reporting period, the estimated number of people reached, and a list of strategies used.
 - Provide a narrative on publication of the article to include the title, focus, and date published.
 - Provide a summary of any updates and/or revisions made to educational materials

8. PUBLIC COMMENT

Part II B.7 of the General Permit requires that Fort Belvoir provides an opportunity for receipt and consideration of public comment regarding any Local TMDL Action Plan. The EPA states in Federal Register Volume 64, No. 235, page 68,750 on December 8, 1999, regarding "public" and its applicability to MS4 programs, the following:

"EPA agrees with the suggested interpretation of "public" for DOD facilities as "the resident and employee population within the fence line of the facility." The department recommends that nontraditional MS4 operators, such as state and federal entities and local school districts, utilize this statement as guidance when determining their applicable "public" for compliance with this permit"

Therefore, Fort Belvoir has adopted this definition and defines the "public" as anyone who lives or works within the jurisdictional boundary of the Garrison as shown in Figure 1.

The Lower Accotink Creek Sediment TMDL Action Plan was completed as per Part II.B of the 2018-2023 General Permit. The Lower Accotink Creek Chloride TMDL Action Plan allowed for a public comment period by being posted on the Fort Belvoir Home Page under Environmental Documents for Stormwater in January 2021. A Notice of Availability for the document was posted on the Fort Belvoir Environmental Facebook page and Fort Belvoir Home Page on 8 January 2021, and was published in the Fort Belvoir newspaper, *The Belvoir Eagle* on 14 January 2021. Fort Belvoir provided for the public comment period to be open until 15 February 2021, allowing for at least 15 days for public comment. Fort Belvoir DPW did not receive any comments during this period. The Final 2021 Chloride TMDL Action Plan was submitted to VADEQ on 1 May 2021.

This 2025 Sediment TMDL Action Plan for Lower Accotink Creek provides for updates to and evaluation of the previous plan as required by Part II.B.2 of the 2023-2028 MS4 Permit. The Draft Action Plan was posted for public comment on the Fort Belvoir Home Page under Environmental Documents for Stormwater in [Month] 2025 with A Notice of Availability on [Date] 2025.

Fort Belvoir provided for the public comment period to be open until [Date] 2025 and formally addressed the [number] comments received in this Final Chloride TMDL Action Plan. Table 27 below summarizes the comments received and how they were addressed. Further details are available upon request.

Table 27: Public Comments on Draft 2025 Sediment TMDL Action Plan

Comment	Response

[number] comments were received during this comment period and [formally responded to]. Therefore, the plan was finalized. The Final 2025 Sediment Action Plan will continue to be available on the public facing website throughout the permit term, allowing for the public to submit comments at any point in time. If any comments are received, Fort Belvoir will evaluate the need for updating the plan and provide a formal response to the commenter. Any comments received and changes made in the plan will be reported in the MS4 annual status report as required under Part I.D.5.

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APPENDIX A: POLICY MEMO – STORMWATER POLLUTION PREVENTION



DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT BELVOIR
9820 FLAGLER ROAD, SUITE 213
FORT BELVOIR, VIRGINIA 22060-5928

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MEMORANDUM FOR US Army Fort Belvoir Personnel

SUBJECT: Fort Belvoir Policy Memorandum #25, Prohibition of Illicit/Unauthorized Discharges to the Municipal Separate Storm Sewer

1. References.

- a. Clean Water Act (33 USC Sec. 1251)
- b. General Virginia Pollution Discharge Elimination System Permit (VPDES) for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4), Permit # VAR040093 (9VAC25-890-40)
- c. VPDES Industrial Stormwater Individual Major Permit #VA0092771
- d. Industrial Stormwater VPDES Discharges (9 Virginia Administrative Code 25-31, 25-151 and 25-120)

2. Purpose. To prevent illicit discharges and illegal dumping into the storm sewer systems at Fort Belvoir Main Post and Fort Belvoir North Area to ensure protection of water quality of Fort Belvoir waterways and compliance with Fort Belvoir VPDES MS4 and Industrial Stormwater permits.

