MS4 PERMIT YEAR 2021 ANNUAL REPORT
JULY 1, 2020 TO JUNE 30, 2021

FOR URBANIZED AREAS OF VIRGINIA

Virginia Department of Transportation Small Municipal Separate Storm Sewer System (MS4)

CERTIFICATION

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

Signature	Stephen C. Brich
Name	Stephen C. Brich, P.E.
Title	Commissioner of Highways
Organization	Commonwealth of Virginia, Department of Transportation
Date	9/30/2021

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ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
BMP	Best Management Practice
CGP	Construction General Permit
CRCIF	Construction Runoff Control Inspection Form
CWA	Clean Water Act
DCR	Virginia Department of Conservation and Recreation
DEQ	Virginia Department of Environmental Quality
DOD	Department of Defense
EPA	Environmental Protection Agency
ERAC	Environmental Research Advisory Committee
ESC	Erosion and Sediment Control
ESCCC	Erosion and Sediment Control Contractor Certification
FY	Fiscal Year
HUC	Hydrologic Unit Code
IDDE	Illicit Discharge Detection and Elimination
IP	Implementation Plan
L&D	Location & Design
LDA	Land-Disturbing Activity
LUP	Land Use Permit
MCM	Minimum Control Measure
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NMP	Nutrient Management Plan
O&M	Operations & Maintenance
ORI	Outfall Reconnaissance and Inventory
P2	Pollution Prevention
POD	Point of Discharge
PSA	Public Service Announcement
PY	Permit Year
RLD	Responsible Land Disturber
RLDA	Regulated Land Disturbance Activity
SWM	Stormwater Management
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TRB	Transportation Research Board
VAC	Virginia Administrative Code
VDOT	Virginia Department of Transportation
VESCLR	Virginia Erosion and Sediment Control Law and Regulations
VSMP	Virginia Stormwater Management Program
VPDES	Virginia Pollutant Discharge Elimination System
WIP	Watershed Implementation Plan
WLA	Wasteload Allocation

VDOT MS4 PROGRAM PLAN REVISION SUMMARY & ANNUAL REPORT BACKGROUND

The Virginia Department of Transportation (VDOT) is authorized to discharge stormwater from its municipal separate storm sewer system (MS4) by coverage under the Virginia Pollutant Discharge Elimination System (VPDES) *Individual Permit for the VDOT Municipal Separate Storm Sewer System (MS4)* (the Permit) within the urbanized areas of Virginia. As part of the original permit authorization (originally under a general permit), VDOT developed and implemented an MS4 Program Plan (the Plan) with best management practices (BMPs) to address the six minimum control measures (MCMs) and the special conditions for applicable total maximum daily loads (TMDLs) outlined in the Permit. The program plan has been refined and updated throughout the life of the program and permit(s).

In accordance with VDOT's coverage under the new 2017 Individual Permit, VDOT has updated its MS4 Program Plan to address new permit requirements (including the addition of MCM7 – Infrastructure Coordination) as well as enhance BMPs through the adaptive management process. This updated Program Plan was submitted to the Virginia Department of Environmental Quality (DEQ) on December 15, 2019 Implementation of these BMPs is consistent with the provisions of an iterative MS4 Program. Consistent with EPA interpretation, the DEQ has determined that implementation of the MS4 Program Plan, provided that the plan meets the requirements of the Permit, will reduce the discharge of pollutants to the Maximum Extent Practicable (MEP). No other revisions to the Plan have been made since the June submittal.

BMPs that are included in the Plan follow a prescribed alpha-numeric nomenclature that is based on the respective MCMs, the numbers of BMPs for each MCM, and the responsible Division. For example, BMP 3(B)(2) refers to the following:

BMP	3	MCM 3: Illicit Discharge Detection and Elimination
	(B)	The second BMP to address the requirements of MCM 3

Note: BMPs associated with the special conditions for approved TMDLs are assigned a BMP of SC1 (Chesapeake Bay TMDL) or SC2 (Local TMDLs), as appropriate.

The area regulated by the MS4 Permit (herein referred to as the regulated area) covers areas discharging to an MS4 that is owned and/or operated by VDOT and located within one of the urbanized areas of Virginia. Urbanized areas as identified by the 2010 Decennial Census are listed below.

- Blacksburg
- Bristol
- Charlottesville
- Fredericksburg
- Harrisonburg
- Kingsport
- Lynchburg
- Richmond
- Roanoke
- Virginia Beach
- Washington, DC
- Winchester
- Staunton-Waynesboro
- Williamsburg

ANNUAL REPORT ORGANIZATION

This Annual Report utilizes an outline similar to that of the Program Plan for organizational reporting purposes. The annual reporting elements referenced within the respective IP MCMs are identified in the MS4 Individual Permit Cross Reference table below and noted as *Annual Report requirements*. Each is addressed in the third column of each BMP as noted in the table and as appropriate. Notably, each Plan MCM component contains a BMP titled *Annual Report and Effectiveness*.

Permit Reference	Permit Description	MS4 Program Plan BMP
Section I.B.2.c	List of documents incorporated by reference	Reference Document List
MCM1		
Section I.C.1.a.i-iv	Maintain a webpage	BMP 1(A)
Section I.C.1.b.i	Maintain a webpage	BMP 1(A)
Section I.C.1.b.ii	Program for illicit discharges, trash, debris and litter	BMP 1(A,B)
Section I.C.1.b.iii	Signage for pet waste, etc.	BMP 1(B)
Section I.C.1.c	Allowance for regional partnering	N/A
Section I.C.1.d	Include written procedures for Implementation	BMP 1(A-C)
Section I.C.1.e	Annual Report requirements	BMP 1 (C)*
MCM2		
Section I.C.2.a.i	Adopt-A Highway	BMP 2(A)
Section I.C.2.a.ii	Stenciling Program	BMP 2(B)
Section I.C.2.a.iii	Development of local TMDLs	BMP 2(C)
Section I.C.2.a.iv	Promote four stream cleanups	BMP 2(D)
Section I.C.2.b	Include written procedures	BMP 2(A-D)
Section I.C.2.c	Annual Report requirements	BMP 2(E) *
MCM3		
Section I.C.3.a	Prohibit non-stormwater discharges	BMP 3(B), 6(E)
Section I.C.3.b	Maintain IDDE manual	BMP 3(C)
Section I.C.3.c	Training program	BMP 3(C)
Section I.C.3.d	Spills	BMP 3(B)2
Section I.C.3.e	GIS System Map	BMP 3(A)
Section I.C.3.f.i	Program Plan requirements	MCM2 (footnote)
Section I.C.3.f.ii	Program Plan requirements	BMP 3(C)
Section I.C.3.f.iii	Program Plan requirements	MCM2 (footnote), 3(B)2
Section I.C.3.f.iv	Program Plan requirements	BMP 3(A)
Section I.C.3.g	Annual Report requirements	BMP 3(D)*
MCM4		
Section I.C.4.a	Standards and Specs	BMP 4(A)

Permit Reference	Permit Description	MS4 Program Plan BMP
Section I.C.4.b	Procedures for Compliance Inspections	BMP 4(B)
Section I.C.4.c	Track compliance	BMP 4(B)
Section I.C.4.d	Program Plan requirements	BMP 4(A), 4(B)
Section I.C.4.e	Annual Report requirements	BMP 4(B)*
MCM5		
Section I.C.5.a	Standards and Specs	BMP 5(A)
Section I.C.5.b	Standards and Specs	BMP 5(A)
Section I.C.5.c	Inspection BMPs	BMP 5(B)
Section I.C.5.d	Documentation of BMPs	BMP 5(B)
Section I.C.5.e	Definition of Maintenance	N/A
Section I.C.5.f	Database of BMPs	BMP 5(A)
Section I.C.5.g	Report installation for post construction	BMP 5(A)
Section I.C.5.h	Report installation not reported in 5.g	BMP 5(B)
Section I.C.5.i	Annual Report Requirements	BMP 5(C)*
MCM6		
Section I.C.6.a.i-v	Written maintenance procedures	BMP 6(A)1, 6(A)2
Section I.C.6.b	Dumping yard waste	BMP 6(A)
Section I.C.6.c	Management of leaked fluids	BMP 6(B)
Section I.C.6.d	Vehicle wash pad	BMP 6(A)
Section I.C.6.e	HPF SWPPPs	BMP 6(A)
Section I.C.6.f	Management of roadways and parking lots.	BMP 6(A)
Section I.C.6.g	Turf and Pesticide Management	BMP 6(A), 6(B)
Section I.C.6.h	Training	BMP 6(C)
Section I.C.6.i	Program Plan Requirements	N/A
Section I.C.6.j	Annual Report Requirements	BMP 6(E)*
MCM7		
Section I.C.7.a	Annual coordination meeting	BMP 7(A)
Section I.C.6.b	Mapping	BMP 7(A)
Section I.C.6.c	Chesapeake Bay TMDL Action Plans	BMP 7(A)
Section I.C.6.d	Other TMDL Action Plans	BMP 7(A)
Section I.C.6.e	Credit for TMDL Implementation	BMP 7(A)
Section I.C.6.f	IDDE	BMP 7(A)
Section I.C.6.g	Small MS4 Coordination	BMP 7(A)
Section I.C.6.h	Annual Report requirements	BMP 7(A)*
TMDL SC Requirements Affecting other MCMs		
Section I.E.3b	Septic Requirements	BMP 6(A)2
Section I.E.4.b	Excessive sediment loading	Annual S&S
Section I.E.4.c	Excessive sediment loading	BMP 3(C)

Permit Reference	Permit Description	MS4 Program Plan BMP
Section I.E.5.b	PCB reporting	BMP 3(C)

** NOTE – Each MCM in the Program Plan includes a BMP to address Annual Reporting requirements as highlighted in the Permit Cross Reference table above. While this BMP serves to summarize annual reporting requirements as specified in the IP, more detailed information is included within the "Annual Report Information" column of other BMPs as appropriate and referenced to provide supporting documentation.*

MCM#1:
PUBLIC EDUCATION AND OUTREACH ON STORMWATER IMPACTS[1]

[1] VDOT's Permit does not define the term "public". However, VDOT is required to provide outreach to the public including its employees and contractors regarding proper disposal of pet waste and trash and identification and reporting of illicit discharges. VDOT is also required to implement the use of signage at its safety/rest areas to promote proper trash disposal. Therefore, the public, for the purposes of this permit condition, is considered to be VDOT's employees, hired contractors, and travelers using VDOT's fixed facilities such as rest areas. VDOT does not consider travelers along the roadway system as part of the "public" for the purpose of developing targeted public outreach strategies. However, VDOT has developed education material that may incidentally reach these travelers, which will have a positive benefit outside of VDOT's right-of-way.

BMP 1(A) – Maintain and Update Stormwater Webpage

Description and Measurable Goal:	Maintain and update a webpage dedicated to MS4 and stormwater, as it pertains to roads, highways, and permittee owned or operated facilities on the VDOT website (referred to herein as the "VDOT Stormwater Webpage").
Lead Division:	Location & Design
Reference Materials:	VDOT Stormwater Webpage

Efforts and Expected Results in Meeting Measurable Goal	Implementation Schedule	Annual Report Information
Maintain and update VDOT Stormwater Webpage to communicate MS4 program elements.	Webpage was previously developed. VDOT will continue to update webpage with necessary information as discussed in other parts of this Program Plan.	VDOT has maintained its stormwater webpage with educational information including copies of the MS4 Program Plan and copies of the annual reports. VDOT will continue to maintain the website throughout the next permit year. https://www.virginiadot.org/business/locdes/water_resources_program.asp This webpage includes the MS4 Program Plan, annual reports, other program documents, contact information, announcements, and other useful resources.
Provide instructions for the public on how to report illicit discharges, improper disposal, or spills to the MS4 or other potential stormwater pollution concerns	Webpage was previously developed. VDOT will update webpage with necessary information as discussed in other parts of this Program Plan.	VDOT has maintained its link for the public to report illicit discharges, improper disposal. IDDEReports@VDOT.Virginia.gov.

BMP 1(B) – Signage at Rest Areas and Welcome Centers

Description and Measurable Goal:	Provide informational signage at rest areas identified in permit.
Lead Division:	Maintenance
Reference Materials:	Templates for Pet Waste and Litter Signage

Expected Efforts and Results in Meeting Measurable Goal	Implementation Schedule	Annual Report Information
Continue to install and maintain informational signage for disposal of pet waste, litter, debris and trash at rest areas and welcome centers within urbanized areas*.	Message signs were previously developed and reported to DEQ. Facility signage was installed during first six months of permit term. VDOT will continue to maintain signage.	a. The pet waste station maintenance and restocking is part of VDOT's Monthly Quality Assessment Review/Safety Rest Area Inspection Program. This inspection reviews the Pet Stations for functionality and to assure they are being maintained and stocked. The pet waste stations are stocked with disposal bags as part of the normal maintenance operation. As part of the daily good housekeeping procedures for trash and debris removal, any pet waste discovered is picked up and placed in the appropriate trash receptacle. The number of pet stations remains the same as previously reported -- VDOT has them in all 42 Safety Rest Areas, 11 of which are within Census Urban Areas subject to our MS4 Permit Program. No new Safety Rest Areas were established and no major rebuilds were completed this last year. During the last year deteriorated or damaged pet stations were replaced as needed. The latest figures we have, for 2018, indicate that 35,200,900 people visited VDOT Rest Areas and Welcome Centers across the state and were exposed to our Pet Waste messaging and facilities. However, VDOT believes that due to the Covid-19 pandemic during the past permit year, substantially fewer people drove on Virginia interstate highways and took advantage of our pet waste stations at VDOT Safety Rest Areas and Welcome Centers. b. VDOT has installed a total of 16 Litter Control signs at 11 Safety Rest Areas/Welcome Centers located within Census Urban Areas subject to our MS4 permit. The latest figures we have, for 2018, indicated that 12,012,200 people visited the 11 MS4 area Rest Areas/Welcome Centers where VDOT had litter control signs posted and were exposed to that messaging. However, VDOT

		believes that due to the Covid-19 pandemic during the past permit year, substantially fewer people drove on Virginia interstate highways and visited VDOT Safety Rest Areas and Welcome Centers.

BMP 1(C) – Annual Reporting and Effectiveness Review

Description and Measurable Goal:	Provide annual reports and assess effectiveness of outreach efforts.
Lead Division:	Location & Design
Reference Materials:	VDOT Stormwater Webpage*

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Continue to post Program Plans and Annual Reports.	The Program Plan will be posted on the VDOT webpage within 30 days after submittal to DEQ. Within 30 days of any modification to the Program Plan, the latest version will be posted. Annual reports will be posted on the web page within 30 days of submittal to DEQ, or by November 1st of each year.	VDOT has continued to post its MS4 Program Plan and Annual Reports on its stormwater webpage located at: https://www.virginiadot.org/business/locdes/water_resources_program.asp This past year represents the fourth year that VDOT operated under the IP. The current version of the Program Plan is dated December 15th, 2019, and a copy was posted to the website within 30 days after that date. Minor updates to the Program Plan were made during PY20. This Annual Report is also the fourth to be submitted under the IP period of coverage versus the General Permit (GP) previously. The reporting structure was revised in PY18 to reflect the updated IP and PP elements. This Annual Report will be posted within 30 days of final submittal to DEQ.
Assessment of the effectiveness of the outreach program	Annually	VDOT has evaluated each of the practices and we believe that the BMPs are appropriate and effective. Per Section I.C.1.e of the IP and in regards to Educational and Outreach Programs: 1.) Illicit discharge identification and public reporting and/or improper disposal of materials into the MS4. VDOT has a dedicated IDDE email and point of contact for the public to report illicit discharges as advertised on its dedicated stormwater site. VDOT delivers training to appropriate staff, maintenance operators and contractors in how to identify and report illicit discharges. See MCM 3 in this Annual Report for more specific information. The estimated number of individuals reached through these activities is reported in MCM3. This estimate was

		calculated by tallying the number staff trained during SWPPP and Good Housekeeping and Pollution Prevention for Contractors MS4 training modules. VDOT has developed a VDOT Illicit Discharge Detection and Elimination Program Manual and a field guide. The field guide has been distributed to VDOT field staff and key maintenance personnel. 2.) Proper disposal of trash, debris, and litter. VDOT estimates that approximately 12,000,000 people visited the 11 Rest Areas/Welcome Centers where VDOT installed and had litter control signs posted and were exposed to that messaging. VDOT uses continuous vehicular monitoring equipment at some of its Rest Areas/Welcome Centers, and occasionally utilizes temporary counters at others, to provide a total count estimate of vehicular visits per day. The latest information for these areas is 2016, which was used by the Maintenance Division as the basis for approximating and estimating total visits by the public. 3.) Informational Signage for proper disposal of litter, debris and trash was installed at 11 Rest Areas/Welcome Centers as noted previously. VDOT estimates approximately 12,000,000 people visited these sites. For pet waste, VDOT estimates that approximately 35,000,000 people visited all Rest Area and Welcome Centers during the past year where pet waste messaging and facilities were installed. VDOT uses continuous vehicular monitoring equipment at some of its Rest Areas/Welcome Centers, and occasionally utilizes temporary counters at others, to provide a total count estimate of vehicular visits per day. The latest information for these areas is 2016, which was used by the Maintenance Division as the basis for approximating and estimating total visits by the public. 4.) Other Educational and Outreach Programs a.) Watershed Signs – During PY21, two (2) watershed signs were updated in Fluvanna County along Route 20. To date, VDOT has installed approximately 144 watershed signs within the MS4 service area and plans to continue to maintain them.

		b.) Through annual coordination meetings, VDOT met with eleven Phase 1 MS4s to discuss and coordinate illicit discharge reporting procedures, Chesapeake Bay TMDL Action Plans and Implementation, points of contact, and other related topics to assist with achievement of this MCM. c.) Virginia is for Lover's not Litter-During PY21 VDOT rolled out the "Virginia is for Lover's not Litter" campaign and website. https://loversnotlitter.org/ The Public Education and Outreach component has been successful. VDOT completed the MS4 public storymap using friendly centrally located web-based type platform. This includes, for example, the use of georeferenced events and interactive mapping to share with the public and staff activities that are underway or planned, and allows for access to more information and the opportunity for more individuals, including the public, to increase their awareness of certain program elements (e.g. Pet Waste Stations at Rest Areas, etc).

MCM#2:
PUBLIC INVOLVEMENT/PARTICIPATION

BMP 2(A) – BMPs for Public Involvement Activities: Adopt a Highway

Description and Measurable Goal:	Promote, support, and maintain public involvement activities that encourage public awareness of stormwater pollution
Lead Division:	Maintenance
Reference Materials:	Adopt-A-Highway Documentation VDOT's Stormwater Page

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Continue to promote the Adopt-A-Highway program.	Annually promote Adopt-A-Highway through use of VDOT's stormwater webpage*.	VDOT estimates at this time that as of June 30, 2021: - The AAH program has a total of 9,535 miles of roadway adopted, including Interstate highways and interchanges, primary roads and secondary roads; - This is an increase of 620 adopted miles over the number reported last year; - Our data shows that 12,864 individuals participated in the program this past permit year; - This is a decrease of 10,519 below the number reported for the previous permit year. VDOT attributes the increase in mileage and the decline in participation to the Covid-19 pandemic. Adoption of highway segments gave people something they could do safely alone outdoors and Covid-related considerations kept the size of the pickup groups small. The above information is VDOT's current best estimate based on available reported information and existing AAH Access database that is currently in use at this time. However, it is currently difficult for VDOT to report precisely regarding the Adopt-a-Highway (AAH) program. VDOT's AAH database is still in the process of being updated. VDOT is aiming to collect this data in the future using a new geo-referenced GIS database, updated guidance, and associated interactive mapping tool, which VDOT believes will improve accuracy and reporting. The update process has been interrupted and we still have some data reporting inconsistencies within our old data system for the program.

BMP 2(B) – BMPs for Public Involvement Activities: Storm Drain Stenciling

Description and Measurable Goal:	Promote, support, and maintain public involvement activities that encourage public awareness of stormwater pollution
Lead Division:	Office of Land Use
Reference Materials:	VDOT's Stromwater Page LUP-SDS The number and location of LUP's that were issued for stenciling activities

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Promote and support a public storm drain stenciling program through the Land Use Permit Program to promote public awareness of stormwater pollution	Annually promote storm sewer stenciling through use of VDOT's stormwater webpage.	VDOT issued two (2) storm drain stenciling permits during the PY. While few permits were issued, VDOT has determined this BMP is still appropriate to the program. During the updates to the stormwater webpage, VDOT included a link to the Land Use Permit program should individuals desire additional information. These include: - LUP-A: Land Use Permit Application for Storm Sewer Stenciling http://www.virginiadot.org/business/resources/land_use_regs/newPermitPackages/LUP-A.pdf - LUP-SPG Permittee Agreement for Storm Sewer Stenciling http://www.virginiadot.org/business/resources/land_use_regs/LUP-SPG_Special_Provisions_-_General.pdf

BMP 2(C) – Participation in Development of Local TMDLs

Description and Measurable Goal:	Track activities in which VDOT participated related to development of Local TMDLs.
Lead Division:	Environmental
Reference Materials:	

Expected Efforts and Results in Meeting Measurable Goal	Implementation Schedule	Annual Report Information
Continue to participate in the development of local TMDLs in watersheds located within the CUA and in which the VDOT MS4 discharges.	Annually participate on local TMDL technical advisory committees, when applicable.	VDOT participated in 6 TMDL technical advisory committee meetings during the reporting year. A list of these committee meetings is provided in Appendix A.
Continue to participate in the development of local TMDLs in watersheds located within the CUA and in which the VDOT MS4 discharges.	Annually participate in local TMDL and watershed implementation plans, when applicable.	VDOT participated in 7 local TMDL and watershed implementation plan meetings. A list of these meetings is provided in Appendix A.
Continue to participate in activities with goals to reduce stormwater pollutant loads; improving water quality, & supporting local water quality restoration.	Annually participate in activities, when applicable and appropriate.	VDOT participated in approximately 43 activities. VDOT will participate in similar activities in subsequent permit years, when applicable and appropriate. A list of these meetings is provided in Appendix A.