3. Definitions.

- a. Illegal dumping: Any dumping of solid or liquid material into the storm sewer system.
- b. Illicit connection: Any drain or conveyance, whether on the surface or subsurface, which allows a non-stormwater discharge to enter the storm sewer system and any connections to the storm sewer system from indoor drains, sinks or sanitary sewer.
- c. Illicit discharge: Any discharge to the storm sewer system that is not composed entirely of stormwater that causes or contributes to pollution. Illicit discharges may include, but are not limited to: hazardous materials such as paints, varnishes and

“LEADERS IN EXCELLENCE”

SUBJECT: Fort Belvoir Policy Memorandum #25, Prohibition of Illicit/Unauthorized Discharges to the Municipal Separate Storm Sewer

solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes such as garbage, yard wastes (grass clippings and leaves), mulch, discarded or abandoned objects, pesticides, herbicides, fertilizers, sewage; dissolved and particulate metals, pet/animal wastes, construction wastes and residues and noxious or offensive material of any kind.

d. Storm sewer system: A collection of underground pipes and conveyances (ditches, channels) that drain to Fort Belvoir waterway. The water that drains through the storm sewer is not treated to remove pollutants. Whatever pollutants enter the storm sewer system directly end up in waterways.

e. Stormwater: Precipitation that flows across the land surface or through conveyances to one or more waterways and that may include rain runoff, snow melt runoff and surface runoff and drainage.

f. Waterways: Includes all bodies of water, but is not limited to, rivers, streams, bays, wetlands stormwater management ponds and drainage ditches.

3. Applicability. This policy applies to military and civilian personnel, tenant and satellite organizations, mission partners, housing residents and contractor activities at Fort Belvoir and Fort Belvoir North Area.

4. Background. As stormwater flows across the ground, off of a roof or through a parking lot, it can pick up various pollutants such as oil, grease, spilled materials, loose soil and other debris. When it rains, stormwater flows to the storm sewer system and eventually drains directly into Fort Belvoir waterways and ultimately to the Chesapeake Bay with no treatment for pollutant removal.

5. Policy. Fort Belvoir is committed to protecting water quality of waterways on and surrounding Fort Belvoir to ensure that human health, ecosystem health and the ability to conduct recreational opportunities are not impacted by stormwater pollution. Reference a. requires the establishment of an enforceable policy that prohibits illicit discharges and illegal dumping.

a. Prohibited Discharges into Storm Sewer System: The following are common sources of illicit discharges/illegal dumping at Fort Belvoir that are prohibited from entering into the storm sewer system: sanitary sewer overflows, trash, paint, grease,

SUBJECT: Fort Belvoir Policy Memorandum #25, Prohibition of Illicit/Unauthorized Discharges to the Municipal Separate Storm Sewer

motor oil or other lubricants, fuel, cooking oil, salt, fertilizer, pesticides chemicals, liquid materials, lawn wastes (grass clippings and leaves), mulch, cigarette butts, sand, soil, construction materials, wash waters containing soaps, detergents and degreasers of any kind, fire hydrant and water line flushing and potable water tank discharge without prior de-chlorination, and pet/animal waste.

b. **Materials Storage:** All personnel are responsible for ensuring proper storage of materials. Materials should be stored inside, under roof, whenever possible. If outside storage of materials cannot be avoided, materials must be elevated off the ground and covered to prevent stormwater from coming in contact with material and being carried into the storm sewer. Keep it "High and Dry"! Any outdoor materials storage areas should be located away from components of the storm sewer system (inlets, drains, swales, stormwater management ponds, ditches). Personnel responsible for bulk storage areas for items such as salt, mulch, and soil stockpiles will implement best management practices to ensure that material does not enter storm sewer during a storm event. Any liquid materials must be stored in adequate secondary containment.

c. **Spill Response:** All personnel are responsible for following the Fort Belvoir Master Spill Plan. Fort Belvoir Spill Response Procedures can be found at https://home.army.mil/belvoir/index.php/download_file/force/822/549

d. **Waste Material Disposal:** All personnel are responsible for proper disposal of all hazardous and nonhazardous waste materials, including yard wastes. Hazardous waste disposal is required to be conducted in accordance with the Fort Belvoir Hazardous Waste Minimization and Management Plan.

e. **Vehicle Cleaning, Maintenance and Storage:** Operations, including fueling, cleaning and maintenance of aircraft, equipment, campers, boats and vehicles should be conducted indoors or under cover to prevent exposure to stormwater whenever possible. Cleaning of vehicles may be conducted outside only at an authorized wash rack or commercial car wash.

f. **Use of Deicing Materials:** Application of any deicing agents containing urea or other forms of nitrogen or phosphorous or ethylene glycol to parking lots, roadways, sidewalks or other paved surfaces is prohibited per reference a.

g. **Waste Container Management:** All personnel are responsible for ensuring that tops and sides of dumpsters are closed and notifying the Directorate of Public Works (DPW), Operations and Maintenance (O&M), Solid Waste Program Manager, 703-806-0061, if the dumpster is rusty, leaking or missing a drain plug that could allow for dumpster contents to leak onto the ground.