BMP 2(D) – BMPs for Public Involvement Activities: Stream Cleanups

Description and Measurable Goal:	Promote, support, and maintain public involvement activities that encourage public awareness of stormwater pollution
Lead Division:	Location & Design
Reference Materials:	

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Promote four local area stream clean-ups sponsored by VDOT or other organizations.	Annually promote Local Stream Clean-Ups through use of VDOT's stormwater webpage.	VDOT promoted several Stream Cleanup Events during the reporting year including: 1. Project Clean Stream – Beginning 9/11/2020 2. James River Regional Cleanup, James River Advisory Council, 9/12/2020 3. James River Cleanup, ASCE Richmond, 10/10/2020 4. Potomac River Watershed Cleanup, Alice Ferguson Foundation, 4/10/2021 5. Clean the Bay, Chesapeake Bay Foundation, 5/31/2021 to 6/5/2021 6. James River Cleanup. James River Advisory Council, 9/11/2021

BMP 2(E) – Annual Reporting and Effectiveness Review

Description and Measurable Goal:	Report efforts and results of Public Involvement/Participation BMPs in the Annual Report and Monitor Effectiveness
Lead Division:	Location & Design
Reference Materials:	

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Summarize Activities in BMP 2A-2D as required by permit.	Annually.	The information to demonstrate compliance with each control measure practice for this MCM are itemized in BMPs 2A-2D above.
Summarize other public involvement activities.	Annually.	The following is a summary of other activities (other than those listed under BMP 2A-2D) in which VDOT participated or was the sponsor with the goal of improving water quality; and supporting local water quality restoration include: 1.) VDOT participated in meetings, workshops, or conferences with environmental organizations during the reporting year: A list of these meetings is provided in Appendix A. 2.) VDOT participated in coordination meetings with 11 other Localities to discuss MS4 and infrastructure coordination during the reporting year. A list of these meetings is provided under Annual Report Information in MCM 7. 3.) Other Public Involvement Activities: - Trash cleanup by VDOT employees on Transportation Day, May 27, 2021. - Coordination with Fairfax County on county funded trash cleanup program in conjunction with Adopt a Highway for access. Operation Stream Shield (OSS) partners with local homeless shelters to pay residents to pick up trash and litter. In PY21 OSS resulted in 862 bags of trash being picked up from VDOT R/W with a total weight of 4,090 lbs. - Pollinator planting event at the New Kent East Coast Gateway Safety Rest Area and Welcome Center was held in June, 2021 to promote pollinator habitat, environmental stewardship, and water quality.

		Activities conducted and/or promoted in the list above may continue, however the specific events may vary and increase or decrease as the opportunities arise and as appropriate.
Identify Partners	Annually.	The following is a summary of any other activities (other than those listed in BMP 2A-2D) in which VDOT participated (e.g. workshops, meetings) or which VDOT sponsored with the goal of reducing stormwater pollutant loads; improving water quality; and supporting local water quality restoration. 1.) VDOT participated in meetings, workshops, or conferences with environmental organizations during the reporting year: A list of these meetings is provided in Appendix A.
Evaluate and describe effectiveness of each strategy and practice.	Annually.	VDOT has evaluated each of the practices and we believe that the BMPs are appropriate and effective. Notable achievements and potential future activities leading to increased effectiveness are described below. VDOT made a number of advancements and achievements over past reporting year including: - VDOT has been active with public participation and involvement over the past year through a variety of venues including workshops, conferences, TMDL meetings, public events, MS4 coordination meetings, and others. - Stream cleanup events and the promotion of them represent a new IP element for PY18. VDOT L&D Division coordinated effectively with its Communications Division at both the Central Office and Districts to communicate through existing channels on social media. - Adopt-a-Highway Program represents a new IP element as of PY18. The agency began the process of updating the tracking and reporting database associated with this program in PY18 and PY19. VDOT is still in the process of creating a new, geo-referenced database, guidance, and associated map for its use. It is currently in the final testing phase and will be publicly made available in the very near future.

		- Pet Waste, Litter and Watershed Signage Mapping. The georeferenced locations of VDOT signage, which was previously available in the form of a list, has been transferred and been made available in a format that is an interactive map and is available to the public through a map on VDOT's website through an ESRI ArcGIS Suite Storymap. The following are program elements that VDOT anticipates undertaking over the permit cycle including in part or in whole during the upcoming PY: - Adopt-a-Highway (AAH) Program – The legacy AAH database was an Access based system. VDOT is in the process of updating and converting this system to a new map based geo-referenced database available to the public, and anticipates that we should be able to better track and report information in the future. This includes conducting an analysis of whether there has been an increase or decrease in public participation over time. The first phase planned is a roll out to District Adopt A Highway Coordinators. The second phase is evaluating the potential to allow for direct inputs by the pubic directly with review by Adopt A Highway Coordinators. - The promotion of stream cleanup events and public participation and involvement may be enhanced with a new web based app that can be used by the public to submit events for broader awareness. This app has an interactive mapping interface and may be a part of the Storymap that VDOT has completed and made available on its stormwater website during the PY21 period.

MCM#3: ILLICIT DISCHARGE DETECTION AND ELIMINATION[2]

[2] BMP 3(C) – Illicit Discharge Detection and Elimination Program Note: VDOT has developed an Illicit Discharge Detection and Elimination (IDDE) Program to address illicit discharges that originate within VDOT's property and right-of-way as well those that originate outside of VDOT's right-of-way, but enter VDOT's MS4. VDOT actively screens, investigates, and eliminates illicit discharges that originate within its right-of-way to the MEP. VDOT actively screens and investigates illicit discharges that enter its MS4 from an external source. However, VDOT does not have direct legal authority to prohibit or eliminate these sources, as VDOT has limited enforcement authority outside its right of way or property boundaries. As such, VDOT refers discovered illicit dischargers to the regulatory agencies and other MS4s as described in VDOT's IDDE manual.

In addition to any regulatory requirements, VDOT, DEQ, and VDEM have established guidelines regarding coordination of transportation-related pollution incidents. The guidelines were outlined in the April 5, 2005 version of the DEQ Pollution Response Manual and provide a framework whereby DEQ, VDEM, and VDOT work with first responders (e.g. local fire departments, state and local police) to ensure these incidents are handled appropriately and in an efficient manner. The spill response program may include a combination of response actions by the permittee, and/or another public or private entity. For purposes of this permit:

- Fluids from vehicular accidents are not handled through the IDDE program;
- For Section I.C.3.g.ii-"Significant spills" is defined as those that require formal regulatory reporting or pose an imminent threat to human health or the environment.

BMP 3(A) – Storm Sewer Map

Description and Measurable Goal:	Develop and maintain a storm sewer map that supports a successful Illicit Discharge Detection and Elimination (IDDE) Program. The map, at a minimum, will include: • The permittee's MS4 service area based on the CUA as determined by the U.S. Census Bureau's 2010 census; • Location of all outfalls owned or operated by the permittee discharging to state waters; • Known points of discharge to downstream, directly adjacent MS4s; • A unique identifier for each outfall and point of discharge; • Names of receiving waters to which the outfalls discharge; and • Stormwater management facilities owned or operated by the permittee.
Lead Division:	Location & Design
Reference Materials:	Storm Sewer Map VDOT Right of Way Determination and Mapping Protocols VDOT Outfall Inventory Manual

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Complete storm sewer system map.	Storm sewer map was previously developed. VDOT will update with necessary information as needed.	VDOT has developed and updated over time a storm sewer map which includes as described herein a compilation of VDOT's MS4 service area, outfalls discharging to state waters and known points of discharge with unique identifies, and stormwater management facilities owned or operated by VDOT. Outfalls and known points of discharge, each with unique identifies, are hosted in an ArcGIS mapping database. Over the PY18 reporting period, VDOT generated a statewide Up-to-date Service Area GIS map based on its 2017 Linear Referencing System (LRS) road centerline layer release and 2010 CUA for areas inside and outside the Chesapeake Bay in accordance with written procedures that were developed for documentation purposes. VDOT's stormwater management facility BMP Inventory and Inspection information is hosted in the ArcGIS Suite in a uniform centralized database solution. The database was migrated from an ArcGIS Online platform to the ArcGIS Portal during PY20 in coordination with the VDOT IT Division. These facilities are kept up to date in accordance with written procedures and by trained staff in each of the nine (9) VDOT Districts in coordination with

		VDOT Central Office through the inventorying of BMPs as they come online through project delivery and inspection/acceptance procedures throughout the year. A major undertaking in PY20 and PY21 is the updating of the stormwater BMP database fields in Survey 123 and ArcGIS portal to reflect recent BMP maintenance research and associated updates to the VDOT BMP Inspection and Maintenance Manual. These updates are anticipate to result in a more comprehensive and better end product to align District efforts and better ensure data consistency statewide VDOT's storm sewer mapping GIS components are continually reviewed by VDOT and improved over time to maintain the mapping database.

BMP 3(B)1 - Prohibition of Non-Stormwater Discharge

Description and Measurable Goal:	Prohibit non-stormwater discharges into the storm sewer system through updated manuals of practice.
Lead Division:	Maintenance
Reference Materials:	Maintenance Best Practices Manual*

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Continue to develop and refine appropriate practices in the Maintenance Best Practices Manuals to prohibit non-stormwater discharges from VDOT operations.	This BMP is currently implemented and is continuously updated. Revisions will be made as appropriate to update this Manual.	The VDOT Maintenance Best Practices Manual continues to be implemented, in order to ensure that discharges of pollutants from roads, streets and parking lot maintenance are being prevented or minimized. VDOT's Maintenance Division completed an update of the Manual during the previous permit year, adding a new "Environmental" chapter and inserting references to Environmental Division policies and guidance documents related to various kinds of maintenance activities.

BMP 3(B)2 - Prohibition of Non-Stormwater Discharge

Description and Measurable Goal:	Prohibit non-stormwater discharges into the storm sewer system
Lead Division:	Environmental
Reference Materials:	Waste Management and Pollution Prevention Guides Transportation-related Incident Procedures

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Continue to develop and refine appropriate practices in the Waste Management & Pollution Prevention Guides to prohibit non-stormwater discharges from VDOT operations.	This aspect of the BMP is currently implemented and is an ongoing effort. The WM/PP Guide will be reviewed each year.	The Facility Waste Management and Pollution Prevention Guide was updated in June 2019. The Guide was also reviewed this permit cycle (January 2021) and sections were identified where updates would be beneficial for additional clarifications. The updated Guide is expected in PY 2022.
Continue to support VDOT's role consistent with the guidelines detailed in the DEQ, VDOT, and VDEM Coordination of Transportation-Related Incidents, or subsequent agreement, in response to spills that may discharge into the MS4 via roadside ditches.	This aspect of the BMP is currently implemented and is an ongoing effort.	VDOT continues to support its role in multi-agency coordination of transportation related incidents.

BMP 3(B)3 – Prohibition of Non-Stormwater Discharge

Description and Measurable Goal:	Review of legal authorities to continue providing adequate legal authority.
Lead Division:	Location & Design
Reference Materials:	Laws, Regulations, permit(s), Program Plan, and related VDOT Governance Documents

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Review and update legal authorities, if necessary, such as permits, orders, contracts, and inter-jurisdictional agreements.	24 months from permit effective date (6/30/2019).	The MS4 Program has completed its review of VDOT's legal authorities, such as permits, orders, contracts, and inter-jurisdictional agreements. Upon completion of this effort, we have concluded the Department has adequate legal authority to control or support control of discharges to and from the VDOT MS4.

BMP 3(C) – Illicit Discharge Detection and Elimination Program

Description and Measurable Goal:	Utilize written procedures to detect, identify, and address unauthorized non-stormwater discharges, including illegal dumping, to VDOT's MS4.
Lead Division:	Environmental
Reference Materials:	VDOT IDDE Program Manual VDOT IDDE Field Guide IDDE Geodatabase Storm Sewer Map

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Ensure that proper notifications are made if certain pollutants are identified as entering VDOT's system from non-VDOT sources.	Incorporate notification provisions into VDOT IDDE Field Guide during PY19. Update IDDE Program Manual as appropriate.	Proper notification language was incorporated into the PY20 update of the IDDE Program Manual, and in PY19 update of the IDDE Field Guide.
Maintain, modify and update the IDDE Program Manual and Field Guide, as warranted.	This aspect of the BMP is currently implemented and is an ongoing effort.	The IDDE Program Manual underwent a revision in PY20. The updated guide outlines steps VDOT personnel and the public can use to report suspected illicit discharges, the process VDOT Illicit Discharge Team members use to report or resolve illicit discharges, as well methods used to track illicit discharge reports in a geodatabase. In PY19, the IDDE Field Guide was streamlined and converted to a smaller format for easier field use by maintenance and field crews. The guide includes contact information for reporting illicit discharges, as well as color photos and diagrams outlining the investigation and reporting process. Copies of the guide have been distributed to all VDOT maintenance facilities within 3 miles of an MS4 area. Copies of both the IDDE Program Manual and Field Guide are available on VDOT Stormwater webpages, as well as by request to the VDOT MS4 group.
Develop, update, offer and deliver IDDE Training Materials for appropriate VDOT staff, maintenance operators, and contractors in how to	This aspect of the BMP is currently implemented and is an ongoing effort. Appropriate VDOT maintenance operators and contractors will be offered	VDOT has an IDDE training video available on various digital platforms including YouTube, the internal VDOT Virtual Campus, and the Electronic Bulletin Boards found at VDOT facilities.

<table>
<tr>
<td>identify and report illicit discharges.</td>
<td>IDDE training once every five years.</td>
<td>Additionally, several other MS4-related educational modules provide training on aspects of illicit discharges, including the Facility SWPPP and Good Housekeeping and Pollution Prevention for Contractors trainings.

This permit year, language requiring the viewing of the Illicit Discharge Detection and Elimination training video was inserted into various new/renewed maintenance and facility contracts (i.e. mowing contracts, salt distribution contracts, etc.). Prior to the start of work, contractors are required to notify VDOT that relevant employees have viewed the training, as well as the number of trainees. Since January 2021 the training requirement language has been inserted into at least 13 contracts and is expected to see greater adoption as contracts expire and new contracts awarded.

During PY21, VDOT provided IDDE-related training to approximately 1,444 employees and contractors. For a further breakdown of training numbers, see BMP 6(C)1.</td>
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<td>Continue to perform investigations associated with potential illicit discharges as appropriate using VDOT’s IDDE Program Manual procedures. Effort is to be coordinated with Maintenance Division and other VDOT Divisions, as appropriate.</td>
<td>This aspect of the BMP is currently implemented and is an ongoing effort – follow-up investigations will be performed in accordance with the VDOT IDDE Program Manual.</td>
<td>Forty-five (45) potential illicit discharges were reported to VDOT’s IDDE program in Permit Year 2020-2021. Based on follow-up investigation, 31 reported discharges were determined not to qualify as illicit discharges and the reports were closed. VDOT’s efforts to resolve the 14 confirmed discharges are summarized below. A detailed copy of the reports, and the IDDE tracking geodatabase, can be obtained by contacting the Environmental Division’s MS4 group.

VDOT or VDOT contractors were the responsible party in two confirmed illicit discharges within MS4 areas.

<table>
<tr><th>District</th><th>Reported</th><th>Confirmed</th></tr>
<tr><td>Bristol</td><td>0</td><td>0</td></tr>
<tr><td>Culpeper</td><td>0</td><td>0</td></tr>
<tr><td>Fredericksburg</td><td>0</td><td>0</td></tr>
<tr><td>Hampton Roads</td><td>1</td><td>0</td></tr>
<tr><td>Lynchburg</td><td>0</td><td>0</td></tr>
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		Northern Virginia **19** **8** **Richmond** **23** **6** **Salem** **2** **0** **Staunton** **0** **0** **TOTAL** **45** **14** **<u>Summary of IDDE's confirmed:</u>** **Northern Virginia (NOVA) District** 1. The NOVA district NPDES Coordinator forwarded a citizen complaint of a hydraulic line break and spill into a roadside ditch in a residential area of the town of McLean, VA. VDOT personnel immediately responded to the area and determined that a VDOT-contracted tree-trimming company had a hydraulic line break and spill. The VDOT Regional Hazardous Materials Manager contracted an on-call environmental firm to clean up the spill and return the ditch to use. Cleanup was performed the next day, all recoverable material removed, and the ditch returned to previous grade. Thus the report was closed. 2. A contractor with the VDOT I-66 Outside the Beltway project noted recent sediment deposition in a streambed and turbid water discharging into VDOT ROW/Project Limits of Disturbance. Tracing the issue upstream, it was determined to originate from a broken water main in the area of Pekay St. At the time of discovery, employees from the town of Vienna were onsite and working to repair the water main break. The town of Vienna notified DEQ of the sediment deposition/discharge, and undertook additional cleanup and repairs to remove any recoverable sediment from VDOT stormwater pipes and outfalls. The five-day follow up report provided to DEQ indicated all cleanup had been appropriately completed, and the report was closed. 3. Inspectors with the VDOT I-66 Outside the Beltway project noted a black sludge/discharge into a newly installed triple

		box culvert. Further investigation showed a utility contractor pumping substances from manholes in the Dunn-Loring Metro station parking area and directing the discharge to VDOT storm sewer inlets. The incident was forwarded to DEQ and Fairfax County for follow-up. DEQ's PREP office investigated the incident, and while no RP was ever established, a cleanup response was coordinated between VDOT and DEQ. 4. The NOVA NPDES Coordinator forwarded internal communications regarding a sanitary sewer leak at the truck rest area along I-95 South in the area of Dumfries, VA. While no discharge to a surface water was found, it was determined that the issue constituted an illicit discharge, as leaked sewage had entered the storm sewer system. DEQ was notified within 24-hours of this determination. The Rest Area Program Manager VDOT's Maintenance Division, established a plan of corrective action in the following days, and submitted a five-day follow-up report to DEQ outlining the corrective actions. A plumbing contractor was brought out, limed the affected area, and repaired the leak. After completion of repairs and submission of the five-day report to DEQ, the report was closed. 5. An inspector for the I-66 Outside the Beltway project noted a discharge of oily substance onto VDOT ROW and the project LOD. DEQ and Fairfax County were also notified. Residential development outside of VDOT's ROW/LOD was noted as the potential source of the discharge. DEQ and Fairfax County were the responsible enforcement authorities in this instance, and while no follow-up information was provided, no further incident was noted within VDOT's ROW, so the report was closed. 6. Arlington County forwarded a report of a sanitary sewer discharge resulting from a power failure at the treatment plant near 3402 S. Glebe Road. Sewage had discharged into a VDOT-owned stormwater inlet. At the

		time of reporting, public works employees as well as Dominion Power and maintenance contractors were establishing pumparounds to cease the discharge to the storm sewer. Follow-up emails indicated controls had been put in place, cleanup of any recoverable materials was in progress, and all appropriate authorities were notified, so the report was closed. 7. The VDOT NOVA NPDES Coordinator forwarded a report from Fairfax County of paint dumped into a stormwater inlet by a homeowner near 6617 Haycock Ave. Fairfax County issued a Notice of Violation to the homeowner, and they were instructed that any further discharges could result in monetary penalties. No recoverable material was found, and the discharge was ceased, so the report was closed. 8. Fairfax County notified the VDOT NOVA NPDES Coordinator of an illicit discharge of sediment-laden potable water that resulted from a water main break. Fairfax Water responded to the broken water main, and pumped the turbid water into the VDOT curb inlet. DEQ was notified of the discharge. While the discharge of potable water is allowed, the deposition of sediment and discharge of turbid water is considered an illicit discharge. Following emergency repairs to the water main, VDOT staff noted that debris and sediment still remained on the roadway, as well as the curb inlet. Follow-up with Fairfax Water personnel indicated contractors would return to the site to complete debris and sediment removal in both the roadway and curb inlet, and the report was closed. **Richmond District** 1. Chesterfield County copied VDOT on a 24-hour notification to DEQ of an illicit discharge to state waters. In an attempt to cleanup a spill of latex paving/asphalt sealant, a driveway contractor diluted the spilled material with water and discharged into a

		VDOT-owned stormwater drain that connected to Chesterfield County's MS4. Chesterfield County staff were present onsite, conducting interviews, and ensuring the contractor deployed appropriate containment and cleanup procedures for the remaining spilled/diluted product. Chesterfield County filed a five-day followup report to DEQ & VDOT the following day, indicating that no recoverable material remained. No animal mortalities as well as no visual impacts to water quality or the stream itself. DEQ accepted this followup and the report was closed. 2. Chesterfield County copied VDOT on a 24-hour notification to DEQ of a sediment release resulting from a ruptured water main near 8611 Scottingham Drive. Sediment and water were carried through a VDOT ditch, into a County-owned drainage ditch that discharged to wetlands. Minimal impact to the wetlands was noted, and the five-day followup report indicated no further action was necessary, and the report was closed. 3. Chesterfield County forwarded a report of a spill of fuel oil from the residence at 9834 Proctors Road resulting from two individuals cutting up an old tank, releasing product onto the roadway which ran into a nearby gutter (VDOT MS4). The Fire Marshall and Fire Department responded to the incident, and cleaned up free product with sphagnum moss. No oil made it to a stormwater inlet (just the gutter/roadway). The responsible parties were issued citations and summons. No degradation to the asphalt/roadway appeared to take place, so no immediate safety concerns on the part of VDOT. Chesterfield County ensured the discharge was cleaned up, and appropriate legal proceedings initiated, so the report was closed. 4. Chesterfield County forwarded a 24-hour notification of a gasoline spill from the Sunoco at 2910 Turner Road. A faulty fuel pump hose ruptured and less than 10 gallons

		of gasoline entered the storm drain at the station. The illicit discharge was carried through VDOT's MS4 to Chesterfield County's MS4, where it discharged to an unnamed tributary of Falling Creek. The Fire Department deployed absorbent booms, but heavy stormwater flow from recent rains resulted in a release to surface waters. VDOT was not copied on final five-day followup report, but DEQ was notified, the RP was determined, cleanup efforts initiated, with no damage to VDOT's MS4, so the report was closed. 5. Chesterfield County Stormwater alerted VDOT of a sanitary sewer overflow at 1748 Oak Lake Boulevard. The effluent discharged onto the road then flowed to a private MS4. DEQ was also alerted, and follow-up communications with Chesterfield County indicated appropriate cleanup efforts had been conducted, so the report was closed. 6. Chesterfield County notified VDOT of a sanitary sewer overflow near 1401 Mall Drive. At the time Chesterfield notified VDOT, it was indicated that DEQ had been alerted, remediation had already taken place, and all discharge material removed from affected structures, so the incident was closed.

BMP 3(D) – Annual Reporting and Effectiveness Review

Description and Measurable Goal:	Report efforts and results of IDDE Efforts in the Annual Report and Monitor Effectiveness
Lead Division:	Location & Design
Reference Materials:	

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Annual Report containing permit required elements.	Annually.	The information to demonstrate compliance with each control measure practice for this MCM are itemized in BMPs 3A-3C above.
Evaluate and describe effectiveness of each strategy and practice.	Annually.	VDOT has evaluated each of the practices and we believe that the BMPs are appropriate and effective. Notable achievements and potential future activities leading to increased effectiveness are described below. VDOT has made a number of advancements and achievements over the past reporting year including: - This MCM requires extensive collaboration among several VDOT Divisions as well as other partners and the public. VDOT believes this has been a positive and effective effort. - This permit year, language requiring the viewing of the Illicit Discharge Detection and Elimination training video was inserted into various new/renewed maintenance and facility contracts (i.e. mowing contracts, salt distribution contracts, etc.). Prior to the start of work, contractors are required to notify VDOT that relevant employees have viewed the training, as well as the number of trainees. - In PY21, the IDDE ArcGIS Storymap module was completed. It includes elements from the IDDE manual and videos from training content. - The IDDE ArcGIS application that was developed in PY 18 and refined in PY19 is still under development for public access. - The Maintenance Division completed updates to existing sections of the Maintenance Best Practices Manual, as

		well as adding a new "Environmental" chapter. The following are program elements that VDOT anticipates undertaking over the permit cycle including in part or in whole during the upcoming PY: - The L&D Division anticipates enhancing its Storm Sewer Mapping systems through use of the ESRI ArcGIS Suite over the upcoming PY and beyond. This includes the updating of the stormwater BMP database fields in Survey 123 and ArcGIS Portal to reflect recent research and associated updates to the stormwater BMP Inspection and Maintenance Manual, complete by the VDOT Maintenance Division. This may also include, for example leveraging data within VDOT Microstation project files and ProjectWise and partners existing datasets. In addition L & D anticipates undertaking a trial phase to evaluate updates to the outfall and storm sewer mapping systems through an internal L & D mapping application.

MCM#4:
CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

BMP 4(A) – Annual Standards and Specifications

Description and Measurable Goal:	VDOT will utilize its annual ESC and SWM Standards & Specifications to address discharges entering the MS4 from VDOT land-disturbing activities regulated by the VPDES and VSMP.
Lead Division:	Location & Design
Reference Materials:	VDOT's Annual ESC and SWM Standards & Specifications Database to track land-disturbing activities regulated under CGP

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Continue to obtain annual approval of VDOT's ESC and SWM Standards & Specifications from DEQ.	Update components of the Standards & Specifications as regulations and operations warrant.	VDOT made continual modifications, revisions, and updates to VDOT Road and Bridge Specifications, Special Provisions, and Standards and updated Instructional and Informational Memorandums (IIMs) to address discharges entering the MS4 from land disturbing activities regulated by the VPDES and VSMP during the reporting year to maintain compliance with applicable regulatory and permit requirements. VDOT also updated SWPPP General Information Sheets and supporting forms/documents for new construction projects to reflect the 2019-2024 Construction General Permit (CGP). VDOT continued coordination with DEQ during the reporting year to facilitate the approval process and to address comments and update various components. The last annual update of the VDOT ESC and SWM Standards & Specifications was dated June 30, 2021 and submitted shortly thereafter to DEQ. VDOT is awaiting approval or related response from DEQ.
Continue to require the ESC plan to be developed in accordance with VDOT's annual ESC Standards & Specifications prior to commencing land disturbing activities.	This aspect of the BMP is currently implemented and is an ongoing annual effort.	VDOT continues to require ESC Plans for RLDAs are developed in accordance with VDOT's Annual Standards and Specifications for ESC.
Continue to require applicable RLDA to secure the necessary state permit authorizations from DEQ to discharge stormwater from construction sites.	This aspect of the BMP is currently implemented and is an ongoing annual effort.	VDOT continued to require applicable RLDA to secure the necessary state permit authorizations from DEQ to discharge stormwater from construction sites. During the reporting year from July 1, 2020 to June 30, 2021, within the MS4 urbanized area there were approximately :

		(1) Total number of regulated land-disturbing activities that required CGP coverage and were new or teriminated during the PY21 =34; and (2) Total number of acres disturbed that required CGP coverage and were new or terminated during PY21 = 400.61 acres. Note this number of permits and acreage are an estimate and include new CGP coverage initiated or those that were terminated during the permit year only, and may not include CGP projects initiated in prior permit years including permit modifications that increased acreage, or those that are outside of the MS4 area.

BMP 4(B) – Annual Reporting and Effectiveness Review

Description and Measurable Goal:	Inspect and enforce compliance with the VPDES Construction General Permit and attending regulations on applicable projects.
Lead Division:	Construction
Reference Materials:	VDOT's Annual ESC and SWM Standards & Specifications

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Perform ESC construction oversight inspections for compliance with Annual ESC and SWM Standards & Specifications.	This aspect of the BMP is currently implemented and is an ongoing effort – VDOT will inspect regulated land-disturbing activities in accordance with the Annual ESC and SWM Standards & Specifications.	The construction inspection schedule of every five business days and within 24 hours after any measurable storm event (or once every four business days) has been applied statewide regardless of whether or not Impaired, TMDL, or Exceptional waters are present. In addition, ESC Construction oversight compliance inspections have been conducted by District NPDES Coordinators in accordance with VDOT's Annual Standards and Specifications for Erosion and Sediment Control.
Require compliance with SWPPP plans including the ESC Plan, and require changes/ modifications to SWPPPs, as necessary, to maintain compliance with applicable regulations. Also, utilize enforcement authority if necessary.	This aspect of the BMP is currently implemented and is an ongoing effort.	VDOT estimates a total of 625 ESC construction periodic oversight inspections within the MS4 service area that were conducted and reported by District NPDES Coordinators and Designees. These inspections represent a portion of all inspections performed within the urbanized area and are conducted for oversight purposes in accordance with VDOT's ESC AS&S. Of these, approx. 6,305 erosion and sediment control and Construction Stormwater General Permit deficiencies were noted; and 6,073 corrective actions were executed. A summary of the most

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
		frequent types of deficiencies and associated corrective actions reported by NPDES Coordinators were: - Temporary and Permanent Stabilization - Maintenance of ESC Controls - Outfall – channel / ditch shape / erosion and lining. - Construction Entrances - P2 requirements ranging from good housekeeping to performing complete and timely C-107 inspections VDOT utilized enforcement measures to address insufficient ESC measures and to correct deficiencies.
Develop procedures to perform periodic compliance inspections.	This aspect of the BMP is currently implemented and is an ongoing effort. Periodic compliance inspections are conducted a minimum of quarterly.	VDOT developed procedures in PY18 for periodic construction oversight inspections with the new Instructional & Informational Memorandum (IIM) 256 policy. This IIM outlines roles and responsibilities for the L&D Division and District NPDES Coordinators. It includes a color classification system for project status and level of engagement by Management, formalizing the process. The IIM was included in VDOT's Annual Standards and Specifications for PY21. This IIM was updated to address recent regulatory changes to improve processes in PY21 and included with the recent Annual Standards and Specifications submittal.

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Develop a mechanism to track ESC construction oversight inspections and associated deficiencies.	No later than June 30, 2019, VDOT must develop a mechanism for tracking of compliance inspections, deficiencies noted, corrective actions and nature of corrective actions.	VDOT had developed an ArcGIS Online cloud based database and mapping mechanism that allows for the tracking of construction ESC periodic compliance oversight inspections over previous permit years. The Online cloud based database was migrated to an ArcGIS Portal on-premise system during PY20. The system includes information on the number of compliance inspections, deficiencies that were discovered, corrective actions required and nature of corrective actions, and a project color coding system to correspond with IIM-LD-256. The database system was first rolled out to District NPDES Coordinators in PY18, and VDOT has continued to work on its functionality to improve issues and address the reliability and capabilities. Following the migration of the database and system from an Online cloud based system to Portal, another round of training was held with District NPDES Coordinators in PY20, and the database has been utilized throughout the PY21 year to track inspections.
Evaluate and describe effectiveness of each strategy and practice.	Annually.	VDOT evaluated each of the practices and we believe that the BMPs are appropriate and effective. Notable achievements and potential future activities leading to increased effectiveness are described below. VDOT made a number of advancements and achievements over past reporting year: - Began using PlanGrid throughout the state with all construction Inspectors and District NPDES Coordinators having access. PlanGrid has allowed construction project teams to communicate ESC and SWM issues immediately for correction. This allows for faster, more efficient and more accurate project communication. - Received and addressed DEQ comments on VDOT's PY 20 Annual Standards & Specifications for ESC & SWM. - Continued updating of SWPPP General Information Sheets and permitting

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
		forms to reflect new 2019-2024 CGP and regulatory changes and outreach to various VDOT Divisions, Districts, and programs. - Additional resourcing for District NPDES Coordinators to support ESC construction periodic oversight inspections to facilitate compliance. - Held virtual meetings bringing together District NPDES Coordinators and Central Office staff to discuss program implementation, share best practices, and to improve effectiveness. - Continued refinement of geospatial ArcGIS RLDA tracking software to track active/terminated VDOT projects and to generate Site Maps to be included with Registration Statements. - Further refinements to the ArcGIS Construction ESC Inspection tracking system are in development. The system may be used in the field with mobile tablets by Inspectors during construction inspections, or following site visits on a desktop computer. - Reviewed and updated VDOT's Road and Bridge Standards and Specifications associated with EC and associated Approved Product Lists (APLs), and Special Products Evaluation List (SPEL). The following are program elements that VDOT anticipates undertaking over the permit cycle including in part or in whole during the upcoming PY: - VDOT plans to continue to review and update the periodic ESC oversight inspection form based on past feedback from the Districts and Construction Division and to standardize for consistency statewide. - VDOT is continuing to enhance the tracking mechanism for NPDES Construction ESC Inspections to improve functionality and reliability. This may include the creation of a new electronic

Expected Efforts and Results in Meeting Measurable Goal	Implementation Schedule	Annual Report Information
		Survey 123 form to better align with a standardized periodic ESC oversight inspection form and additional Survey 123 electronic forms that have been identified as a need for logging certain information. This may also include addressing current issues such as generation/printing of standard reports from the database, greater ability to support annual reporting and improving reliability. - VDOT Districts most likely plan to continue utilizing the PlanGrid software on periodic NPDES ESC Site Inspections and to evaluate ways to integrate the best functionality of the software with that of the ArcGIS platform. The Plan-Grid software can be utilized to conduct inspections with an iPad in the field and allows for immediate communication with VDOT inspectors and in some cases the Contractor, and allows site photos to be linked to where ESC issues are occurring on the plan sheets. New uses such as electronic SWPPP and SWPPP self-inspections will continue to be tested. - VDOT plans to implement new training initiatives for Construction, Maintenance, and Design staff members. Continuing education topics may include subjects such as erosion and sediment control field implementation, pollution prevention, SWPPP implementation, design best practices, and project phasing.

MCM#5:
POST-CONSTRUCTION STORMWATER MANAGEMENT

BMP 5(A) – Standards and Specifications

Description and Measurable Goal:	VDOT will utilize its annual ESC and SWM Standards & Specifications to address post-construction stormwater runoff that enters the MS4 from regulated land-disturbing activities.
Lead Division:	Location & Design
Reference Materials:	VDOT's Annual ESC and SWM Standards and Specifications

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Continue to obtain annual approval of VDOT's ESC and SWM Standards & Specifications.	Update components of the Standards & Specifications as regulations and operations warrant. Incorporate most current DEQ approved standards and specifications for post-construction SWM. Update the approval dates for standards and specifications within the program plan within 30 days of DEQ approval for any changes.	The VDOT ESC and SWM Standards and Specifications, dated June 30, 2021, were submitted. VDOT is awaiting DEQ approval or related response. VDOT made continual modifications, revisions, and updates to VDOT Road and Bridge Specifications, Special Provisions, and Standards and updated Instructional and Informational Memorandums (IIMs) to address discharges entering the MS4 from land disturbing activities regulated by the VPDES and VSMP during the reporting year to maintain compliance with applicable regulatory and permit requirements. VDOT has continued coordination with DEQ during the reporting year to facilitate the approval process and to address comments and update various components.
Continue to specify design criteria for post-construction stormwater runoff controls.	This aspect of the BMP is currently implemented and is an ongoing annual effort.	VDOT continues to require SWM Plans to incorporate design criteria for post-construction stormwater runoff controls in accordance with the VDOT Annual Standards & Specifications for ESC & SWM.
Continue to develop stormwater management plans that are in accordance with VDOT's annual ESC and SWM Standards & Specifications	This aspect of the BMP is currently implemented and is an ongoing annual effort.	VDOT continues to require that SWM Plans for RLDAs were developed in accordance with VDOT's Annual Standards and Specifications for ESC and SWM.

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Continue to inventory post-construction SWM facilities and related hydraulic and design information.	VDOT has previously implemented this requirement and will continue to inventory new BMPs as they are brought online.	A summary table of new stormwater BMP facilities brought online during the PY21 period within the urbanized area is provided in Appendix B. Note that these BMPs do not include those BMPs already reported to DEQ through VDOT's monthly CGP termination process, or those where the project and CGP permit were administered by others such as a Locality (e.g. Locally Administered Project) in accordance with Part I.C.5.f-h. Those outside the urbanized area are also not included.
Land Disturbing Projects and SWM facilities follow appropriate requirements and are reported properly to DEQ.	VDOT has developed queries and reports from current databases in a specific tabular format such that BMPs can be reported in a format that is compatible with the Virginia Construction Stormwater Database.	VDOT submitted information for SWM BMP facilities implemented in accordance with the Standards and Specifications for the control of post construction stormwater runoff from areas of new development and development on prior developed lands to the DEQ through VDOT's regular monthly permit termination process, in accordance with Part I.C.5.g. BMPs not associated with a CGP but required for VESCR Minimum Standard 19 compliance or CBPA Land Disturbing Activities < 1-acre are reported in a summary table in Appendix B.

BMP 5(B) – Long-Term Care and Maintenance of SWM Facilities

Description and Measurable Goal:	Provide adequate long-term operation and maintenance of its SWM facilities in accordance with the VDOT BMP Inspection and Maintenance Manuals.
Lead Division:	Maintenance
Reference Materials:	VDOT's Annual ESC and SWM Standards and Specifications, including: VDOT BMP Inspection Manual VDOT BMP Maintenance Manual

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Continue to annually inspect VDOT post-construction SWM facilities in accordance with VDOT BMP Inspection Manual, and record inspections in SWM facility database.	This aspect of the BMP is currently implemented and is an ongoing effort.	The stormwater facility BMPs within the urbanized area were inspected during the reporting year in accordance with VDOT's BMP Inspection Manual. Inspection records are located in VDOT's SWM BMP Inspection database. A summary of the total number of BMPs inspected and the number of inspections performed by each of the nine (9) Districts is provided in Appendix C.
Continue maintenance on its post-construction SWM facilities in accordance with the VDOT BMP Maintenance Manual	This aspect of the BMP is currently implemented and is an ongoing effort.	VDOT's permanent SWM BMPs/facilities continue to be maintained in accordance with the VDOT BMP Inspection and Maintenance Manuals, which were updated and consolidated during this permit year into a new, single and improved VDOT Stormwater BMP Inspection-Maintenance Manual. VDOT's current BMP database is housed within an ArcGIS Portal system. It cannot currently produce a list of maintenance activities that were necessary to address structural deficiencies or other significant maintenance tasks at this time without some very time-consuming, BMP by BMP research into the annual inspection files to see what structural/significant maintenance was needed. VDOT is in the process of updating this system and plans to incorporate this capability in the future. See Section BMP 5(C) for additional information. While this limitation is a function of the current software application database and reporting inefficiencies, the physical stormwater BMP/facilities do continue to be inspected annually as noted in this section and Appendix C, and routine and corrective maintenance/repairs are made to VDOT BMP/facilities by District Maintenance staff and contractors over time. Additionally, improvements to the BMP Inspection forms allow for better on-the-ground reporting and associated maintenance.

Report BMP Data in a format acceptable to DEQ	VDOT submits the BMP information per the termination process in a format as requested by DEQ on an ongoing basis.	VDOT reported to DEQ through its monthly CGP project termination process stormwater BMP facilities that were brought online during the reporting period. In addition, a summary table of other stormwater BMP facilities brought online during the PY21 reporting period within the urbanized area, not reported through this monthly permit termination process, is provided in Appendix B, in accordance with Part I.C.5.f-h .

BMP 5(C) – Annual Reporting and Effectiveness Review

Description and Measurable Goal:	Report efforts and results of Post-Construction Stormwater BMPs in the Annual Report and Monitor Effectiveness
Lead Division:	Location & Design
Reference Materials:	

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Summarize Activities in BMP 5A-5B as required by permit.	Annually.	The information to demonstrate compliance with each control measure practice for this MCM are itemized in BMPs 5A-5B above.
Evaluate and describe effectiveness of each strategy and practice.	Annually.	VDOT evaluated each of the practices and we believe that the BMPs are appropriate and effective. Notable achievements and potential future activities leading to increased effectiveness are described below. VDOT made a number of advancements and achievements over past reporting year: • Continued collaboration with DEQ on Annual Standards and Specifications for ESC and SWM during the permit year. Migration of BMP database from ArcGIS Online cloud based system to ArcGIS Portal in PY20, with subsequent training of District staff that conduct and complete BMP Inspections during PY20 and PY21. • Comprehensive update of Stormwater BMP Inspection and Maintenance Manual in PY21 by Maintenance Division into a single consolidated manual based on significant industry research on inspections and associated maintenance activities for each individual stormwater BMP type that was conducted in PY19. The industry research that was completed in PY19 led to a significant revamping of the Manual and Survey 123 electronic forms that are used in conjunction with the ArcGIS Portal stormwater BMP database by District staff in the field for BMP Inspections. Training was conducted with District staff and the new format in PY20/PY21. • UVA/VTRC research and publications, continuing research into off-site trading and use of nutrient credits, and the continued research project on water quantity technical

		criteria as it relates to sheet flow and level spreaders. • Review and approval of VDOT bioretention soil media Special Provision and testing process by DEQ in PY21. • Partnering meeting with DEQ periodically throughout the reporting year • Report tool for individual reports. The following are program elements that VDOT anticipates undertaking over the permit cycle including in part or in whole during the upcoming PY: - Continued effort to update electronic Survey 123 forms in PY22 again to reflect recent comprehensive update to stormwater BMP Inspection and Maintenance Manual in PY21. - Improve reporting capabilities of the ESRI ArcGIS Suite BMP database, both for annual reporting, as well as for District staff to facilitate Inspectors with their work. This may include: 1.) Ability to generate automated reports of structural deficiencies for annual reporting. 2.) Ability to generate reports useful to Districts such as pulling requests for remaining BMPs that need to be inspected for the PY.

MCM#6:
POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR VDOT OPERATIONS

BMP 6(A)1 – Procedures for Operation and Maintenance Activities

Description and Measurable Goal:	Develop and refine written procedures designed to minimize or prevent pollutant discharge from support facilities, daily operations, equipment maintenance, and the application, storage, transport, and disposal of pesticides, herbicides, and fertilizers.
Lead Division:	Maintenance
Reference Materials:	Maintenance Best Practices Manual

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Continue to develop and refine applicable sections of the Maintenance Best Practices Manual for MS4 regulated activities	This BMP is currently implemented and is continuously updated. Revisions will be made as appropriate to update this Manual.	The VDOT Maintenance Best Practices Manual continues to be implemented, in order to ensure that discharges of pollutants from roads, streets and parking lot maintenance are being prevented or minimized. Maintenance Division updated this Manual during the previous permit year, adding a new "Environmental" chapter and inserting references to Environmental Division policies and guidance documents related to various kinds of maintenance activities.
Prohibit the dumping of yard waste and grass clippings into the MS4.	This aspect of the BMP is currently implemented through the Road and Bridge Specifications (2020).	Guidance provided in the VDOT Maintenance Best Practices Manual and the Roadside Development Specifications (Division VI of the VDOT Road and Bridge Specifications, 2020) continue to be implemented correctly.

BMP 6(A)2 – Procedures for Operation and Maintenance Activities

Description and Measurable Goal:	Develop and refine, as appropriate, written procedures designed to minimize or prevent pollutant discharge from high-priority support facilities, daily operations, equipment maintenance, and the application, storage, and disposal of pesticides, herbicides, and fertilizers.
Lead Division:	Environmental
Reference Materials:	Waste Management and Pollution Prevention Guide List of High Priority Facilities Applicable Stormwater Pollution Prevention Plans

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Continue to develop and refine applicable sections of Waste Management and Pollution Prevention Guide that apply to MS4 regulated activities	This aspect of the BMP is currently implemented and is an ongoing effort. The WM/PP Guide will be reviewed each year.	The Facility Waste Management and Pollution Prevention Guide was updated in June 2019. The Guide was also reviewed this permit cycle (January 2021) and sections were identified where updates would be beneficial for additional clarifications. The updated Guide is expected in PY 2022.
Prohibit vehicle washing except on approved wash pads.	This aspect of the BMP is currently implemented and is an ongoing effort.	VDOT's Waste Management and Pollution Prevention Guide 3.23 addresses vehicle and equipment washing at VDOT facilities. The Guide establishes approved areas for washing, as well as detailed un-approved washing activities. Compliance with the washing requirements is periodically evaluated through environmental compliance assessments.
Identify High Priority Facilities as defined by the Individual Permit	The effort has been completed. The list will be annually evaluated to determine if additional facilities are determined to be high priority.	VDOT maintains a list of high-priority facilities. Currently, 67 facilities are identified as high-priority facilities in the MS4 area with no new sites identified this permit year. The SWPPPs for these sites were developed during previous reporting periods (initial SWPPPs developed May 2015 – February 2017).