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SUBJECT: Fort Belvoir Policy Memorandum #25, Prohibition of Illicit/Unauthorized Discharges to the Municipal Separate Storm Sewer

h. Illicit Connections: All personnel are responsible for reporting any discovered or suspected illicit connections to the DPW Environmental Division (ENV), Stormwater Program Manager, 703-806-0627.

i. Annual Training: As required by reference a., the following personnel are required to attend annual training in the recognition, prevention and reporting of illicit discharges: personnel employed in and around maintenance and public works facilities; personnel employed for road, street and parking lot maintenance; personnel employed in and around recreational facilities; and personnel employed at facilities where Stormwater Pollution Prevention Plans have been implemented. Additional categories of personnel may require training if personnel are found to have caused an illicit discharge. DPW ENV will schedule and provide training for all required personnel.

j. All stormwater concerns and suspected illicit connections may be submitted via email at usarmy.belvoir.id-sustainment.mbx.dpw-environmental@army.mil.

6. Proponent. The proponent for this policy is the Directorate of Public Works. The technical POC is the Stormwater Program Manager at 703-806-0627. The point of contact is Mr. Yun Heo, Director of Public Works.

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Encl

DAVID J. STEWART
COL, EN
Commanding

APPENDIX B:

LIST OF URBAN STRUCTURAL BMPs WITHIN THE LOWER ACCOTINK CREEK WATERSHED

MS4 Structure ID	Latitude	Longitude	BMP Type	Total Drainage Area	Impervious	Pervious	BMP Warehouse ID	Installation Date	Credit Taken?	Loading Rate, Impervious, Suspended Solids (1,171.32 lbs./ac./yr.)	Loading Rate, Pervious, Suspended Solids (175.8 lbs./ac./yr.)	Combined Suspended Solids Loading Rate (lbs./yr.)	Suspended Solids Removal Rate Efficiency %	Suspended Solids Reduction Achieved (lbs./yr.)	TMDL
6457	38.751777	-77.194686	Bioretention - Level 1	7.11	1.39	5.72	USAHQ-2015-00002039	6/30/2012	Yes	1,628.13	1,005.58	2,633.71	55%	1,448.54	Accotink
6466	38.752834	-77.195148	Bioretention - Level 1	2.73	0.42	2.31	USAHQ-2015-00002038	6/30/2012	Yes	491.95	406.10	898.05	55%	493.93	Accotink
6479	38.755335	-77.193620	Bioretention - Level 1	12.8	4.31	8.49	USAHQ-2015-00002037	6/30/2012	Yes	5,048.39	1,492.54	6,540.93	55%	3,597.51	Accotink
6749	38.756945	-77.193984	Bioretention - Level 1	10.4	5.65	4.75	USAHQ-2015-00002040	6/30/2012	Yes	6,617.96	835.05	7,453.01	55%	4,099.15	Accotink
7893	38.714568	-77.176168	Bioretention - Level 1	0.93	0.58	0.35	FTBEL-2013-00554478	7/1/2013	Yes	679.37	61.53	740.90	55%	407.49	Accotink
7591	38.712128	-77.169668	Bioretention - Level 1	0.85	0.44	0.41	DOD-2018-00090980	4/23/2018	Yes	515.38	72.08	587.46	55%	323.10	Accotink