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Continue to develop and refine SWPPPs for High Priority Facilities	This aspect of the BMP is currently implemented and is an ongoing effort. Each SWPPP is reviewed annually.	VDOT has developed SWPPPs for all high-priority facilities in the VDOT MS4 regulated area. Each SWPPP is to be reviewed at least annually by the SWPPP Facility Stormwater Coordinator. Minor SWPPP revisions are edited by SWPPP Facility Stormwater Coordinators whereas significant potential refinements/edits are managed by the Central Office. For example, most SWPPPs are on the second or third formal revision update (latest updates in 2020). VDOT will continue to implement the SWPPPs, and will revise and modify SWPPPs as appropriate.
Continue to perform annual MS4 compliance assessments at VDOT High Priority Facilities within the MS4 Areas	This aspect of the BMP is currently implemented and is an ongoing effort.	VDOT performed annual MS4 compliance assessments for all high-priority facilities within the MS4 areas in the spring of 2021. Due to COVID-19 safety concerns, the site assessment portion was conducted alone and the records review portion was conducted remotely. One main aspect of the assessments is to evaluate compliance with Department procedures to 1) minimize and prevent the discharge of potential pollutants to the MS4, 2) evaluate the proper management and disposal of wastes and 3) minimize the discharge of pollutants from bulk storage areas associated with facility activities. Additionally, VDOT has fully deployed our new facility environmental database referred to as the Comprehensive Environmental Data and Reporting (CEDAR) Facility Module (FM). From 2020 through May 2021, VDOT added over 1,000 users with system permissions, conducted approximately 45 training events and trained approximately 600 users. The new CEDAR FM enabled annual MS4 compliance assessments (along with the monthly SWPPP inspections) to be performed electronically with corrective actions automatically uploaded to the CEDAR system for better tracking and program management.
Develop a list of facilities with onsite septic in local watersheds with a bacteria TMDL that	Maintain list and guidance and communicate requirements to District Maintenance and/or	There are three VDOT Facilities with on-site septic systems in local watersheds with a bacteria TMDL and VDOT WLA.

Expected Efforts and Results in Meeting Measurable Goal	Implementation Schedule	Annual Report Information
allocates a WLA to VDOT's MS4.	Facilities to inspect and/or pump out septic tanks once every 5 years.	Merrifield Area Headquarters' septic tank was pumped in March 2021. Chester Area Headquarters' septic tank was pumped in May 2018. Winchester Residency Complex's septic tank was pumped in October 2016. The facility is currently planning a pump out prior to October 2021.

BMP 6(B) – Turf and Landscape Management

Description and Measurable Goal:	Develop and refine turf and landscape nutrient management plans (NMPs) that have been developed by a certified turf and landscape nutrient management planner to minimize or prevent pollutant discharge from turf and landscape management
Lead Division:	Maintenance
Reference Materials:	List of Applicable Lands that Require NMPs Applicable Nutrient Management Plans (once developed) Roadside Development Standards and Specifications

Expected Efforts and Results in Meeting Measurable Goal	Implementation Schedule	Annual Report Information
Identify all applicable lands where nutrients are applied to a contiguous area of more than one acre.	This effort has been completed. The list will be evaluated annually to determine if updates are required.	There are no longer any individual VDOT facilities where nutrients are applied; therefore, no new individual Nutrient Management Plans are needed.
Continue to develop and refine NMPs on all lands where nutrients are applied to a contiguous area of more than one acre.	This aspect of the BMP is currently implemented and is an ongoing effort.	VDOT cannot discretely estimate the acreage upon which nutrients are applied subject to VDOT's two DCR-approved Nutrient Management Plans: (1) one plan applicable to all new construction; (2) the other plan applicable to all roadside management activities.
Continue to develop and refine Nutrient Management Standards & Specifications as approved by DCR for roadside development during construction and maintenance activities.	This aspect of the BMP is currently implemented with approved district specific NMPs and is an ongoing effort.	VDOT personnel continue to implement provisions of two DCR-approved Nutrient Management Plans: (1) *"Nutrient Management Plan for Turf Establishment on Construction Projects";* and (2) *"Nutrient Management Plan for Turf Establishment on Roadside Projects".* The current plans are valid until June 30, 2023

Continue to specify criteria for managing yard waste and grass clippings in VDOT's Roadside Development Standards and Specifications.	This aspect of the BMP is currently implemented through the Road and Bridge Specifications (2020).	VDOT's Maintenance Best Practices Manual, Waste Management, Pollution Prevention Guide, collectively now include standards and specifications for tree trimming and brush disposal as well as for handling yard waste and grass clippings.

BMP 6(C)1 – Training of VDOT Forces

Description and Measurable Goal:	Continue to implement VDOT's efforts to prevent and reduce stormwater pollution from VDOT-related activities through development, deployment, and delivery of training courses and events.
Lead Division:	Environmental (for division specific elements of VDOT's Employee Training Program for MS4 and Stormwater)
Reference Materials:	VDOT Employee Training Program for MS4 and Stormwater

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Deliver a training plan to include, but not limited to, training on the IDDE program, Good Housekeeping/Pollution Prevention, SWPPP and appropriate spill prevention and responses.	This aspect of the BMP is currently implemented and is an ongoing effort.	The following is a summary of training provided by the Environmental Division for the reporting year. There were 5822 attendees of MS4-related training during the reporting year. *Spill Prevention Control and Countermeasure (SPCC)* training is delivered at facilities that operate under an SPCC plan. Training can be taken through the VDOT Virtual Campus and accessed on Electronic Bulletin Boards (EBBs) found at every VDOT facility. It includes aspects of proper and improper disposal of materials in addition to Good Housekeeping and Pollution Prevention (GHPP). *Facility Storm Water Pollution Prevention Plan (SWPPP)* training is delivered across the state at MS4 high priority facilities that are issued SWPPPs, and includes elements of VDOT's Illicit Discharge Detection and Elimination (IDDE) Program and GHPP. The *Facility SWPPP* training module is distributed via the VDOT Virtual Campus and posted on EBBs. Additionally, in-person training is provided at the large District Complexes that have SWPPPs, as well as one-on-one training for new Facility SWPPP Coordinators.* *In-person training has been postponed until it is deemed safe to begin in-person training again. *DOT Hazardous Materials Awareness* training is delivered to VDOT staff that are involved in the shipment and signing of manifests for hazardous materials and includes elements of GHPP. The VDOT *Salt Infrastructure* and *Facility Leak and Spill Prevention* training modules were developed and released through the VDOT Virtual Campus

		and EBBs the previous permit year. These were developed based on particular aspects of GHPP VDOT Environmental staff identified as requiring special focus and are deployed at facilities with site-specific concerns. *Good Housekeeping and Pollution Prevention for Contractors* training is available on the EBBs as well as VDOT's Training YouTube channel. This training is targeted towards VDOT maintenance contractors, and provides a general overview of GHPP procedures that contractors are expected to adhere to while working on/at any VDOT maintenance facility, and includes many aspects related to stormwater pollution prevention. *Facility Erodibles Stockpile Management* is available on the EBBs and VDOT's Virtual Campus. Similar to the *Salt Infrastructure* and *Facility Leak and Spill Prevention* training modules, the *Erodibles Management* training was developed with focus on one aspect of GHPP and will be deployed at facilities with site-specific issues. *Illicit Discharge Detection and Elimination* training is new and available on VDOT's YouTube channel, as well as the virtual campus and EBBs. This training focuses on identifying an illicit discharge, appropriate processes for determining a source, and proper reporting procedures. A larger marketing/awareness effort for this module was undertaken in PY21. See Appendix D for a summary of the VDOT Employee Training Summary.

BMP 6(C)2 – Training of VDOT Forces

Description and Measurable Goal:	Continue to develop and refine VDOT's efforts to prevent and reduce stormwater pollution from VDOT-related activities.
Lead Division:	Maintenance (for division specific elements of VDOT's Employee Training Program for MS4 and Stormwater)
Reference Materials:	VDOT Employee Training Program for MS4 and Stormwater

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Ensure that VDOT employees and contractors who apply pesticides and herbicides are properly trained or certified in accordance with the Virginia Pesticide Control Act.	This aspect of the BMP is currently implemented and is an ongoing effort.	VDOT has a partnership with Virginia Cooperative Extension (VCE) where by VCE agents provide 20 hours of Registered Technician (RT) classroom training. Topics included: Pesticide Use in Virginia, Principles of Pest Control, Pesticide Labeling, Pesticide Formulations, Pesticides in the Environment, Harmful Effects and Emergency Response, Personal Protective Equipment, Pesticide Handling Decisions, Application Equipment (Calibration and Methods), Calculating the Correct Amount to Apply, and Transportation, Storage, Containment, Disposal and Spill Management. VDOT also has a partnership with Virginia Tech Weed Science Department to administer 20 hours of hands on RT Training. The hands on RT training reiterates the classroom material and provides practical training using a backpack sprayer. In addition, it provides a weed identification laboratory exercise. The overall objective of the RT training is to train VDOT employees to become Registered Technician pesticide applicators per VDACS requirements. VDOT currently has 177 certified pesticide applicators. Training was planned for Spring of 2020 but was cancelled due to the Covid-19 Pandemic. Hopefully as Virginia opens back up from Covid-19, courses will be offered in Fall 2021 and Spring 2022. VDOT continues to control the discharge of pollutants related to storage and application of pesticides, herbicides, and fertilizers applied to our rights of way and support facilities by those individuals that are certified as Registered Technicians.
Ensure that VDOT employees and	This aspect of the BMP is currently	Currently, various kinds of MS4 related training are provided independently by VDOT Districts and

<table>
<tr>
<td>contractors are trained in good housekeeping and pollution prevention practices and the IDDE Program.</td>
<td>implemented and is an ongoing effort</td>
<td>Divisions. Separately, DEQ provides necessary certification courses for stormwater management and erosion/sediment control. What tracking occurs, it is managed and monitored by VDOT's Workforce Development/VDOT University staff. However, that may not capture all relevant participation at this time. VDOT's MS4/Maintenance Training Plan was updated within the last permit year.

The following is a summary of training provided during this permit reporting year

<table>
<tr><th>Type of Training</th><th>Employees Trained</th></tr>
<tr><td>Spill Prevention, Control, and Countermeasure</td><td>1315</td></tr>
<tr><td>DOT Hazmat Awareness</td><td>25</td></tr>
<tr><td>Facility Stormwater Pollution Prevention Plan (SWPPP)</td><td>734</td></tr>
<tr><td>VDOT Salt Infrastructure</td><td>864</td></tr>
<tr><td>Facility Leak and Spill Control</td><td>521</td></tr>
<tr><td>Facility Erodible Stockpile Management</td><td>941</td></tr>
<tr><td>Illicit Discharge Detection & Elimination</td><td>710</td></tr>
<tr><td>Good Housekeeping and Pollution Prevention for Contractors</td><td>712</td></tr>
<tr><td>DEQ Inspector for Stormwater Management</td><td>78</td></tr>
<tr><td>DEQ Inspector for Erosion & Sediment Control</td><td>71</td></tr>
<tr><td>TOTAL</td><td>5,971</td></tr>
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BMP 6(C)3 – Training of VDOT Forces

Description and Measurable Goal:	Continue to train VDOT forces to prevent and reduce stormwater pollution from VDOT-related activities.
Lead Division:	Construction (for division specific elements of VDOT's Employee Training Program for MS4 and Stormwater)
Reference Materials:	VDOT Employee Training Program for MS4 and Stormwater

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Ensure applicable construction personnel receive training on the IDDE program and appropriate spill responses.	Starting in the second year of permit coverage, provide training to applicable field personnel.	A total of 1,089 VDOT individuals are certified through the DEQ ESC and/or SWM Certification Program, of which illicit discharge and spill response is a subject element. The following list identifies the total number of VDOT individuals certified or re-certified this reporting period: DEQ ESC/SWM Certifications — Certified SWM Program Administrator — 3 SWM Inspector — 31 SWM Plan Reviewer — 16 SWM Combined Administrator — 10 ESC Program Administrators — 6 ESC Inspector — 421 ESC Plan Reviewer — 13 ESC Combined Administrators — 45 Responsible Land Disturber — 252 Dual Combined Administrator — 36 Dual Inspector — 249 Dual Plan Reviewer — 7 This relates only to the certifications awarded by DEQ.

BMP 6(C)4 – Training of VDOT Forces

Description and Measurable Goal:	Continue to implement VDOT's efforts to prevent and reduce stormwater pollution from VDOT-related activities.
Lead Division:	Workforce Development (for division specific elements of VDOT's Employee Training Program for MS4 and Stormwater)
Reference Materials:	VDOT Employee Training Program for MS4 and Stormwater

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Ensure that VDOT employees and consultants serving as plan reviewers and inspectors obtain the appropriate certifications as specified in VDOT's annual ESC and SWM standards and specifications.	This aspect of the BMP is currently implemented and is an ongoing effort.	A total of 1,089VDOT individuals are certified through the DEQ ESC and/or SWM Certification Program, of which illicit discharge and spill response is a subject element. The following list identifies the total number of VDOT individuals certified or re-certified this reporting period: DEQ ESC/SWM Certifications — Certified SWM Program Administrator — 3 SWM Inspector — 31 SWM Plan Reviewer — 16 SWM Combined Administrator — 10 ESC Program Administrators — 6 ESC Inspector — 421 ESC Plan Reviewer — 13 ESC Combined Administrators — 45 Responsible Land Disturber — 252 Dual Combined Administrator — 36 Dual Inspector — 249 Dual Plan Reviewer — 7 This relates only to the certifications awarded by DEQ.
Provide training opportunities through the Erosion and Sediment Control Contractor Certification (ESCCC) Program.	This aspect of the BMP is currently implemented and is an ongoing effort.	The VDOT ESCCC Program provides an integral service to VDOT contractors, maintenance forces, and land-use permittees. The course topics include: the VESCLR, the erosion process, ESC control measures, and the VDOT contract enforcement process. The training is provided by four outside vendors who schedule classes through the year. There were approximately 439 individuals trained during this reporting year.

BMP 6(D) – Oversight of VDOT Maintenance Contractors

Description and Measurable Goal:	Contractual oversight procedures for VDOT contractors for maintenance of roadway or operation and use of VDOT facilities.
Lead Division:	Maintenance
Reference Materials"	Maintenance Contracts

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Continue to require that contractors use appropriate control measures and procedures for stormwater discharges to the VDOT's MS4 System.	This aspect of the BMP is currently implemented and is an ongoing effort	VDOT contractors are required to comply with contract language, VDOT's Annual Standards and Specifications, and all other relevant documentation providing stipulations regarding use of appropriate control measures for stormwater discharges and prevention of non-stormwater discharges from the VDOT MS4 system.

BMP 6(E) – Annual Reporting and Effectiveness Review

Description and Measurable Goal:	Report efforts and results of Pollution Prevention/Good Housekeeping BMPs in the Annual Report and Monitor Effectiveness
Lead Division:	Location & Design

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Summarize Activities in BMP 6A-6D as required by permit.	Annually.	The information to demonstrate compliance with specific control measure practices for this MCM are itemized in BMPs 6A-6D above. Other reporting items are listed below.
Assure that protocols are followed	Annually.	VDOT maintains design criteria for infrastructure related to the storage of deicing materials. The infrastructure and guidance detailed in the waste management and pollution prevention guide are designed to control and minimize pollutant discharge. Compliance with the guidance are periodically assessed during facility compliance assessments. As part of the Department's New Product Review process for chemicals proposed to be used within the Department or applied to Department Right of Way, no deicing chemicals containing urea or other forms of nitrogen or phosphorus were reviewed for use by VDOT during the reporting year. These written procedures together with the *Procedures for Operation and Maintenance Activities* outlined in BMP 6(A)2 Environmental, and the *Annual Standards and Specifications for ESC* outlined in BMP 4(A) reduce the discharge of pollutants associated with VDOT owned or operated facilities and road, street, and parking lot maintenance per Part I.C.6.f. The Procedures for Operation and Maintenance Activities outlined in BMP 6(A)1 Maintenance, and the Turf and Landscape Management practices outlined in BMP 6(B) that cover pesticide, herbicide, and fertilizer application were followed as discussed in the reporting of those BMPs and per Part I.C.6.g.
Evaluate and describe effectiveness of each strategy and practice.	Annually.	VDOT has evaluated each of the practices and we believe that the BMPs are appropriate and effective. Notable achievements and potential future activities leading to increased effectiveness

		are described inline through the above BMP responses, as appropriate.

MCM#7:
INFRASTRUCTURE COORDINATION

BMP 7(A) – Infrastructure Coordination

Description and Measurable Goal:	Coordinate with other large MS4s regarding physical interconnection of systems.
Lead Division:	Location & Design

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Meet* annually with each Phase 1 MS4 permittee for the purpose of coordination on priority issues for the Program Plan and TMDL Action Planning relevant to interconnectivity.	This aspect of the BMP is currently being implemented and is an ongoing effort.	VDOT coordinated and met with the following Phase 1 MS4 localities during the reporting year. **Locality** — **Date** Prince William County — 12/17/20 Arlington County — 12/17/20 Chesterfield County — 12/07/20 Henrico County — 12/07/20 Chesapeake — 05/20/21 Hampton — 05/20/21 Newport News — 05/20/21 Norfolk — 05/20/21 Virginia Beach — 05/20/21 Portsmouth — 05/20/21 Fairfax County — 12/17/20 *In person or via a conference call meeting The primary issues discussed during the meetings with each Phase 1 permittee included: - Priority issues and updates; - SWM implementation on new construction projects; - Status of Mapping program; - Chesapeake Bay TMDL Action Plans - means, methods and schedule; - Other TMDL Action Plans; - Credit for TMDL Implementation – BMPs and strategies to meet reduction requirements; - Data Management system approaches and software utilized to facilitate; - IDDE – Coordination on high risk industrial facilities, contact information and process;
Participate in coordination efforts initiated by Phase 1 MS4 and Small MS4 operators when the VDOT MS4 is physically-interconnected.	Engage and participate with Phase 1 and Small MS4s as requested.	VDOT coordinated and met with the New River Valley MS4 local government staff throughout the reporting year. These small MS4's include the Town of Blacksburg, Town of Christiansburg, Montgomery County, and Virginia Tech.

*Note: * Meetings may be conducted individually with permittees or in a group meeting and face to face meetings, conference calls, or using electronic meeting technology may constitute a meeting.*

SC#1:
SPECIAL CONDITIONS FOR CHESAPEAKE BAY TMDL[3]

[3] *Special condition for the Chesapeake Bay TMDL. The Commonwealth in its Phase I and Phase II Chesapeake Bay TMDL Watershed Implementation Plans (WIP) committed to a phased approach for MS4s, affording MS4 operators up to three full five-year permit cycles to implement necessary reductions. This permit is consistent with the Chesapeake Bay TMDL and the Virginia Phase I and II WIPs to meet the Level 2 (L2) scoping run for existing developed lands as it represents an implementation of a cumulative 36.0% of L2 as specified in the 2010 Phase I WIP. Conditions of future permits will be consistent with the TMDL or WIP conditions in place at the time of permit issuance.*

(1) In accordance with Part I, Section D.3 of the permit, the operator shall develop and submit to the DEQ for its review an amended Chesapeake Bay TMDL Action Plan that addresses a cumulative reduction of at least 36% of the total Level 2 Scoping Run reductions.

BMP SC1(A) – Action Plan for Chesapeake Bay TMDL

Description and Measurable Goal:	Develop and implement 2nd Phase TMDL Action Plan for the Chesapeake Bay Watershed TMDL
Lead Division:	Environmental
Reference Materials:	Chesapeake Bay 2nd Phase TMDL Action Plan

<table>
<tr><th>Expected Efforts and Results in Meeting Measurable Goal</th><th>Implementation Schedule</th><th>Annual Report Information</th></tr>
<tr><td>A list of BMPs and/or strategies implemented during the reporting period and the estimated reduction of pollutant(s) achieved by each reported in pounds per year.</td><td>Report annually</td><td>See Appendix F for details on BMP implementation, credits achieved to-date and the Urban BMP Reporting Spreadsheet.</td></tr>
<tr><td>The progress toward meeting the required cumulative reductions for total nitrogen, total phosphorus, and total suspended solids</td><td>Report annually</td><td>Parameter
<table><tr><th></th><th>TP (lb/yr)</th><th>TN (lb/yr)</th><th>TSS (lb/yr)</th></tr><tr><td>James</td><td>5,065.98</td><td>25,249.77</td><td>2,399,498.96</td></tr><tr><td>Potomac</td><td>12,214.31</td><td>51,254.01</td><td>23,940,485.68</td></tr><tr><td>Rappahannock</td><td>645.82</td><td>4,650.58</td><td>1,841,196.16</td></tr><tr><td>York</td><td>357.69</td><td>2,734.05</td><td>122,409.94</td></tr></table>Total Reductions Reported to Date (all basins):
18,282.85 83,888.41 28,303,590.75</td></tr>
<tr><td>A list of control measures that are planned to be implemented during the next reporting period</td><td>Report annually</td><td>See Appendix F for details on the proposed PY22 implementation schedule.</td></tr>
</table>

*Note: * A copy of the Chesapeake Bay TMDL Action Plan is available at Environmental Division's* Central Office location.

SC#2:
SPECIAL CONDITIONS FOR APPROVED LOCAL TMDLS[4]

[4] *Special conditions for approved total maximum daily loads (TMDL) other than the Chesapeake Bay TMDL. An approved TMDL may allocate an applicable wasteload to a small MS4 that identifies a pollutant or pollutants for which additional stormwater controls are necessary for the surface waters to meet water quality standards The permittee shall develop and implement a local TMDL action plan for each pollutant for which wasteloads have been allocated to the permittee's MS4 in TMDLs approved by the Environmental Protection Agency (EPA) and listed in Attachment A of the permit as described below:*

a. For TMDLs approved by the EPA prior to July 1, 2013, the permittee shall update the previously approved local TMDL action plans in order to meet the conditions of Part I.E.2, 3, 4, and 5, as applicable, no later than 12 months after the permit effective date.

b. For TMDLs approved by EPA on or after July 1, 2013 and prior to April 1, 2017, the permittee shall develop and initiate implementation of action plans for each pollutant for which wasteloads have been allocated to the permittee's MS4 in order to meet the conditions of Part I.E.2, 3, 4, and 5, as applicable no later than 24 months after the permit effective date.

BMP SC2(A) – Action Plans for Approved Local TMDL

Description and Measurable Goal:	Develop and implement applicable TMDL Action Plans for approved TMDLs that have assigned VDOT's MS4 a wasteload allocation.
Lead Division:	Environmental
Reference Materials:	List of approved local TMDLs that have assigned VDOT's MS4 a WLA Local TMDL Action Plans (once developed)

Expected Efforts and Results in Meeting Measurable Goal	**Implementation Schedule**	**Annual Report Information**
Summary of actions conducted to Implement Local TMDL Action Plans.	In accordance with schedule identified in each Local TMDL Action Plan.	Summary of actions to implement the Action Plans is reported in Appendix G.
Update Existing Local TMDL Action Plans *(TMDLs approved before July 2013)** in accordance with Special Conditions of Permit.	Update Existing Local TMDL Action Plans within 12 months of receiving permit coverage.	Existing TMDL Action Plans were updated within 12 months of permit coverage.
Develop New Local TMDL Action Plans *(TMDLs approved between July 2013 and June 2017)** in accordance with Special Conditions of Permit.	Develop Local TMDL Action Plans within 24 months of receiving permit coverage.	TMDL Action Plans were updated to include new TMDLs within 24 months of permit coverage.
Implement Local TMDL Action Plans.	Schedule to be identified during the development of the Local TMDL Action Plans.	Schedule of implementation identified in TMDL Action Plans. Implementation progress for each Local TMDL is included in Attachment G.
Evaluate effectiveness of applicable local TMDL Action Plans	No later than 48 months from permit effective date (7/1/2021)	TMDL effectiveness evaluation was submitted 7/1/2021.