7593	38.712846	-77.169815	Bioretention - Level 1	0.81	0.41	0.40	DOD-2018-00090979	4/23/2018	Yes	480.24	70.32	550.56	55%	302.81	Accotink
9073	38.711569	-77.181742	Bioretention - Level 1	0.24	0.15	0.09		11/26/2023	Yes	175.70	15.82	191.52	55%	105.34	Accotink
6208	38.749406	-77.195605	Bioretention - Level 2	12.8	6.46	6.34	USAHQ-2015-00002046	6/30/2011	Yes	7,566.73	1,114.57	8,681.30	80%	6,945.04	Accotink
205	38.755155	-77.199083	Bioretention - Level 2	0.47	0.30	0.17	DOD-2018-00091006	4/27/2018	Yes	351.40	29.89	381.28	80%	305.03	Accotink
6145	38.749199	-77.196888	Bioretention - Micro Level 1	2.74	1.47	1.27	USAHQ-2015-00002050	6/30/2012	Yes	1,721.84	223.27	1,945.11	55%	1,069.81	Accotink
6753	38.756673	-77.195386	Bioretention - Micro Level 1	1.43	0.97	0.46	DOD-2006-000037257	6/30/2012	Yes	1,136.18	80.87	1,217.05	55%	669.38	Accotink
6758	38.756391	-77.196197	Bioretention - Micro Level 1	1.19	0.47	0.72	DOD-2006-000037226	6/30/2012	Yes	550.52	126.58	677.10	55%	372.40	Accotink
6212	38.750186	-77.195563	Bioretention - Micro Level 2	4.91	1.14	3.77	USAHQ-2015-00002048	6/30/2011	Yes	1,335.30	662.77	1,998.07	80%	1,598.46	Accotink
6213	38.749958	-77.195882	Bioretention - Micro Level 2	0.87	0.20	0.67	USAHQ-2015-00002049	6/30/2011	Yes	234.26	117.79	352.05	80%	281.64	Accotink
6214	38.750500	-77.195317	Bioretention - Micro Level 2	3.27	1.08	2.19	USAHQ-2015-00002047	6/30/2011	Yes	1,265.03	385.00	1,650.03	80%	1,320.02	Accotink
6215	38.750849	-77.195199	Bioretention - Micro Level 2	2.23	0.61	1.62	DOD-2006-000037219	6/30/2011	Yes	714.51	284.80	999.30	80%	799.44	Accotink
6216	38.751113	-77.195027	Bioretention - Micro Level 2	1.5	0.28	1.22	DOD-2006-000037253	6/30/2011	Yes	327.97	214.48	542.45	80%	433.96	Accotink
6462	38.752366	-77.195456	Bioretention - Micro Level 2	1.65	0.84	0.81	DOD-2006-000037264	6/30/2012	Yes	983.91	142.40	1,126.31	80%	901.05	Accotink
5750	38.721252	-77.163370	Bioretention - Micro Level 2	0.3	0.14	0.16	DOD-2018-00091001	10/30/2017	Yes	163.98	28.13	192.11	80%	153.69	Accotink
5753	38.721388	-77.162891	Bioretention - Micro Level 2	0.31	0.17	0.14	DOD-2018-00091002	3/23/2018	Yes	199.12	24.61	223.74	80%	178.99	Accotink
6940	38.751493	-77.203964	Bioretention - Tree Box Filter	0.15	0.05	0.10	USAHQ-2015-00002031	6/30/2011	Yes	58.57	17.58	76.15	82%	62.44	Accotink
6942	38.751091	-77.203756	Bioretention - Tree Box Filter	0.35	0.24	0.11	USAHQ-2015-00002029	6/30/2011	Yes	281.12	19.34	300.45	82%	246.37	Accotink
6944	38.751075	-77.203923	Bioretention - Tree Box Filter	0.46	0.17	0.29	USAHQ-2015-00002030	6/30/2011	Yes	199.12	50.98	250.11	82%	205.09	Accotink
6946	38.751524	-77.203694	Bioretention - Tree Box Filter	0.27	0.05	0.22	USAHQ-2015-00002028	6/30/2011	Yes	58.57	38.68	97.24	82%	79.74	Accotink
7592	38.712844	-77.170200	Cisterns & Rain Barrels	0.85	0.00	0.85	DOD-2018-00090982	4/23/2018	Yes	0.00	149.43	149.43	100%	149.43	Accotink