*Note: * Copies of the Local TMDL Action Plans for Bacteria, PCBs and Sediment are available at Environmental Division's Central Office location.*

Action Plan Text:
VDOT will annually evaluate the implementation of the MS4 Program Plan as well as the BMPs identified in this Action Plan for effectiveness in addressing the bacteria WLAs.

The annual evaluation will include an assessment on the appropriateness and effectiveness of the identified BMPs in the MS4 Program Plan and the Action Plan to reduce bacteria discharges in the specific watershed. During this evaluation, VDOT will also determine if additional BMPs are necessary to demonstrate that adequate progress is being made to reduce the pollutant discharge.

VDOT will annually report its progress on implementation of the BMPs in the Local Bacteria TMDL Action Plan, other interim milestone activities, and applicable results from the evaluation. If, because of the annual evaluation, a Program Plan and/or Action Plan modification is appropriate, VDOT will perform the modification in accordance with its MS4 Program Plan procedures and in accordance with the MS4 Individual Permit.

PROGRAM EVALUATION, MODIFICATION, AND REPORTING

Through the MS4 Steering Committee meetings, VDOT will annually evaluate the effectiveness of each strategy or practice. VDOT routinely evaluates specific standards and specifications, schedules, manuals, checklists, and other documents. Revisions to the MS4 Program Plan are expected throughout the life of this permit as part of the iterative process to reduce pollutant loading and protect water quality. As such, revisions made in accordance with this permit as a result of the iterative process do not require modification of this permit. VDOT will document revisions to the MS4 Program Plan as part of the Annual Report, including an explanation as to why a specific BMP was replaced or eliminated. Minor modifications have been made to the Program Plan during a past permit year, with the most current being December 2019.

Documents, policies, and procedures listed in the Program Plan are updated internally at VDOT as needed (to comport with changes to laws, regulations, implementation approach or other factors not related to MS4/Stormwater).

Appendix A
List of TMDL Committees, Meetings & Activities

October 2021

Local TMDL Technical Advisory Committee Meetings

Meeting Name/Venue	Date
Sand Branch Benthic TMDL Public Meeting and Technical Advisory Committee (TAC) Meeting	10/29/2020
South Fork Rivanna River Water Quality Study (TMDL) Community Kick Off Meeting	11/18/2020
South Fork Rivanna Advisory Committee Meeting	12/9/2020
James, Maury, and Jackson PCB TMDL- First Public Meeting	1/12/2021
Sand Branch Benthic TMDL Technical Advisory Committee (TAC) Meeting	1/25/2021
James River Tributaries Benthic TMDL Public Meeting	1/26/2021
Tidal James River and Elizabeth River PCB TMDL Public Meeting (Tidewater)	1/26/2021
Tidal James River and Elizabeth River PCB TMDL Public Meeting (Piedmont)	1/28/2021
South Fork Rivanna River Water Quality Study (TMDL) Meeting	2/23/2021
Tidal James and Elizabeth River PCB TMDL - Piedmont Technical Advisory Subcommittee Meeting	03/25/21
Tidal James and Elizabeth River PCB TMDL - Tidewater	03/30/21
James River Tributaries Benthic TMDL Public Meeting	4/14/2021
Sand Branch Benthic TMDL Technical Advisory Committee (TAC) Meeting	4/21/2021
Sand Branch Benthic TMDL Technical Advisory Committee (TAC) Meeting	6/24/2021

Local TMDL & Watershed Implementation Plan Meetings

Meeting Name/Venue	Date
GWRC Chesapeake Bay Implementation Program	8/25/2020
Salt Management Strategy Steering Committee	9/30/2020
Salt Management Strategy (SaMS) Government Coordination Workgroup Meeting	11/18/2020
Salt Management Strategy (SaMS) Stakeholder Advisory Committee Meeting	11/18/2020
SaMS Stakeholder Advisory Committee	12/2/20
Salt Management Strategy (SaMS) Stakeholder Advisory Committee Meeting	12/20/2020
Salt Management Strategy Toolkit	1/21/2021

Activities

Meeting Name/Venue	Date
DEQ State Lands WIP Meeting	07/27/20
Chesapeake Bay TMDL Phase III WIP Interagency Team Meeting	07/26/20
Sustainable Shorelines Webinar: Softening Our Shorelines	08/21/2020
Living Shorelines Performance Webinar,	8/25/2020
WaterJam 2020	09/14-17/2020
Urban Stormwater Workgroup	09/15/20
DEQ State Lands WIP Meeting	09/15/20
Virginia Water Monitoring Council	09/21-22/2020
Chesapeake Bay TMDL Phase III WIP Interagency Team Meeting	09/22/20
WEFTEC 2020	10/4-9/2020
DEQ State Lands WIP Meeting	10/14/20

VDOT Pollinator Habitat Meeting w/ PennDOT	10/20/19
WTS Panel: It's Raining! Stormwater Management and Protection of Natural Resources: State Transportation Programs	10/21/20
Chesapeake Bay TMDL Phase III WIP Interagency Team Meeting	10/28/20
Chesapeake Bay TMDL Phase III WIP SAG Meeting	10/28/20
DEQ State Lands WIP Meeting	11/04/20
SaMS Government Workgroup	11/18/20
AbTech's Stormwater Purification & Treatment Webinars	10/29/20; 11/12/20; 12/10/20
DEQ State Lands WIP Meeting	12/2/20
Chesapeake Bay TMDL Phase III WIP Interagency Team Meeting	12/14/20
Stream Restoration Crediting to Meet MS4 and TMDL Requirements	12/17/20
CSN - New Guidance for Stream Restoration Protocols 2 & 3	1/07/21
TRB Resource and Conservation Committee	01/14/21
Urban Stormwater Workgourp	01/19/21
Lewis Ginter Winter Botany Course	1/20-21/2021
Equitable Negotiation on the Coast	1/21/21; 01/28/21; 02/04/21; 02/11/21
Chesapeake Bay TMDL Phase III WIP Interagency Team Meeting	01/25/21
EPA's Transportation Stormwater Permit Compendium	02/03/21
Erosion Control Blankets Webinar	02/09/21
Chesapeake Bay TMDL Phase III WIP Interagency Team Meeting	02/17/21
Living Shorelines: Learning the CRV (Containment, Reinforcement, Vegetation) Method	02/25/21
VLWA	03/8-10/21
Chesapeake Bay TMDL Phase III WIP Interagency Team Meeting	03/22/21
Environment Virginia	03/23-25/21
Chesapeake Bay TMDL Phase III WIP Interagency Team Meeting	04/15/21
VWEA Stormwater Seminar	04/21-22/2021
VIMS Living Shorelines Training 2	04/30/2021
York River and Small Coastal Basins Symposium	05/13/2021
Chesapeake Bay TMDL Phase III WIP Interagency Team Meeting	05/19/21
RVA H20 Project	05/18/21
DEQ State Lands WIP Meeting	05/21/21
Chesapeake Bay TMDL Phase III WIP Interagency Team Meeting	06/17/21
Invasive Plant Workshop	06/24/2021

Appendix B
New Stormwater Management Facilities Brought Online During the Reporting Year

October 2021

MS4 Reporting FY21 (July 1, 2020 through June 30, 2021) New SWM Facilities brought online within the Census Urban Areas that were not reported at construction general permit termination; MCM #5/BMP 5(B)*

VDOT Facility Type	DEQ Facility Type (Water Quality)	Latitude	Longitude	Total Acres Treated	Pervious Acres Treated	Impervious Acres Treated	Date Brought Online	6th Order HUC	Date Last Inspected
Bioretention 2 - IIB	Bioret. 2	37.3274	-80.0296	2.10	1.26	0.84	03/01/21	RU14	03/01/21
Bioretention 2 - IIB	Bioret. 2	37.3257	-80.0319	2.61	2.18	0.43	03/02/21	RU14	03/02/21

* Stormwater BMP facilities in this table represent those within the urbanized area brought online during the PY21 period and that are maintained by VDOT. Excluded here are those BMPs that were already reported to DEQ through VDOT's monthly CGP permit termination process, or those where the project and CGP permit was administered by others such as a locality (e.g. LAP or LUP project) in accordance with Part I.C.5.f-h

Appendix C
BMP Inspections Performed during the Reporting Year

October 2021

BMP Numbers – MS4 Annual Report (PY21)

District	Number of BMPs	Number of BMP Inspections*
Bristol	8	8
Culpeper	40	40
Fredericksburg	72	69 (1 removed, 1 under construction, 1 new)
Hampton Roads	134	106 (28 new)
Lynchburg	15	13
Northern Virginia	604	552 (8 removed, 43 under construction, 1 new)
Richmond	204	182 (13 removed, 1 under construction, 8 new)
Salem	57	56 (1 under construction, 2 new)
Staunton	45	44 (1 removed)
Rest Areas	17	16 (1 under construction)

* Inspections reported for BMPs in the Urbanized Area.

Appendix D
VDOT Environmental Employee Training Summary

October 2021

MS4 Permit Year 2020 - 2021	
Type of Training	**Number of Employees Trained**
SPCC	1315
Facility SWPPP	734
DOT Hazmat Awareness	25
VDOT Salt Infrastructure	864
Facility Leak & Spill Control	521
Facility Erodible Stockpile Management	941
Illicit Discharge Detection & Elimination	710*
Good Housekeeping and Pollution Prevention for Contractors	712*
Total	**5822**

*sum of the number of YouTube views in PY21, number of trainees via VDOT's Virtual Campus, and contractor trainees indicated in notification letters

Appendix E
MCM 7 Infrastructure Coordination Meetings

Infrastructure Coordination Meetings with Other MS4s

Meeting Name/Venue	Date	Anticipated Future Participation
Prince William County & VDOT Annual Infrastructure Coordination Meeting	12/17/20	Yes, anticipate Infrastructure Coordination meeting during PY22
Arlington County & VDOT Annual Infrastructure Coordination Meeting	12/17/20	Yes, anticipate Infrastructure Coordination meeting during PY22
Chesterfield County & VDOT Annual Infrastructure Coordination Meeting	12/07/20	Yes, anticipate Infrastructure Coordination meeting during PY22
Henrico County & VDOT Annual Infrastructure Coordination Meeting	12/07/20	Yes, anticipate Infrastructure Coordination meeting during PY22
Chesapeake & VDOT Annual Infrastructure Coordination Meeting	05/20/21	Yes, anticipate Infrastructure Coordination meeting during PY22
Hampton & VDOT Annual Infrastructure Coordination Meeting	05/20/21	Yes, anticipate Infrastructure Coordination meeting during PY22
Newport News & VDOT Annual Infrastructure Coordination Meeting	05/20/21	Yes, anticipate Infrastructure Coordination meeting during PY22
Norfolk & VDOT Annual Infrastructure Coordination Meeting	05/20/21	Yes, anticipate Infrastructure Coordination meeting during PY22
Virginia Beach & VDOT Annual Infrastructure Coordination Meeting	05/20/21	Yes, anticipate Infrastructure Coordination meeting during PY22
Portsmouth & VDOT Annual Infrastructure Coordination Meeting	05/20/21	Yes, anticipate Infrastructure Coordination meeting during PY22
Fairfax County & VDOT Annual Infrastructure Coordination Meeting	12/17/20	Yes, anticipate Infrastructure Coordination meeting during PY22

Appendix F
CB TMDL Action Plan Implementation and Credits Achieved To-Date

October 2021

	Parameter		
	TP (lb/yr)	TN (lb/yr)	TSS (lb/yr)
James	5065.03	25249.77	2399498.96
Potomac	12214.31	51254.01	23940485.68
Rappahannock	645.82	4650.58	1841196.16
York	357.69	2734.05	122409.94
Total Reductions Reported to Date (all basins):	**18282.85**	**83888.416**	**28303590.75**
Reduction Requirement (Special Condition D2- 36%)	5227.00	27581.00	3551947.00
% Complete to date (Special Condition D2- 36%)	349.78%	304.15%	796.85%

Reduction Requirement (100%)	14519.44	76613.89	9866519.44
% Complete to date (100%)	125.92%	109.50%	286.86%

James River Basin

	Reductions			
	TP (lb/yr)	TN (lb/yr)	TSS (lb/yr)	
Redevelopment				
Jamestown-Scotland Ferry (UPC 102110)	1.83	14.09	894.20	<--Previously reported in 2016 MS4 Annual Report
Rt. 264 (UPC 104331)	6.35	45.76	3465.59	<--Previously reported in 2016 MS4 Annual Report
Stream Restoration and Stabilization				
Lithia Road Stream Restoration	93.70	103.30	61812.40	<--Previously reported in 2018 MS4 Annual Report
Skiffes Creek Stream Restoration	199.00	469.00	377049.18	<--Previously reported in 2018 MS4 Annual Report
Timsbury Creek Stream Restoration	985.00	2700.38	573480.66	<--Previously reported in 2018 MS4 Annual Report
Slatersville AHQ Stream Restoration	186.00	425.00	353852.46	<--Previously reported in 2020 MS4 Annual Report
Outfall and Channel Stabilization				
Route 60 (UPC 105139)- Installed 6/30/2014	3.53	3.89	784.57	<--Previously reported in 2017 MS4 Annual Report. Verified 2/14/2019
Route 5 (UPC 106842) - Installed 6/24/2016-2/28/2017	1.22	1.35	272.34	<--Previously reported in 2017 MS4 Annual Report. Verified 7/7/2021
Quarterpath Outfall - Installed 7/16/2016-9/30/2017	5.44	6.00	1210.40	<--Previously reported in 2018 MS4 Annual Report. Verified 7/7/2021
Historical BMPs	3.00	22.00	3538.00	<--Previously reported in 2016 MS4 Annual Report
Land Cover Conversion				
Skiffes Land Cover Conversion	0.15	1.61	20.00	<--Previously reported in 2018 MS4 Annual Report
RDC Land Cover Conversion	1.76	18.46	**212.20**	<--Previously reported in 2018 MS4 Annual Report
I-295 Plantings 2019	11.25	117.79	1400.83	<--Previously reported in 2019 MS4 Annual Report
Culpeper District	0.00	857.00	0.00	<--Previously reported in 2019 MS4 Annual Report Addendum
Staunton District	0.00	1997.90	0.00	<--Previously reported in 2019 MS4 Annual Report Addendum
Lynchburg District Pollinator Areas	0.00	354.90	0.00	<--Previously reported in 2019 MS4 Annual Report Addendum
I-295 Plantings 2020	3.09	32.39	372.36	<--Previously reported in 2020 MS4 Annual Report
BMP Retrofit 20030	0.50	5.40	62.40	<--Previously reported in 2020 MS4 Annual Report
BMP Retrofit 20046	0.90	9.40	108.10	<--Previously reported in 2020 MS4 Annual Report
Mowing Practices	0.00	8820.63	0.00	<--Previously reported in 2020 MS4 Annual Report Addendum
Street Sweeping and Catch Basin Cleanout	**3303.53**	**8258.83**	**991060.15**	**<--New for 2021 MS4 Annual Report**
Nutrient Credit Purchase				
Swiss Dixie Nutrient Bank (6/21/16)	20.00	66.94	574.60	<--Previously reported in 2016 MS4 Annual Report. TSS Updated 2021
Cranston's Mill Pond Bank (5/19/15)	15.00	33.00	0.00	<--Previously reported in 2016 MS4 Annual Report.
Swiss Dixie Nutrient Bank (6/2/17)	2.00	6.69	57.46	<--Previously reported in 2017 MS4 Annual Report. TSS Updated 2021
Swiss Dixie Nutrient Bank (6/2/17)	103.00	344.74	2959.19	<--Previously reported in 2017 MS4 Annual Report. TSS Updated 2021
Hunts Creek Huntrient Bank (6/7/2018)	15.12	50.61	1302.13	<--Previously reported in 2018 MS4 Annual Report. TSS Updated 2021
Namozine Nutrient Bank (6/7/2018)	0.90	3.01	25.86	<--Previously reported in 2018 MS4 Annual Report. TSS Updated 2021
Sams Nutrient Bank (6/7/18)	6.90	31.00	1138.22	<--Previously reported in 2018 MS4 Annual Report. TSS Updated 2021
Potamoi Holdings (4/25/19)	13.14	100.00	262.29	<--Previously reported in 2019 MS4 Annual Report. TSS Updated 2021
Structural BMP Enhancement and Retrofit				
Lynchburg District Stormwater Pond	11.89	37.29	5708.01	<--Previously reported in 2017 MS4 Annual Report
VDOT Richmond District Outfall Retrofit	2.49	17.80	1160.00	<--Previously reported in 2017 MS4 Annual Report
Pine Chapel	2.22	8.27	1005.65	<--Previously reported in 2017 MS4 Annual Report
Skiffes Upland Dry Swale	0.77	5.85	380.00	<--Previously reported in 2018 MS4 Annual Report
RDC Level Spreader	1.25	8.89	0.00	<--Previously reported in 2018 MS4 Annual Report
BMP Retrofit 20030	31.70	139.80	8669.70	<--Previously reported in 2020 MS4 Annual Report
BMP Retrofit 20046	32.40	130.80	6660.00	<--Previously reported in 2020 MS4 Annual Report
Total Credit Reported	5,065	25,250	2,399,499	
Reduction Requirement (Special Condition D2- 36%)	1,948	7,007	904,473	
% Complete to date (Special Condition D2 36%)	260%	360%	265%	

Stantec

Memo

To:	Tracey Harmon	From:	Daniel Reese Jr., PE Ashley Hall, PE
	Virginia Department of Transportation		Stantec Consulting Services Inc.
File:	203401484	Date:	July 14, 2021

Reference: BMP Verification – Pasture Circle Outfall Stabilization

Introduction

The Pasture Circle Outfall Stabilization project is located on Pasture Circle in a rural residential area off Rt. 607 (Croaker Rd.), north of I-64 in James City County, Virginia and is within the York River watershed. This project was designed to replace the aging 30" culvert beneath the cul-de-sac portion of Pasture Circle and to repair a washed out sideslope upstream of the culvert outlet within the utility easement. The Virginia Department of Transportation (VDOT) installed a drop inlet with 55' of 15" storm pipe draining into a manhole conveying drainage from the west side of Pasture Circle. A 54' and 78' of 30" storm pipe upstream and downstream respectively of the manhole to convey drainage from the east side of Pasture Circle. The eroding sideslope was re-graded to match adjacent grades and re-vegetated. See attachment for photos of the outfall after stabilization.

Inspection

The Pasture Circle Outfall Stabilization project was inspected on July 7th, 2021. Photos from the inspection are included in the attachment. The sideslope between the roadway down to the pipe outlet appears to be stable with mature and uniform vegetation. No signs of erosion or sediment was observed in areas upstream of the inlets for the 15" and 30" storm pipe.

The outlet of the pipe appears to discharge into a stable area at the bottom of the slope and there are no obvious signs of erosion directly around the outlet or downstream of the outlet. Sediment deposition was observed downstream of the pipe outlet and is believed to be from an adjacent single-family lot being developed east of the cul-de-sac. Erosion and sediment control measures associated with the adjacent lot development was present during the inspection.

Recommended Actions

Sediment may be present within the storm pipe network from the adjacent lot development, potentially reducing the pipe's capacity to convey runoff. It is recommended to confirm the source of sediment observed downstream of the pipe and ensure no issue is present underneath the road. Remove any sediment from the storm pipe network to restore its design capacity.

Summary

Approximately 4 years after the site was identified for restoration, the Pasture Circle Outfall Stabilization project appears to be stable with uniform and mature vegetation growing on the slope. There was sediment deposition observed downstream of the outlet of the pipe, possibly due to the adjacent lot development. It is recommended that the source of sediment be confirmed and restore the capacity of the storm pipe network to its original condition. The project has accomplished the goal of reducing erosion between the roadway and pipe outfall with no signs of erosion or failure.

Reference: **BMP Verification – Pasture Circle Outfall Stabilization**

Stantec Consulting Services Inc.