7158	38.757321	-77.194010	Dry Extended Detention Ponds - Level 1	4.11	2.46	1.65	USAHQ-2015-00002024	6/30/2011	Yes	2,881.45	290.07	3,171.52	60%	1,902.91	Accotink
7210	38.758240	-77.190821	Dry Extended Detention Ponds - Level 1	2.42	1.22	1.20	DOD-2006-000037407	6/30/2011	Yes	1,429.01	210.96	1,639.97	60%	983.98	Accotink
6818	38.754242	-77.188251	Dry Extended Detention Ponds - Level 1	21.4	7.06	14.34	USAHQ-2015-00002035	6/30/2012	Yes	8,269.52	2,520.97	10,790.49	60%	6,474.29	Accotink
6851	38.748945	-77.203711	Dry Extended Detention Ponds - Level 1	30.75	7.35	23.40	USAHQ-2015-00002034	6/30/2012	Yes	8,609.20	4,113.72	12,722.92	60%	7,633.75	Accotink
7223	38.747934	-77.192256	Dry Extended Detention Ponds - Level 1	8.68	3.65	5.03	USAHQ-2015-00002022	6/30/2012	Yes	4,275.32	884.27	5,159.59	60%	3,095.76	Accotink
6793	38.748878	-77.191666	Dry Extended Detention Ponds - Level 1	16.31	4.89	11.42	USAHQ-2015-00002036	6/30/2013	Yes	5,727.75	2,007.64	7,735.39	60%	4,641.23	Accotink
7894	38.715177	-77.176721	Dry Extended Detention Ponds - Level 1	0.53	0.30	0.23	FTBEL-2013-00554479	7/1/2013	Yes	351.40	40.43	391.83	60%	235.10	Accotink
7895	38.715472	-77.176392	Dry Extended Detention Ponds - Level 1	0.43	0.29	0.14	FTBEL-2013-00554480	7/1/2013	Yes	339.68	24.61	364.29	60%	218.58	Accotink
7896	38.715346	-77.175794	Dry Extended Detention Ponds - Level 1	0.41	0.15	0.26	FTBEL-2013-00554481	7/1/2013	Yes	175.70	45.71	221.41	60%	132.84	Accotink
4935	38.715006	-77.186798	Dry Extended Detention Ponds - Level 1	7.32	2.02	5.30	USAHQ-2015-00002066	1/1/2014	Yes	2,366.07	931.74	3,297.81	60%	1,978.68	Accotink
5773	38.735118	-77.166063	Dry Extended Detention Ponds - Level 1	9.94	7.35	2.59	USAHQ-2015-00002062	1/1/2014	Yes	8,609.20	455.32	9,064.52	60%	5,438.71	Accotink
7200	38.757269	-77.192690	Dry Extended Detention Ponds - Level 1	9.35	6.48	2.87	DOD-2006-000037410	8/9/2018	Yes	7,590.15	504.55	8,094.70	60%	4,856.82	Accotink
230	38.746981	-77.203280	Dry Swale	0.075	0.04	0.04	USN-2016-00017869	5/25/2016	Yes	43.34	6.68	50.02	70%	35.01	Accotink
7590	38.712397	-77.171012	Dry Swale - Level 2	2.24	1.39	0.85	DOD-2018-00090986	4/23/2018	Yes	1,628.13	149.43	1,777.56	70%	1,244.30	Accotink
9020	38.727047	-77.169683	Filter Strip - Compost Amendment	2.93	0.00	2.93	FTBEL-2011-00320350	12/1/2020	Yes	0.00	515.09	515.09	85%	437.83	Accotink
7246	38.754306	-77.197151	Green Roofs - Extensive	0.14	0.00	0.14	DOD-2006-000037220	6/30/2011	Yes	0.00	24.61	24.61	85%	20.92	Accotink
6647	38.751504	-77.196031	Green Roofs - Intensive	0.69	0.69	0.00	USAHQ-2015-00002041	6/30/2012	Yes	808.21	0.00	808.21	85%	686.98	Accotink
7196	38.757886	-77.191480	Infiltration Practices - Level 1	0.76	0.42	0.34	USAHQ-2015-00002023	6/30/2011	Yes	491.95	59.77	551.73	95%	524.14	Accotink
5749	38.721105	-77.163723	Infiltration Practices - Level 1	0.18	0.04	0.14	DOD-2018-00090997	10/30/2017	Yes	46.85	24.61	71.46	95%	67.89	Accotink