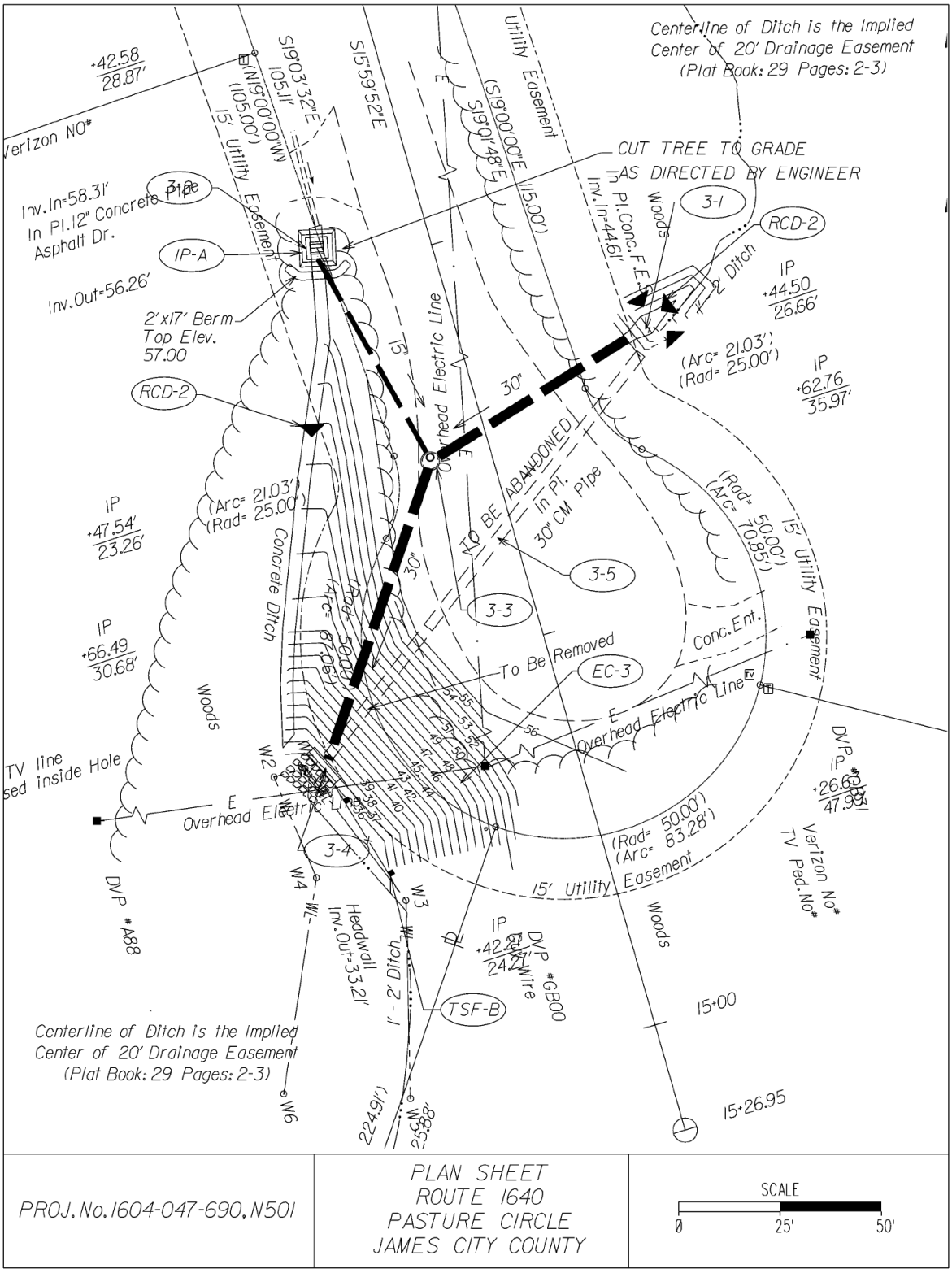
Daniel Reese Jr PE
Water Resources Engineer
Phone: (540) 340-2376
Daniel.Reesejr@stantec.com

Attachment: Photos

c. Ashley Hall, PE (Stantec)

Photographs for the VDOT Pasture Circle Outfall Stabilization Project

Photo 1: Plan sheet for stabilization activities



Photos from 2021 taken by Stantec on 07/07/21.
Project: 203401484

Photographs for the VDOT Pasture Circle Outfall Stabilization Project

Photo 2: Stabilized slope with vegetated cover (2021)

Photo 3: Downstream of Pipe Outlet (2021)

Photo 4: Outfall channel downstream of outlet pipe (2021)

Photos from 2021 taken by Stantec on 07/07/21.
Project: 203401484

Photographs for the VDOT Pasture Circle Outfall Stabilization Project

Photos from 2021 taken by Stantec on 07/07/21.

Stantec

Memo

To:	Tracey Harmon	From:	Daniel Reese Jr., PE Ashley Hall, PE
	Virginia Department of Transportation		Stantec Consulting Services Inc.
File:	203401484	Date:	July 14, 2021

Reference: BMP Verification- Quarterpath Crossing Outfall Stabilization

Introduction

The Quarterpath Crossing outfall stabilization project is located off Route 199 in the Quarterpath Crossing Shopping Center west of the Harris Teeter in the City of Williamsburg, Virginia and is in the James River watershed. Before repair, the existing outfall was eroded with sloughing of the banks from a private property of Quarterpath Crossing Shopping Center that discharges to a Virginia Department of Transportation (VDOT) right-of-way (ROW). To stabilize the outfall, the project involved piping the drainage to the toe of a slope further downstream, installing riprap, and filling in the eroded banks with topsoil and stabilizing with grass. The slope upstream of the outlet pipe was re-graded with imported compacted fill to match the adjacent grades with two (2) backup berms installed for conveyance control. See attachment for photos of the outfall before and after stabilization.

The outfall stabilization was completed in 2018. Sediment and nutrient reduction credits from the project were taken by VDOT to address the Chesapeake Bay Total Maximum Daily Load (TMDL) and were reported in the 2017 Annual Report. Projects used to meet the Chesapeake Bay TMDL reductions are required to be inspected every 5 years after implementation to ensure the practice is functioning correctly. The observations from the Quarterpath Crossing outfall stabilization inspection are reviewed below.

Inspection

The Quarterpath Crossing outfall stabilization project was inspected on July 7th, 2021. Photos from the inspection are included in the attachment. The slope of the banks downstream of the pipe outlet appears to be stable with no evidence of erosion or displacement of riprap occurring within the channels. The slope upstream of the outlet pipe appears to be stable covered with mature, uniform vegetation. The vegetation on and around the slope is primarily grass with a mixture of woody plants. Sediment deposition was not observed at or downstream of the outlet pipe during the inspection.

Recommended Actions

The overall project area was well maintained with no erosion issues. No corrective actions are recommended at this time beyond continue to maintain the grassy area and monitor for erosion along the downstream channel and upstream slope area.

Summary

Approximately 3 years after implementation, the Quarterpath Crossing outfall stabilization project appears to be stable with a variety of vegetation growing on the slope and banks. It is recommended to continue routine maintenance of the grassy area and observe for any changes to the channel, banks and slope upstream of the pipe outfall. The project has accomplished the goal of reducing erosion downstream of the pipe outfall.

Reference: **BMP Verification- Quarterpath Crossing Outfall Stabilization**

Stantec Consulting Services Inc.

Daniel Reese Jr PE
Water Resources Engineer
Phone: (540) 340-2376
Daniel.Reesejr@stantec.com

Attachment: Photos

c. Ashley Hall, PE (Stantec)

Photographs for the VDOT Quarterpath Crossing Outfall Stabilization Project

Figure 1: Outfall before stabilization project was implemented (prior to 2021)

Figure 2: Banks of outfall channel before stabilization project was implemented (prior to 2021)

Photos from 2021 were taken by Stantec on 07/07/21.

Photographs for the VDOT Quarterpath Crossing Outfall Stabilization Project

Figure 3: Profile sheet for stabilization activities

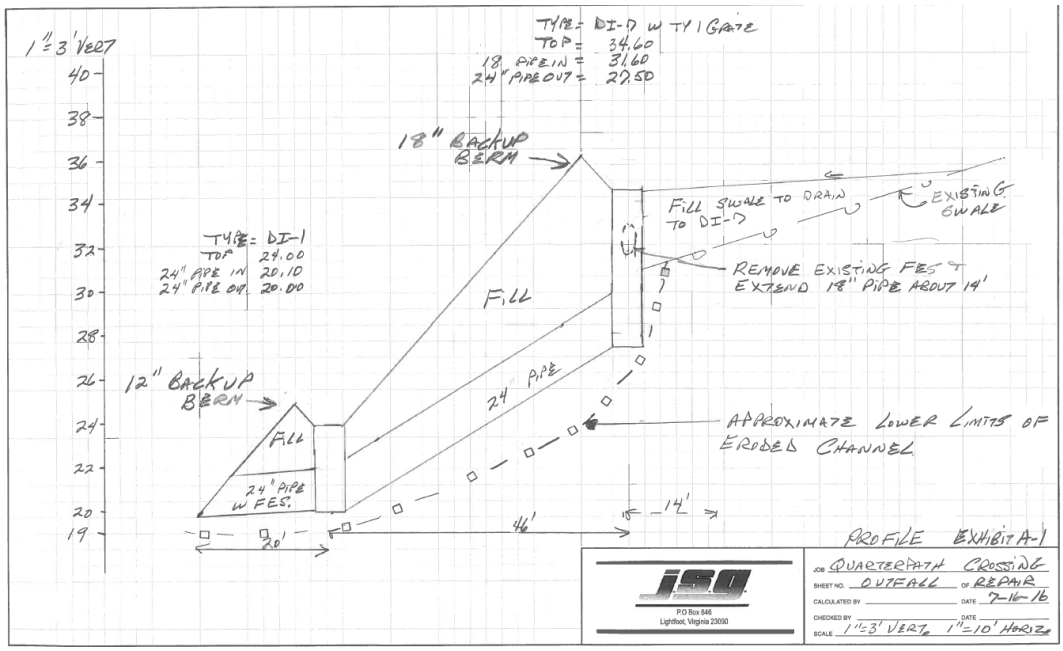


Figure 4: Outfall stabilization project during inspection (2021)

Photos from 2021 were taken by Stantec on 07/07/21.

Photographs for the VDOT Quarterpath Crossing Outfall Stabilization Project

Figure 5: Stabilized slope with vegetated cover (2021)

Figure 6: Channel downstream of pipe outfall (2021)

Photos from 2021 were taken by Stantec on 07/07/21.

Free Union AHQ FY21

[1] Data collected from Manassas residency reflects street sweeping done in FY2020. Data does not represent street sweeping done within the CUA or watershed, so it was assumed to have been performed county-wide.

Date	County	Where material originated from and Activity	Quantity (# of Loads x	Tons	Disposal Site (see list below)	Sites
			46	23.6072		

FW: Street Sweeping

Hall, Ashley
To Smith, Ben

Reply | Reply All | Forward | ...

Fri 7/30/2021 9:23 AM

this was just the free union area

Jason Raines
TOM I Maintenance
Virginia Department of Transportation
Cell:434-960-0695 Office:434-973-5838
Jason.Raines@vdot.virginia.gov

On Thu, Jul 29, 2021 at 4:38 PM Hall, Ashley <Ashley.Hall@stantec.com> wrote:

> Thanks Jason. Can you give me an idea of the area that was being swept? Was this the full Charlottesville Residency area and/or interstates only?
>
> **From:** Raines, Jason <jason.raines@vdot.virginia.gov>
> **Sent:** Thursday, July 29, 2021 2:12 PM
> **To:** Hall, Ashley <Ashley.Hall@stantec.com>
> **Subject:** Re: Street Sweeping
>
> we sweet 10/28 -11/4 for a total of 46 Cy
>
> **Jason Raines**
> *TOM I Maintenance*
> Virginia Department of Transportation
> Cell:434-960-0695 Office:434-973-5838
> Jason.Raines@vdot.virginia.gov

FY 20 Mass Loading Methodology (TMDL Guidance Memo)

Tons of Material Collected	Pounds of Material Collected	Dry Weight Ratio (lbs dry/lbs material)	TN Reduction Ratio	TP Reduction Ratio	TSS Reduction Ratio	
24	47214.4	0.7	0.0025	0.001	0.3	

Before discount

TN Removed	**83**	lbs
TP Removed	**33**	lbs
TSS Removed	**9915**	lbs

For Ches Bay, discounted by 0.28 to account for roads not in the CUA

TN Removed	**23**	lbs
TP Removed	**9**	lbs
TSS Removed	**2759**	lbs

Chesepeake Bay Discount

Length of Roads in Free Union AHQ CUA	109.502	miles
Length of Roads in Free Union AHQ	393.537	miles
Discount Factor	0.28	

Moores Run Discount

Length of Roads in Moores Run WS in Free Union AHQ in CUA	18.367	miles
Length of Roads in Free Union AHQ	393.537	miles
	0.047	

Rivanna Discount

	109.502	miles
Length of Roads in Rivanna WS in Free Union AHQ in CUA	393.537	miles
Length of Roads in Free Union AHQ	0.28	

Good morning Ashley;

The estimated street sweeping tonnage for Fiscal Year 2021 for the Peninsula IMO is **607.95 tons**.

David W. Meador
Contract Admin. Peninsula IMO
Virginia Department of Transportation
757-253-5150
david.meador@VDOT.Virginia.gov

FY 20 Mass Loading Methodology (TMDL Guidance Memo)

Tons of Material Collected	Pounds of Material Collected	Dry Weight Ratio (lbs dry/lbs material)	TN Reduction Ratio	TP Reduction Ratio	TSS Reduction Ratio	Discount Factor
608	1215900	0.7	0.0025	0.001	0.3	

James

TN Removed	**692**	lbs
TP Removed	**277**	lbs
TSS Removed	**83089**	lbs

Before Discount

TN Removed	**2128**	lbs
TP Removed	**851**	lbs
TSS Removed	**255339**	lbs

York

TN Removed	**637**	lbs
TP Removed	**255**	lbs
TSS Removed	**76423**	lbs

	York	James	
	47.131	51.242	Peninsula interstate w/in CUA by watershed
157.471	91.504	65.967	Peninsula Interstate (total)
	0.30	0.33	

FY 20 Mass Loading Methodology (TMDL Guidance Memo)						
Tons of Material Collected	Pounds of Material Collected	Dry Weight Ratio (lbs dry/lbs material)	TN Reduction Ratio (lbs/yr)	TP Reduction Ratio (lbs/yr)	TSS Reduction Ratio (lbs/yr)	Discount Factor
1777	3553270	0.7	0.0025	0.001	0.3	0.978

Total interstate length in CPB 261.441 mi
Total interstate length in CPD in CU 255.813 mi
0.978473

Before Discount

TN Removed	**6218**	lbs
TP Removed	**2487**	lbs
TSS Removed	**746187**	lbs

CUA Discount

TN Removed	**6084**	lbs
TP Removed	**2434**	lbs
TSS Removed	**730124**	lbs

To determine street sweeping performed within CUA and watershed, the ratio of interstate roads within CUA and watershed and all interstate roads in the Southside HR IMO were calculated. Miles of VDOT maintained roads within the Hampton Roads Southside IMO: 159.02 and Miles of VDOT maintained roads within the CUA (Southside): 158.04. Ratio applied: 158/159 = 0.994

	tons of material
Street sweeping	1626.76
Drop inlet cleaning	149.875

RE: Street sweeping data

Hall, Ashley
To: Steven Stephenson
Cc: Smith, Ben

Reply | Reply All | Forward | ...
Mon 8/9/2021 3:50 PM

To: Hall, Ashley <Ashley.Hall@stantec.com>
Cc: Smith, Ben <Ben.Smith@stantec.com>
Subject: FW: Street sweeping data

See the email below form John Laporta with Atlantic Heating and Cooling.
He calculated that they collect approx. .055 tons from each drain.

Steve Stephenson
Contract Administrator Supervisor/Interstate Maintenance Office
Hampton Roads District
Virginia Department of Transportation
Phone (757) 494-5474, Cell (757) 435-3128
steven.stephenson@vdot.virginia.gov

VDOT

From: John LaPorta <john@atlanticheatcool.com>
Sent: Monday, August 9, 2021 2:35 PM
To: Steven Stephenson <steven.stephenson@vdot.virginia.gov>
Subject: RE: Street sweeping data

Steve,
I am going to do my best to give you a accurate amount of material collected from each drain. In June we cleaned 25,170 feet of pipe and 429 DI's. We Dumped a total of 23.84 tons on material. With these figures we on average take out .055 of a ton from each drain. I hope this helps.

From: Steven Stephenson <steven.stephenson@vdot.virginia.gov>
Sent: Monday, August 9, 2021 10:16 AM
To: Hall, Ashley <Ashley.Hall@stantec.com>
Cc: Smith, Ben <Ben.Smith@stantec.com>
Subject: RE: Street sweeping data

Good morning,

I am sorry I did not get this to you last week.
See below for the requested information.

Our sweeping contractor provided the information below for FY21.
Miles Swept - 2167
Approx. number of dumps per day – 7
Approx. Tons per Dump – 3.19
Total Tons – 1626.76

I totaled up the Drop inlet cleanouts for Drain Cleaning at 2356.
Also, just in case bridge drains count, our contractor cleaned 369 bridge drains.

Thank you, have a great day!

Steve Stephenson
Contract Administrator Supervisor/Interstate Maintenance Office
Hampton Roads District
Virginia Department of Transportation
Phone (757) 494-5474, Cell (757) 435-3128
steven.stephenson@vdot.virginia.gov

VDOT

RE: Street sweeping data

Hall, Ashley
To Jennings, Gary
Cc Smith, Ben

Reply | Reply All | Forward

Tue 8/10/2021 1:57 PM

Thank you Gary!

From: Jennings, Gary <gary.jennings@vdot.virginia.gov>
Sent: Tuesday, August 10, 2021 1:55 PM
To: Hall, Ashley <Ashley.Hall@stantec.com>
Subject: Re: Street sweeping data

Ashley;

We picked up an additional 468 tons of sweeping from January to June 2021. In total we disposed of 715 tons of sweeping in FY21. Let me know if you need anything else. Thanks.

VDOT | **Gary Jennings**
Richmond District IMO Administrator
Virginia Department of Transportation
757-345-1005
gary.jennings@VDOT.Virginia.gov

FY 21 Mass Loading Methodology (TMDL Guidance Memo)

Tons of Material Collected	Pounds of Material Collected	Dry Weight Ratio (lbs dry/lbs material)	TN Reduction Ratio	TP Reduction Ratio	TSS Reduction Ratio	Discount Factor
715	1430000	0.7	0.0025	0.001	0.3	

James

TN Removed	**1403**	lbs
TP Removed	**561**	lbs
TSS Removed	**168363**	lbs

Before Discount

TN Removed	**2503**	lbs
TP Removed	**1001**	lbs
TSS Removed	**300300**	lbs

James Len	504.097
James CUA	313.683
James Discount	0.561
York Len	55.403
York CUA	6.945
York Discount	0.012
Total	559.5

Chickahominy Local TMDL

Chickahominy CUA	14.841
Total Len	0.026525469

Overall CUA Discount (for Local TMDLs)

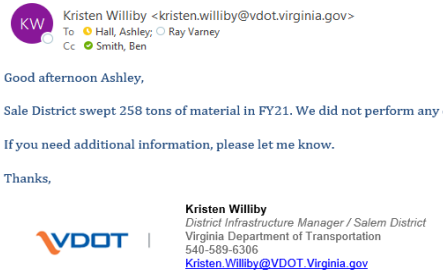
Total Len	559.5
Total Len in CUA	320.628
Total Discount	0.573061662

FY 20 Mass Loading Methodology (TMDL Guidance Memo)						
Tons of Material Collected	Pounds of Material Collected	Dry Weight Ratio (lbs dry/lbs material)	TN Reduction Ratio	TP Reduction Ratio	TSS Reduction Ratio	Discount Factor
258	516000	0.7	0.0025	0.001	0.3	0.06

Before Discount		
TN Removed	**903**	lbs
TP Removed	**361**	lbs
TSS Removed	**108360**	lbs

CUA Discount		
TN Removed	**56**	lbs
TP Removed	**22**	lbs
TSS Removed	**6726**	lbs

Per VDOT Implementation Plan, street sweeping as a BMP is needed to remove 136 tons/year



KW Kristen Williby <kristen.williby@vdot.virginia.gov>
To Hall, Ashley; Ray Varney
Cc Smith, Ben

Good afternoon Ashley,

Sale District swept 258 tons of material in FY21. We did not perform any drop basin cleanouts last year.

If you need additional information, please let me know.

Thanks,

Kristen Williby
District Infrastructure Manager / Salem District
Virginia Department of Transportation
540-589-6306
Kristen.Williby@VDOT.Virginia.gov

To determine street sweeping performed within CUA and watershed, the ratio of roads within CUA and watershed and all roads in the watershed were calculated. Miles of VDOT maintained roads within James River watershed: 1951.12 and Miles of VDOT maintained roads within the CUA within watershed: 116.32. Ratio applied: 116.32/1951.12=0.0596

(James River Basin)			
Salem roads in CUA in watershed	77.665		
Total Salem roads in watershed	1251.236		
Discount	0.062070625		
Crab Creek			
Salem roads in CUA in crab creek in CPB	5.005		
Salem toads total	1251.236	87.58652	
Discount	0.004000045		
Upper Roanoke River			
Salem roads in CUA in upper roanoke river in	47.54		
Salem roads total	1251.236		
Discount	0.037994431		
Stroubles Creek Discount			
Salem roads in CUA in stroubles watershed ir	2.502		
Salem roads total	1251.236		
Discount	0.001999623		

Swiss Dixie Nutrient Bank - James River		Bank Data		Conversion			
3/4/2016	Phase II NRIP provided by DEQ						
	HUC - 02080207			DEQ			
	James River Basin			Conversion Rate		Total Sediment	
		Acres	TP	S:P Ratio			
	Hay to Forest	102.79	100.73		28.73	2893.973	**Weighted S:P Ratio:** **28.73**
						0	
						0	
		Total	100.73		Total:	**2893.973**	
	* from Exhibit. Combined with other agriculture in tables						

VDOT Purchase Amounts:

TP	Date	Converted to S
2	6/2/2017	57.46
103	6/2/2017	2959.19
20	6/21/2016	574.6
		3591.25 Total S (lbs)

Hunts Creek Nutrient Bank - James River	Bank Data		Conversion		
12/8/2017 NRIP Provided by DEQ					
HUC - 02080203 (vast majority of site) & 02080205 (very small portion			DEQ		
JAMES BASIN			Conversion Rate	Total Sediment	
	Acres	TP	S:P Ratio		
Hay to Forest	151	147.98	86.12	12744.04	**Weighted S:P Ratio:** **86.12**
				0	
				0	
	Total	147.98		Total: **12744.04**	
* from Exhibit. Combined with other agriculture in tables					

VDOT Purchase Amounts:		
TP	Date	Converted to S
15.12	6/7/2018	1302.134
		0
		1302.134 Total S (lbs)

Notes: NRIP does not stipulate what small portion of the site (a very small portion on the Eastern edge of the site which is along the road) drains to HUC02080205
For simplicity sake, the conversion was based on HUC 02080203 (vast majority of site)
It should be noted that 02080205 has a smaller conversion ratio of S:P.

Namozine Nutrient Bank - James River		Bank Data		Conversion		
3/15/2016	NRIP Provided by DEQ					
	HUC - 02080207			DEQ		
	JAMES BASIN			Conversion Rate	Total Sediment	
		Acres	TP	S:P Ratio		
	Hay to Forest	24.45	23.96	28.73	688.3708	**Weighted S:P Ratio:** **28.73**
					0	
					0	
		Total	23.96	Total:	**688.3708**	
	* from Exhibit. Combined with other agriculture in tables					

VDOT Purchase Amounts:

TP	Date	Converted to S
0.9	6/7/2018	25.857
		0
		25.857 Total S (lbs)

Sams Nutrient Bank - James River		Bank Data		Conversion		
3/9/2017	NRIP Provided by DEQ					
	HUC - 02080207			DEQ		
	JAMES BASIN			Conversion Rate	Total Sediment	
		Acres	TP	S:P Ratio		
	Crop to Forest	10.1	12.32	164.96	2032.307	**Weighted S:P Ratio:** **164.96**
					0	
					0	
		Total	12.32	Total:	**2032.307**	
	* from Exhibit. Combined with other agriculture in tables					

VDOT Purchase Amounts:

TP	Date	Converted to S
6.9	6/7/2018	1138.224
		0
		1138.224 Total S (lbs)

Potamoi James - Miyagi Nutrient Bank	Bank Data		Conversion		
9/12/2018 Submitted to VDOT with Nitrogen Bids					
HUC - 02080208			DEQ		
JAMES BASIN			Conversion Rate	Total Sediment	
	Acres	TP	S:P Ratio		
Pasture to Forest	52.97	92.17	19.94	1837.87	**Weighted S:P Ratio:** **19.96152**
Impervious Urban to Forest	0.05	0.02	109.2	2.184	
Pervious Urban to Forest	1.07	2.53	20.04	50.7012	
	Total	94.72		Total: **1890.755**	
* from Exhibit. Combined with other agriculture in tables					

VDOT Purchase Amounts:		
TP	Date	Converted to S
13.14	(04/19)	262.2943
		0
		262.2943 Total S (lbs)

Potomac River Basin

	Reductions			
	TP (lb/yr)	TN (lb/yr)	TSS (lb/yr)	
Redevelopment				
Gloucester Parkway (104418)	1.38	4.45	618.22	<--Previously reported in 2016 MS4 Annual Report
Stream Restoration and Stabilization				
Harrisonburg Stream Restoration	**204.00**	**187.00**	**417348.00**	**<--Previously reported in 2016 MS4 Annual Report. Verified 5/11/2021. SDR Updated.**
Harrisonburg Stream Restoration-Protocol 3	0.00	136.70	0.00	<--Previously reported in 2018 MS4 Annual Report
Lake Ridge AHQ Stream Restoration	178.34	494.89	**340331.49**	<--Previously reported in 2019 MS4 Annual Report
Wancopin	**5759.90**	**15573.00**	**15301105.00**	**<--New for 2021 MS4 Annual Report**
Pikes Branch	3739.00	9195.00	**7122295.08**	<--Previously reported in 2020 MS4 Annual Report
Outfall and Channel Stabilization	0.00	0.00	0.00	
Historical BMPs	45.00	569.00	90783.00	<--Previously reported in 2016 MS4 Annual Report
Forest Buffers				
Harrisonburg Land Cover Conversion	0.10	12.50	436.00	<--Previously reported in 2017 MS4 Annual Report
Land Cover Conversion				
Harrisonburg Land Cover Conversion	8.41	158.45	2942.40	<--Previously reported in 2017 MS4 Annual Report
Culpeper District	0.00	1510.70	0.00	<--Previously reported in 2019 MS4 Annual Report Addendum
Staunton District	0.00	9878.10	0.00	<--Previously reported in 2019 MS4 Annual Report Addendum
Loudoun Residency Pollinator Areas	0.00	772.80	0.00	<--Previously reported in 2019 MS4 Annual Report Addendum
Northern Virginia Mowing Practices	0.00	2306.00	0.00	<--Previously reported in 2020 MS4 Annual Report
NOVA LCC- Project 21	0.75	14.11	261.93	<--Previously reported in 2020 MS4 Annual Report
Northern Virginia Pollinator Habitats	0.00	20.29	0.00	<--Previously reported in 2020 MS4 Annual Report
Mowing Practices	0.00	3994.07	0.00	<--Previously reported in 2020 MS4 Annual Report Addendum
Street Sweeping and Catch Basin Cleanout	**2,148.96**	**5,372.40**	**644,688.13**	**<--New for 2021 MS4 Annual Report**
Nutrient Credit Purchase				
Edgecliff Bank (1/31/17)	112.00	832.16	3205.44	<--Previously reported in 2017 MS4 Annual Report. TSS Updated 2021
Potamoi Holdings (4/25/19)	9.54	150.00	10888.50	<--Previously reported in 2019 MS4 Annual Report. TSS Updated 2021
RLP Investments, LC (Kinsales) (4/25/19)	3.19	50.00	3640.91	<--Previously reported in 2019 MS4 Annual Report. TSS Updated 2021
Structural BMP Enhancement and Retrofit	0.00	0.00	0.00	
Reston MTD	1.02	6.78	942.08	<--Previously reported in 2019 MS4 Annual Report
Staunton BMP Retrofit (34029)	2.72	15.61	999.50	<--Previously reported in 2020 MS4 Annual Report
Total Credit Reported	12,214	51,254	23,940,486	
Reduction Requirement (Special Condition D2- 36%)	2,811	18,801	2,477,611	
% Complete to date (Special Condition D2- 36%)	435%	273%	966%	

Stantec

Memo

To:	Tracey Harmon	From:	Ashley Hall Chris Plummer Gene Haffey
	Virginia Department of Transportation		Stantec Consulting Services Inc.
File:	2034001484	Date:	August 20, 2021

Reference: Dry Fork Stream Restoration Verification

Introduction

The Dry Fork Stream Restoration project is located on the VDOT Harrisonburg Residency lot in Rockingham County, Virginia. The watershed is composed of a mix of rural and industrial areas and discharges into Dry Fork, then Smith Creek, ending in the North Fork Shenandoah River in the Shenandoah River watershed. Before repair, the streambed exhibited lateral instability along the bottom half of the reach, below the existing ford crossing. Upstream of the ford crossing the channel exhibited stable banks with little to no active erosion. The stream channel was dry during evaluation, with evidence of ponding and rack lines indicating recent higher flows. To stabilize the channel VDOT has graded back vertical eroded banks to create a bankfull bench, stabilized areas identified as high erosion risks per the BANCS assessment with rock toe protection and J-hooks, and stabilized the channel bottom with constructed riffles. Coir mat and stabilizing seed mixes were installed along all denuded streambanks, and heavy recruitment of native vegetation was evident throughout the restoration area. See Appendix A for photos of the stream channel before and after restoration.

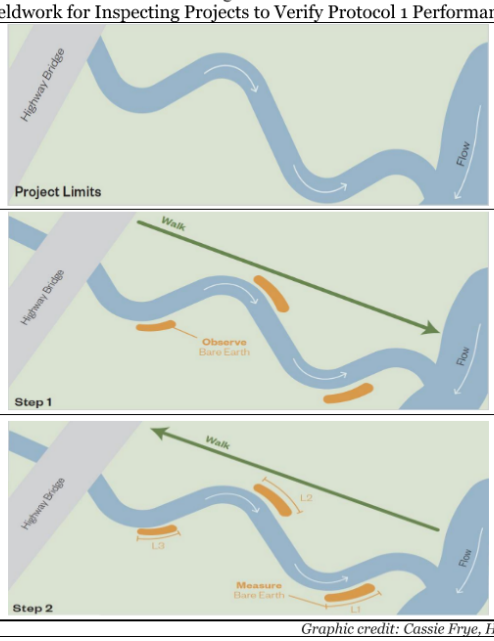
The stream restoration was completed in August 2016. Sediment and nutrient reduction credits from the project were taken by VDOT to address the Chesapeake Bay Total Maximum Daily Load (TMDL) and were reported in the 2016 MS4 Annual Report. Projects used to meet the Chesapeake Bay TMDL reductions are required to be inspected every 5 years after implementation to ensure the practice is functioning correctly. The observations from the Dry Fork Stream Restoration project inspection are reviewed below.

Inspection Process

Stantec used the Protocol-Specific Rapid Verification Inspections from the *Recommended Methods to Verify Stream Restoration Practices Built for Pollutant Crediting in the Chesapeake Bay Watershed*, as approved by the Urban Stormwater Work Group of the Chesapeake Bay Program dated June 18, 2019. As Protocol 1 and Protocol 2 were used for this project, the restoration reach was walked in an “out and back” manner (see Figures 1 and 2).

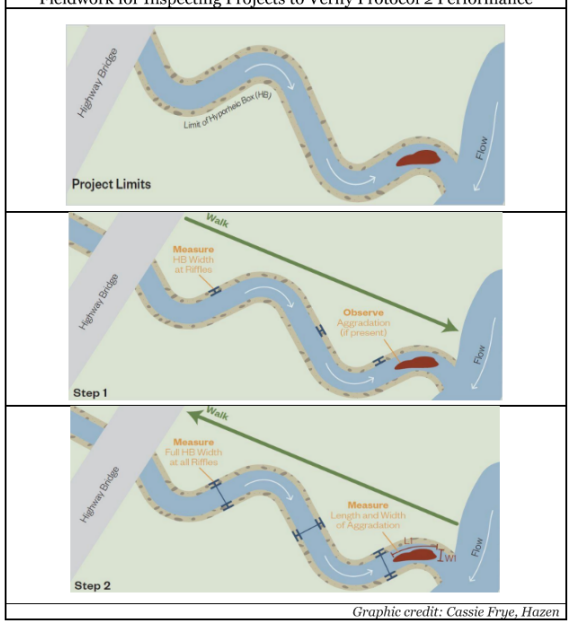
Reference: **Dry Fork Stream Restoration Verification**

Figure 1:
Fieldwork for Inspecting Projects to Verify Protocol 1 Performance



Graphic credit: Cassie Frye, Hazen

Figure 2:
Fieldwork for Inspecting Projects to Verify Protocol 2 Performance



Graphic credit: Cassie Frye, Hazen

Per the Verification guidance, the project is then inspected to determine if the degree of change, relative to the original design, is severe enough to warrant management actions (Table 1). The stream restoration project will fall into one of three possible categories:

1. Functioning or Showing Minor Compromise (Pass)
2. Showing Major Compromise (Action Needed)
3. Project Failure (Fail)

Table 1:
Framework for Relating Reach Conditions to Management Decisions

Status	*% of Failing Project Reach*	*Inspections*	*Management Actions*
Functioning or Showing Minor Compromise	**0 to 10%**	Re-inspect in 5 years	None Needed Credit Renewed for 5 Years
Showing Major Compromise	**20 to 40%**	Conduct immediate forensic investigation to identify cause(s)	Do project maintenance and repairs, as warranted
Project Failure	**50% or more**	Lose credit and abandon the project or reconstruct a new stable channel	

The method for calculating the percentage of the project reach in poor condition for Protocols 1 and 2 is described in Table 2.

Reference: **Dry Fork Stream Restoration Verification**

Table 2:

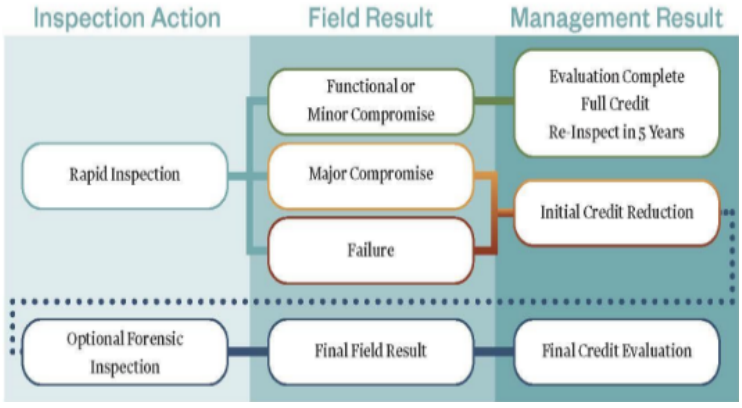
Protocol 1	Protocol 2
A. Define Restored Banks Over Reach Length[1]	*A.* Define Hyporheic Zone Over Reach Length[2]
Example: 1000 ft reach has 2000 LF of restored banks	*Example: 1000 ft reach has 400 LF of reconnected hyporheic zone, both banks would be 800 LF*
B. Estimate Total Impaired Reach Length, for all indicators [4]	*B.* Estimate Length of Impaired Hyporheic Zone, for all indicators [5]
Example: 100 ft of right bank and 50 ft of left bank are compromised, for a total of 150 ft *(150/2000=7.5%)*	*Example: 100 ft of tight bank and 300 ft of left bank are compromised, for a total of 400 ft* *(400/800 = 50%)*
C. Compute Percent Function Loss Over Reach[7] and Compare to Decision Thresholds	
Example: Functioning or showing minor compromise	*Example: Project failure* / *Example: Showing major compromise*

Notes:

[1] Restored bank length can be up to two times greater than the restored reach length
[2] Length of the hyporheic box along the channel from its initial disconnection extending downstream until connection is resumed, excluding bedrock sections, per design.
[3] Area of floodplain with new or increased reconnection with the channel, per design
[4] Calculated by dividing estimated linear feet of eroding/bare earth by the linear feet restored banks (e.g., 400 feet of eroded bank observed over a 1,000 feet restoration project would be 400/2000=20%).
[5] Done in the same general manner as Protocol 1
[6] Can be measured as % bank height length exceeding design tolerances or % floodplain area not vegetated or otherwise connected
[7] The workgroup selected the minimum (10%) threshold using its knowledge of typical pre-restoration channel condition and assuming a 50% (default) post-restoration load-reduction. Specifically, the workgroup determined that restoration is very unlikely unless at least 20% of a reach, measured linearly, was eroding. Pre-restoration reaches containing less than 20% erosion would be incorrectly verified using the 10% post-restoration threshold and the 50% default reduction, in the absence of lower post-restoration banks and/or lower lateral erosion rate (*Source; Scott Cox, PADEP*).

If the rapid assessment indicates the potential for loss of function and thus credit, the project owner/sponsor can respond with several management decisions, which is shown in the flow chart in Figure 3.

Figure 3: Flow Chart Relating Inspection Results to Management Actions



Reference: **Dry Fork Stream Restoration Verification**

Inspection

The Dry Fork Stream Restoration project was inspected on 5/11/2021. Photos from the inspection are included in Appendix A. Overall the site is performing as designed, with the restored channel stabilizing around the installed structures and no downcutting or floodplain abandonment noted along the reach. Vegetative cover exceeds 90% along the stream corridor. The structures along the restoration reach continue to function as intended, creating a stable step pool sequence down the restoration reach.

	Dry Fork Stream Restoration % Failure – Protocol 1/2				
	Restored Stream Banks (LF)	Impaired Stream Banks (LF)	Loss of Function Over Reach (%)	Status	Management Action
Protocol 1	1,022	0	0%	Functional	None needed
Protocol 2	1,022	0	0%	Functional	None needed

Recommended Actions

After inspection of the site, the restored stream reach had no loss of function noted along the reach. This places it in the Functional/Showing Minor Compromise category per the approved Protocol-Specific Rapid Verification Inspection Protocol. Based on this guidance, no management actions are recommend at this time, and the project should be reinspected again in 5 years.

Summary

Approximately 5 years after implementation, the Dry Fork Stream Restoration project appears to be functioning as designed, with minor compromise observed. No management action is needed, and credit can be renewed for 5 years. Given the credit originally taken at this site, 50%, additional credit may be warranted when this project is renewed for credit. The stabilization of the project exceeds 90%, therefore a nutrient reduction of 90% is warranted. The credit for 90% efficiency is shown below.

Dry Fork Stream Restoration Credit Scenarios				
Nutrient Reduction Efficiency	**TP**	**TN**	**TSS**	**TSS (no SDR)**
	lbs/yr	**lbs/yr**	**lbs/yr**	**lbs/yr**
Credit claimed in 2016 Annual Report (50%)	97	104	36,680	213,707
90%	204	187	42,088	417,348

Reference: **Dry Fork Stream Restoration Verification**

Ashley Hall

Phone: 804-461-0878
Ashley.hall@stantec.com

Attachment: Photo Log

Photographs for the VDOT Dry Fork Stream Restoration Project

Photostation 18(preconstruction)/11(post construction):

10/3/2014 – Preconstruction photo

8/26/2016 – Post Construction

5/11/2021 – 5-year site inspection

Photographs for the VDOT Dry Fork Stream Restoration Project

Photostation 24(preconstruction)/8(post construction):

10/3/2014 – Preconstruction photo

8/26/2016 – Post Construction

5/11/2021 – 5-year site inspection

Photographs for the VDOT Dry Fork Stream Restoration Project

Photostation 28(preconstruction)/5(post construction):

10/3/2014 – Preconstruction photo

8/26/2016 – Post Construction

5/11/2021 – 5-year site inspection

Photographs for the VDOT Dry Fork Stream Restoration Project

Photostation 31(preconstruction)/2(post construction):

10/3/2014 – Preconstruction photo

8/26/2016 – Post Construction

5/11/2021 – 5-year site inspection

Photographs for the VDOT Dry Fork Stream Restoration Project

Photostation 32(preconstruction)/1(post construction):

10/3/2014 – Preconstruction photo

8/26/2016 – Post Construction

5/11/2021 – 5-year site inspection

Project Name: *Wancopin Creek*

Location **UPC Code or BMP ID:** *0*

Geographic (County/City):	*Loudoun County*	District:	*Northern Virginia*	Residency:	*Leesburg*	River Basin:	*Potomac*
Inside Year 2000 Urbanized Area? (Y/N)	*No*	Latitude:	*39.00576*	Longitude:	*-77.693425*	Coastal/ Non-Coastal:	*Non-Coastal*

BMP Type: *Stream Restoration*

Project Description:

The Wancopin Creek TMDL Stream Restoration is a turnkey project being completed on under the VDOT Statewide MS4/TMDL Implementation & Related Activities On-Call Contract. The reductions through this 16,700 linear foot stream restoration project are being incrementally reported as the project is implemented.

Project Drainage Area:

Inside CUA	*Impervious Area (ac.)*	*0.00*	*Pervious Area (ac.)*	*0.00*			
Outside CUA	*Impervious Area (ac.)*	*2.6*	*Pervious Area (ac.)*	*65.5*	*Forested Area (ac.)*	*30.20*	

Existing Conditions Proposed Improvements:

Compensatory? (Y/N)	*N*	Onsite stream relocation? (Y/N)	*N*
Condition of Existing Stream	*Severe bank erosion*		
Proposed Stream Designed using Natural Channel priniciples? (Y/N)	*Y*		
Linear Feet Restored (centerline)	*16,700.00*	Existing Avg Bank Height Restored (ft)	*2.00*
Method of Stabilization:	*Protocol 1*	Existing Avg Channel Top Width (ft)	*5.00*

Qualifying Conditions:

Project primarily designed to protect public infrastructure by bank armoring or rip rap? (Y/N)			N
Stream Reach > 100 L.F.? (Y/N)	Y	Existing stream still actively enlarging or degrading? (Y/N)	Y
Project utilizing comprehensive approach to SR addressing long term stability of channels, banks, and floodplain? (Y/N)			Y
Will project comply with all state and federal permitting requirements, including 404 and 401 permits?			Y
Project proposed for sole purpose of receiving nutrient or sediment reduction?			N
Will project have a designated authority responsible for routine maintenance and long term repairs?			Y

Method of Estimating Bank Erosion

1.) Measured in-field pre-restoration	N	2.) BANCS Method	Y	3.) Interim Rate	N

Protocols applied: Protocol 1

Estimated Credit	TN	TP	TSS	
lbs/yr	15,573.0	5,759.90	15301105.00	*SDR applied? (Y/N) N

Discussion

The Project includes a total of approximately 16,700 linear feet of stream restoration; completed as of April 2020.

Est. Implementation Date:	*4/30/2021*	**Project Contact Name:**	*Tracey Harmon*
Project Completed:	*Yes*	**Contact Information (email/phone):**	*(804) 371-6834*

Photos, Plans and/or Project graphics

Photos, Plans and/or Project graphics

Plans, Profile sheets available? (Y/N) Y

Please include as attachments

From Fairfax tickets:

Date	Tons
9/30/2019	3.22
9/30/2019	3.54
9/30/2019	3.8
10/4/2019	2.94
10/4/2019	4.53
10/1/2019	3.01

FY 20 Mass Loading Methodology (TMDL Guidance Memo)

Tons of Material Collected	Pounds of Material Collected	Dry Weight Ratio (lbs dry/lbs material)	TN Reduction Ratio	TP Reduction Ratio	TSS Reduction Ratio	
21	42080	0.7	0.0025	0.001	0.3	

For Ches Bay, discounted by 0.95 to account for roads not in the CUA

TN Removed	**71**	lbs
TP Removed	**28**	lbs
TSS Removed	**8516**	lbs

For Bull Run, discounted by 0.16 (Manassas residency is 230960, Bull Run CUA in Manassas Residency is 20919)

TN Removed	**10**	lbs
TP Removed	**4**	lbs
TSS Removed	**1142**	lbs

Before discount

TN Removed	**74**	lbs
TP Removed	**29**	lbs
TSS Removed	**8837**	lbs

Chesepeake Bay Discount			UP TO DATE 2021
Length of Roads in FFX CUA	4940.233	miles	
Length of Roads in FFX District	5126.629	miles	
Discount Factor	0.963641605		

Bull Run Discount			UP TO DATE 2021
Length of Roads in Manassas CUA i	662.543	miles	
Length of roads in Manassas Res	5126.629	miles	
Discount Factor	0.129235605		

Manassas AHQ FY 20

[f] Data collected from Manassas residency reflects street sweeping done in FY2020. Data does not represent street sweeping done within the CUA or watershed, so it was assumed to have been performed county-wide.