9019	38.726442	-77.170711	Infiltration Practices - Level 1	0.9	0.71	0.19	FTBEL-2011-00320349	12/1/2020	Yes	831.64	33.40	865.04	95%	821.79	Accotink
9021	38.726356	-77.169217	Infiltration Practices - Level 1	1.37	0.43	0.94	FTBEL-2011-00320351	12/1/2020	Yes	503.67	165.25	668.92	95%	635.47	Accotink
9023	38.722189	-77.172275	Infiltration Practices - Level 1	1.42	1.19	0.23	FTBEL-2011-00320353	12/1/2020	Yes	1,393.87	40.43	1,434.30	95%	1,362.59	Accotink
9024	38.723533	-77.170850	Infiltration Practices - Level 1	1.94	1.13	0.81	FTBEL-2011-00320354	12/1/2020	Yes	1,323.59	142.40	1,465.99	95%	1,392.69	Accotink
9025	38.721975	-77.172339	Infiltration Practices - Level 1	2.26	1.27	0.99	FTBEL-2012-00320355	12/1/2020	Yes	1,487.58	174.04	1,661.62	95%	1,578.54	Accotink
9026	38.725611	-77.169875	Infiltration Practices - Level 1	2.75	1.89	0.86	FTBEL-2018-00320356	12/1/2020	Yes	2,213.79	151.19	2,364.98	95%	2,246.73	Accotink
9027	38.724969	-77.170583	Infiltration Practices - Level 1	2.89	1.79	1.10	FTBEL-2019-00320358	12/1/2020	Yes	2,096.66	193.38	2,290.04	95%	2,175.54	Accotink
9028	38.724206	-77.170892	Infiltration Practices - Level 1	3.27	2.03	1.24	FTBEL-2019-00320359	12/1/2020	Yes	2,377.78	217.99	2,595.77	95%	2,465.98	Accotink
9029	38.722189	-77.169267	Infiltration Practices - Level 1	5.27	3.39	1.88	FTBEL-2019-00320360	12/1/2020	Yes	3,970.77	330.50	4,301.28	95%	4,086.21	Accotink
7594	38.713369	-77.170089	Infiltration Practices - Level 2	1.75	1.45	0.30	DOD-2018-00090987	4/23/2018	Yes	1,698.41	52.74	1,751.15	95%	1,663.60	Accotink
7595	38.713833	-77.170504	Infiltration Practices - Level 2	2.63	1.45	1.18	DOD-2018-00090990	4/23/2018	Yes	1,698.41	207.44	1,905.86	95%	1,810.57	Accotink
7891	38.714692	-77.175860	Permeable Pavement - Level 1	0.11	0.04	0.07	FTBEL-2013-00554477	7/1/2013	Yes	46.85	12.31	59.16	70%	41.41	Accotink
5900	38.716806	-77.168294	Permeable Pavement - Level 1	2.05	2.05	0.00	DOD-2018-00090995	11/8/2017	Yes	2,401.21	0.00	2,401.21	70%	1,680.84	Accotink
7809	38.756442	-77.192103	Permeable Pavement - Level 1	6.31	0.00	6.31	DOD-2018-00091022	8/9/2018	Yes	0.00	1,109.30	1,109.30	70%	776.51	Accotink
9018	38.726819	-77.169642	Permeable Pavement - Level 1	0.65	0.65	0.00	FTBEL-2006-00320344	12/1/2020	Yes	761.36	0.00	761.36	70%	532.95	Accotink
5744	38.721012	-77.163662	Vegetated Open Channels	0.14	0.04	0.10	DOD-2018-00090996	10/30/2017	Yes	46.85	17.58	64.43	85%	54.77	Accotink
161	38.755174	-77.198837	Vegetated Open Channels	0.31	0.04	0.27	DOD-2018-00090998	4/27/2018	Yes	46.85	47.47	94.32	85%	80.17	Accotink
6900	38.753906	-77.203098	Wet Pond - Level 1	4.62	1.80	2.82	USAHQ-2015-00002033	6/30/2011	Yes	2,108.38	495.76	2,604.13	60%	1,562.48	Accotink
6437	38.752591	-77.197936	Wet Pond - Level 1	16	10.89	5.11	DOD-2006-000037423	6/30/2012	Yes	12,755.67	898.34	13,654.01	60%	8,192.41	Accotink
Total				246.925	106.03	140.90			64	124,192	24,770	148,961		100,321	64