[g] To determine street sweeping performed within CUA and watershed, the ratio of roads within CUA and watershed and all roads in the county was calculated. For Ches Bay, ratio of CUA 0.82 was used to calculate credits

Prince William VDOT DCR Sweeping Report April-June

Date	County	Where material originated from and Activity	Cubic Yard Quantity (#	Tons	Disposal Site (see list below)
5/17/2021	Prince William	Rt. 2930 Rocky Run Rd.	2	1.0264	Prince William County Landfill
5/18/2021	Prince William	Rt. 2930 Rocky Run Rd.	3	1.5396	Prince William County Landfill
5/19/2021	Prince William	Rt. 2930 Rocky Run Rd.	3	1.5396	Prince William County Landfill
5/20/2021	Prince William	Rt. 2930 Rocky Run Rd.	3	1.5396	Prince William County Landfill
5/21/2021	Prince William	Rt. 2930 Rocky Run Rd.	2	1.0264	Prince William County Landfill
6/1/2021	Prince William	Snow map 21	3	1.5396	Prince William County Landfill
6/2/2021	Prince William	Snow map 21	3	1.5396	Prince William County Landfill
6/3/2021	Prince William	Snow map 21	3	1.5396	Prince William County Landfill
6/15/2021	Prince William	Snow map 25	3	1.5396	Prince William County Landfill
6/21/2021	Prince William	Snow map 27	4	2.0528	Prince William County Landfill
6/25/2021	Prince William	Snow map 27	3	1.5396	Prince William County Landfill
6/29/2021	Prince William	Snow map 27	3	1.5396	Prince William County Landfill
4/26/2021	Prince William	Rt.234 Dumfries Rd.	10	5.132	Prince William County Landfill
4/27/2021	Prince William	Rt.234 Dumfries Rd.	8	4.1056	Prince William County Landfill
4/28/2021	Prince William	Rt.234 Dumfries Rd.	9	4.6188	Prince William County Landfill
4/30/2021	Prince William	Rt.619 Bristow Rd.	7	3.5924	Prince William County Landfill
5/5/2021	Prince William	Rt.619 Bristow Rd.	6	3.0792	Prince William County Landfill
6/22/2021	Prince William	Rt.234 Dumfries Rd.	10	5.132	Prince William County Landfill
6/25/2021	Prince William	Rt. 1600 Ashton Ave.	8	4.1056	Prince William County Landfill
6/28/2021	Prince William	Rt. 1600 Ashton Ave.	7	3.5924	Prince William County Landfill
6/30/2021	Prince William	Rt.782 Residency Rd.	5	2.566	Prince William County Landfill
4/19/2021	Prince William	Rt.3408 Acadia Dr. Sweeping Debris	2	1.0264	Prince William County Landfill
4/20/2021	Prince William	Rt.1825 Benton St. Sweeping Debris	2	1.0264	Prince William County Landfill
4/20/2021	Prince William	Rt.2866 Olivia St. Sweeping Debris	1	0.5132	Prince William County Landfill
4/20/2021	Prince William	Rt.738 Old Stage Rd. Sweeping Debris	4	2.0528	Prince William County Landfill
4/20/2021	Prince William	Rt.3706 Fettler Park Dr. Sweeping Debris	4	2.0528	Prince William County Landfill
4/21/2021	Prince William	Rt.1108 Old Triangle Rd. Sweeping Debris	2	1.0264	Prince William County Landfill
4/21/2021	Prince William	Rt.619 Fuller Heights Rd. Sweeping Debris	6	3.0792	Prince William County Landfill
4/21/2021	Prince William	Rt.1107 Graham Park Rd. Sweeping Debris	3	1.5396	Prince William County Landfill
4/22/2021	Prince William	Rt.1194 River Ridge Rd. Sweeping Debris	3	1.5396	Prince William County Landfill
4/22/2021	Prince William	Rt.4100 Potomac Shores Rd. Sweeping Debris	2	1.0264	Prince William County Landfill
4/22/2021	Prince William	Rt.9341 Panther Pride Rd. Sweeping Debris	3	1.5396	Prince William County Landfill
4/22/2021	Prince William	Rt.635 Cherry Hill Rd. Sweeping Debris	1	0.5132	Prince William County Landfill
4/22/2021	Prince William	Rt.1194 River Heritage Rd. Sweeping Debris	2	1.0264	Prince William County Landfill
4/23/2021	Prince William	Rt.1194 River Heritage Rd. Sweeping Debris	3	1.5396	Prince William County Landfill
5/3/2021	Prince William	Rt. 123 Gordon Blvd. Sweeping	5	2.566	Prince William County Landfill
5/4/2021	Prince William	Rt. 123 Gordon Blvd. Sweeping	3	1.5396	Prince William County Landfill
5/5/2021	Prince William	Rt. 123 Gordon Blvd. Sweeping	3	1.5396	Prince William County Landfill
5/6/2021	Prince William	Rt. 123 Gordon Blvd. Sweeping	5	2.566	Prince William County Landfill
5/18/2021	Prince William	Rt.2482 Benita Fitzgerald Sweeping	3	1.5396	Prince William County Landfill
5/18/2021	Prince William	Rt.2798 Bushy Ln. Sweeping	1	0.5132	Prince William County Landfill
5/18/2021	Prince William	Rt.2870 Beau Ridge Sweeping	1	0.5132	Prince William County Landfill
5/18/2021	Prince William	Rt.1877 Dyers Ln. Sweeping	1	0.5132	Prince William County Landfill
5/18/2021	Prince William	Rt.823 Donald Curtis Sweeping	1	0.5132	Prince William County Landfill
5/25/2021	Prince William	Rt.1189 River Ridge Sweeping	1	0.5132	Prince William County Landfill
5/25/2021	Prince William	Rt.1140 Wayside Dr. Sweeping	3	1.5396	Prince William County Landfill
5/25/2021	Prince William	Rt.1199 Pine Bluff Dr. Sweeping	1	0.5132	Prince William County Landfill
5/25/2021	Prince William	Rt.1198 Naples Ln. Sweeping	1	0.5132	Prince William County Landfill
5/25/2021	Prince William	Rt.1194 Allen Dent Sweeping	1	0.5132	Prince William County Landfill
5/29/2021	Prince William	Rt.4005 Chesapeake Dr. Sweeping	1	0.5132	Prince William County Landfill
5/29/2021	Prince William	Rt.610 Neabsco @ Wawa Sweeping	1	0.5132	Prince William County Landfill
5/29/2021	Prince William	Rt.2550 Powells Creek Sweeping	1	0.5132	Prince William County Landfill
5/29/2021	Prince William	Rt.610 Neabsco @ Klawans Sweeping	1	0.5132	Prince William County Landfill
6/2/2021	Prince William	Rt.638 Potomac Center Blvd.Sweeping Debris	3	1.5396	Prince William County Landfill
6/2/2021	Prince William	Rt.1381 Montgomery Ave. Sweeping Debris	1	0.5132	Prince William County Landfill
6/2/2021	Prince William	Rt.1174 Southhampton St. Sweeping Debris	1	0.5132	Prince William County Landfill
6/2/2021	Prince William	Rt.2000 Reddy Dr. Sweeping Debris	1	0.5132	Prince William County Landfill
6/2/2021	Prince William	Rt. Inn St. Sweeping Debris	1	0.5132	Prince William County Landfill
6/3/2021	Prince William	Rt.1391 Delaware Ave. Sweeping Debris	1	0.5132	Prince William County Landfill
6/3/2021	Prince William	Rt.1362 Maryland Ave. Sweeping Debris	1	0.5132	Prince William County Landfill
6/3/2021	Prince William	Rt.2663 Persistence Dr. Sweeping Debris	2	1.0264	Prince William County Landfill
6/7/2021	Prince William	Rt.687 Dawson Beach Rd. Sweeping Debris	3	1.5396	Prince William County Landfill
6/7/2021	Prince William	Rt.1496 Village Dr. Sweeping Debris	1	0.5132	Prince William County Landfill
6/7/2021	Prince William	Rt.1255 Regency Dr. Sweeping Debris	1	0.5132	Prince William County Landfill
6/8/2021	Prince William	Rt.2880 Exiter Dr. Sweeping Debris	2	1.0264	Prince William County Landfill
6/8/2021	Prince William	Rt.906 Occoquan Rd Sweeping Debris	1	0.5132	Prince William County Landfill
6/8/2021	Prince William	Rt.637 Easy St Sweeping Debris	1	0.5132	Prince William County Landfill
6/8/2021	Prince William	Rt.638 Colchester Rd. Sweeping Debris	1	0.5132	Prince William County Landfill
6/14/2021	Prince William	Rt.1219 Belmont St. Sweeping Debris	1	0.5132	Prince William County Landfill
6/14/2021	Prince William	Rt.1218 Joyce St. Sweeping Debris	1	0.5132	Prince William County Landfill
6/14/2021	Prince William	Rt.1206 Belmont Park Sweeping Debris	1	0.5132	Prince William County Landfill
6/14/2021	Prince William	VRE Woodbridge Sweeping Debris	1	0.5132	Prince William County Landfill
6/14/2022	Prince William	Rt.1299 Summerland Dr. Sweeping Debris	1	0.5132	Prince William County Landfill
6/14/2021	Prince William	Rt.1030 York Dr Sweeping Debris	1	0.5132	Prince William County Landfill
6/22/2021	Prince William	Rt.1030 York Dr Sweeping Debris	1	0.5132	Prince William County Landfill
6/24/2021	Prince William	Rt.1781 Telegraph Rd. Sweeping Debris	3	1.5396	Prince William County Landfill
6/25/2021	Prince William	Rt.2344 Shoppers Best Way Sweeping Debris	2	1.0264	Prince William County Landfill
6/25/2021	Prince William	Rt.2832 Worth Ave. Sweeping Debris	2	1.0264	Prince William County Landfill
6/25/2021	Prince William	Rt.1780 Town Center Ave. Sweeping Debris	2	1.0264	Prince William County Landfill
6/25/2021	Prince William	Rt.1779 Potomac Mills Ave. Sweeping Debris	2	1.0264	Prince William County Landfill
6/28/2021	Prince William	Potomac Mill Dr.	1	0.5132	Prince William County Landfill
6/28/2021	Prince William	Avert St.	1	0.5132	Prince William County Landfill
6/28/2021	Prince William	Alabama Ave.	2	1.0264	Prince William County Landfill
6/28/2021	Prince William	Blackburn Rd.	2	1.0264	Prince William County Landfill
6/29/2021	Prince William	Rt.784 Intersections @ Rt.1	1	0.5132	Prince William County Landfill
6/29/2021	Prince William	Rt.784 Intersections @ Minnieville Rd.	2	1.0264	Prince William County Landfill
6/29/2021	Prince William	Cardinal Dr. @ Rt.1	1	0.5132	Prince William County Landfill
4/19/2021	Prince William	Rt.234 Pr. Wm. Parkway	7	3.5924	Prince William County Landfill
4/20/2021	Prince William	Rt.234 Pr. Wm. Parkway	7	3.5924	Prince William County Landfill
4/21/2021	Prince William	Rt.234 Pr. Wm. Parkway	7	3.5924	Prince William County Landfill
4/22/2021	Prince William	Rt.234 Pr. Wm. Parkway	7	3.5924	Prince William County Landfill
4/23/2021	Prince William	Rt.234 Pr. Wm. Parkway	7	3.5924	Prince William County Landfill
5/3/2021	Prince William	Rt.784 Dale Blvd.	5	2.566	Prince William County Landfill
5/4/2021	Prince William	Rt.784 Dale Blvd.	5	2.566	Prince William County Landfill
5/5/2021	Prince William	Rt.784 Dale Blvd.	5	2.566	Prince William County Landfill
5/6/2021	Prince William	Rt.784 Dale Blvd.	5	2.566	Prince William County Landfill
5/11/2021	Prince William	Rt.642 Hoadly Rd.	6	3.0792	Prince William County Landfill
5/18/2021	Prince William	Rt.642 Hoadly Rd.	5	2.566	Prince William County Landfill
5/19/2021	Prince William	Rt.642 Hoadly Rd.	7	3.5924	Prince William County Landfill
5/20/2021	Prince William	Rt.2053 Lindendale Rd.	6	3.0792	Prince William County Landfill
5/21/2021	Prince William	Rt.2053 Lindendale Rd.	4	2.0528	Prince William County Landfill

Sites

FY 20 Mass Loading Methodology (TMDL Guidance Memo)

Tons of Material Collected	Pounds of Material Collected	Dry Weight Ratio (lbs dry/lbs material)	TN Reduction Ratio	TP Reduction Ratio	TSS Reduction Ratio
159	317157.6	0.7	0.0025	0.001	0.3

Before discount

TN Removed	**555**	lbs
TP Removed	**222**	lbs
TSS Removed	**66603**	lbs

For Ches Bay, discounted by 0.83 to account for roads not in the CUA

TN Removed	**460**	lbs
TP Removed	**184**	lbs
TSS Removed	**55183**	lbs

For Bull Run, discounted by 0.118

TN Removed	**66**	lbs
TP Removed	**26**	lbs
TSS Removed	**7892**	lbs

Chesepeake Bay Discount

Length of Roads in Manassas Res CUA	1703.189	miles
Length of Roads in Manassas Res	2055.66	miles
Discount Factor	0.83	

Bull Run Discount

Length of Roads in Manassas CUA in Bull Run	243.591	miles
Length of roads in Manassas Res	2055.66	miles
Discount Factor	0.118	

Date	Project Location	Where material originated from and Activity	Tons	Disposal Site (see list below)
	Woodrow Wilson Bridge	**Sweeping**	96	Alexandria Waste Recovery
	I-95/I-395	**Sweeping**	619	Potomac Landfill
	I-66	**Sweeping and DI/Drain Debris**	116	Broad Run
	I-495	**Sweeping**	422.2	Potomac Landfill/Contractor/Barret's Transfer Station

FY 20 Mass Loading Methodology (TMDL Guidance Memo)

Tons of Material Collected	Pounds of Material Collected	Dry Weight Ratio (lbs dry/lbs material)	TN Reduction Ratio	TP Reduction Ratio	TSS Reduction Ratio	Discount Factor
1253	2506800	0.7	0.0025	0.001	0.3	0.93

For Ches Bay

TN Removed	**4087**	lbs
TP Removed	**1635**	lbs
TSS Removed	**490463**	lbs

Before Discount

TN Removed	**4387**	lbs
TP Removed	**1755**	lbs
TSS Removed	**526428**	lbs

A discount factor of 0.93 was used to account for areas outside of the CUA

Length of NOVA CUA Interstates	415.184	miles
Length of NOVA Interstates	445.629	miles
Discount Factor	0.9317	

Length of NOVA CUA Interstates in Bull Run	46	miles
Length of NOVA Interstates	445.629	miles
Discount Factor	0.1034	

FY 20 Mass Loading Methodology (TMDL Guidance Memo)						
Tons of Material Collected	Pounds of Material Collected	Dry Weight Ratio (lbs dry/lbs material)	TN Reduction Ratio	TP Reduction Ratio	TSS Reduction Ratio	Discount Factor
2013	4026200	0.7	0.0025	0.001	0.3	0.12

Before Discount

TN Removed	**7046**	lbs
TP Removed	**2818**	lbs
TSS Removed	**845502**	lbs

Cbay Discount

TN Removed	**825**	lbs
TP Removed	**330**	lbs
TSS Removed	**99042**	lbs

FW: Street Sweeping Data

Hall, Ashley
To Smith, Ben

Reply | Reply All | Forward | ...

Fri 7/23/2021 8:16 AM

Click here to download pictures. To help protect your privacy, Outlook prevented automatic download of some pictures in this message.

From: Mitchell, Michael <michael.mitchell@vdot.virginia.gov>
Sent: Friday, July 23, 2021 7:54 AM
To: Hall, Ashley <Ashley.Hall@stantec.com>
Cc: Elwood Waller <brett.waller@vdot.virginia.gov>; Stacy Sager <stacy.sager@vdot.virginia.gov>
Subject: Fwd: Street Sweeping Data

Hi Ashley:

Staunton District's FY21 estimated Street Sweeping quantities were 2013.1 tons.

Let me know if you have questions.

Thanks

NOTE: NO VDOT MAINTAINED ROADS IN CUA WITHIN JAMES RIVER BASIN - POTOMAC CREDIT ONLY

Staunton roads in CUA in watershed	807.982	mi
Total Staunton roads in watershed	6897.571	mi
Discount	0.12	

Edgecliff Nutrient Bank - Potomac River	Bank Data		Conversion		
3/4/2016	NRIP Addendum Provided by DEQ				
	HUC - 02070010 (derived from RES Spreadsheet)		DEQ		
	Potomac Basin		Conversion Rate	Total Sediment	
		Acres TP	S:P Ratio		
	Hay to Forest	531.12 323.98	28.62	9272.308	**Weighted S:P Ratio:** **28.62**
				0	
				0	
		Total 323.98		Total: **9272.308**	
	* from Exhibit. Combined with other agriculture in tables				

VDOT Purchase Amounts:

TP	Date	Converted to S
112	1/31/2017	3205.44
		0
		3205.44 Total S (lbs)

Coles Point NRIP	Bank Data		Conversion		
10/18/2018 Submitted to VDOT with Nitrogen Bids					
HUC - 02070011			DEQ		
POTOMAC BASIN			Conversion Rate	Total Sediment	
	Acres	TP	S:P Ratio		
Cropland to Forest	97.73	72.32	1141.35	82542.43	**Weighted S:P Ratio:** **1141.35**
Cropland to Hay				0	
Fallow to Forest*				0	
	Total	72.32		Total: **82542.43**	
* from Exhibit. Combined with other agriculture in tables					

VDOT Purchase Amounts:

TP	Date	Converted to S
9.54	(04/19)	10888.48
		0
		10888.48 Total S (lbs)

** - Note credit purhcase may have been split between Coles and Hull…. But both have identical ratios and both are entirely crop to forest in same HUC

Hull Springs Farm NRIP	Bank Data		Conversion		
1/4/2017 Submitted to VDOT with Nitrogen Bids					
HUC - 02070011			DEQ		
POTOMAC BASIN			Conversion Rate	Total Sediment	
	Acres	TP	S:P Ratio		
Cropland to Forest	57.71	42.71	1141.35	48747.06	**Weighted S:P Ratio:** **1141.35**
Cropland to Hay				0	
Fallow to Forest*				0	
	Total	42.71		Total: **48747.06**	
* from Exhibit. Combined with other agriculture in tables					

VDOT Purchase Amounts:		
TP	Date	Converted to S
9.54	(04/19)	10888.48
		0
		10888.48 Total S (lbs)

** - Note credit purhcase may have been split between Coles and Hull…. But both have identical ratios and both are entirely crop to forest in same HUC

RLP Kinsale	Bank Data		Conversion		
4/1/2016	Submitted to VDOT with Nitrogen Bids				
	HUC - 02070011		DEQ		
	POTOMAC BASIN		Conversion Rate	Total Sediment	
		Acres TP	S:P Ratio		
	Cropland to Forest	76.15 56.35	1141.35	64315.07	**Weighted S:P Ratio:** **1141.35**
	Cropland to Hay			0	
	Fallow to Forest*			0	
		Total 56.35		Total: **64315.07**	
	* from Exhibit. Combined with other agriculture in tables				

VDOT Purchase Amounts:		
TP	Date	Converted to S
3.19	(04/19)	3640.907
		0
		3640.907 Total S (lbs)

Rappahannock Basin

	Reductions			
	TP (lb/yr)	TN (lb/yr)	TSS (lb/yr)	
Redevelopment	0.00	0.00	0.00	
Stream Restoration and Stabilization				
Industrial Drive Stream Restoration Project	**110.00**	**475.00**	**974464.00**	**<--Previously reported in 2016 MS4 Annual Report. Verified 4/23/2021. SDR Updated**
Industrial Drive Stream Restoration-Protocol 3	0.00	36.70	0.00	<--Previously reported in 2018 MS4 Annual Report
Outfall and Channel Stabilization	0.00	0.00	0.00	
Historical BMPs	0.00	0.00	0.00	
Forest Buffers	0.00	0.00	0.00	
Land Cover Conversion	0.00	0.00	0.00	
Culpeper District	0.00	2379.90	0.00	<--Previously reported in 2019 MS4 Annual Report Addendum
Chatham Heights	0.90	12.44	124.41	<--Previously reported in 2020 MS4 Annual Report
Mowing Practices	0.00	813.45	0.00	<--Previously reported in 2020 MS4 Annual Report Addendum
Street Sweeping and Catch Basin Cleanout	0.00	0.00	0.00	
Nutrient Credit Purchase	0.00	0.00	0.00	
William Walker III (4/25/19).	13.83	145.17	13571.93	<--Previously reported in 2019 MS4 Annual Report. TSS Updated 2021
Incidental Retrofits	0.00	0.00	0.00	
Structural BMP Enhancement and Retrofit	0.00	0.00	0.00	
Fredericksburg Filterras (89-062 and 89-063)	1.09	2.92	279.82	<--Previously reported in 2017 MS4 Annual Report
Shoreline Stabilization				
Belle Isle State Park	**520.00**	**785.00**	**852756.00**	**<--New for 2021 MS4 Annual Report**
Total Credit Reported	646	4,651	1,841,196	
Reduction Requirement (Special Condition D2- 36%)	213	905	77,268	
% Complete to date (Special Condition D2- 36%)	303%	514%	2383%	

Stantec

Memo

To:	Tracey Harmon	From:	Ashley Hall Chris Plummer
	Virginia Department of Transportation		Stantec Consulting Services Inc.
File:	2034001484	Date:	August 20, 2021

Reference: Industrial Drive Stream Restoration Verification

Introduction

The Industrial Drive Stream Restoration project is located in Spotsylvania County, Virginia. The drainage easement receives runoff from a highly urbanized area and discharges into Long Branch in the Rappahannock River watershed. Before repair, a very large (15'+ vertical) and active headcut had formed resulting from land use changes and soil conditions, that threatened the surrounding stability of existing infrastructure. Upstream segments of the project had banks that reached upwards of 20 feet of vertical and eroding surfaces, while downstream areas were laterally unstable, slumping, and contributing sediment loads that resulted in extensive downstream sedimentation. This deposition contributed to further instability and in-channel habitat loss. To stabilize the channel VDOT "lifted" the stream and installed a series of instream structures for vertical control, as well as rock toe protection for lateral stability. See Appendix A for photos of the stream channel before and after restoration.

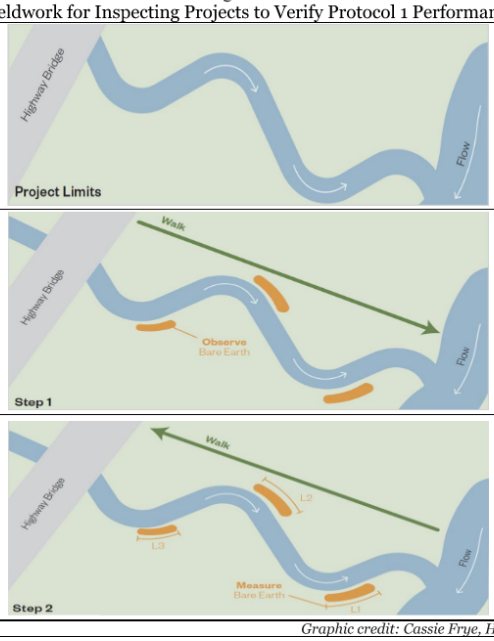
The stream restoration was completed in 2015. Sediment and nutrient reduction credits from the project were taken by VDOT to address the Chesapeake Bay Total Maximum Daily Load (TMDL) and were reported in the 2016 Annual Report. Projects used to meet the Chesapeake Bay TMDL reductions are required to be inspected every 5 years after implementation to ensure the practice is functioning correctly. The observations from the Industrial Drive Stream Restoration reverification project inspection are discussed below.

Inspection Process

Stantec used the Protocol-Specific Rapid Verification Inspections from the *Recommended Methods to Verify Stream Restoration Practices Built for Pollutant Crediting in the Chesapeake Bay Watershed*, as approved by the Urban Stormwater Work Group of the Chesapeake Bay Program dated June 18, 2019. As Protocol 1 and Protocol 2 were used for this project, the restoration reach was walked in an "out and back" manner (see Figures 1 and 2).

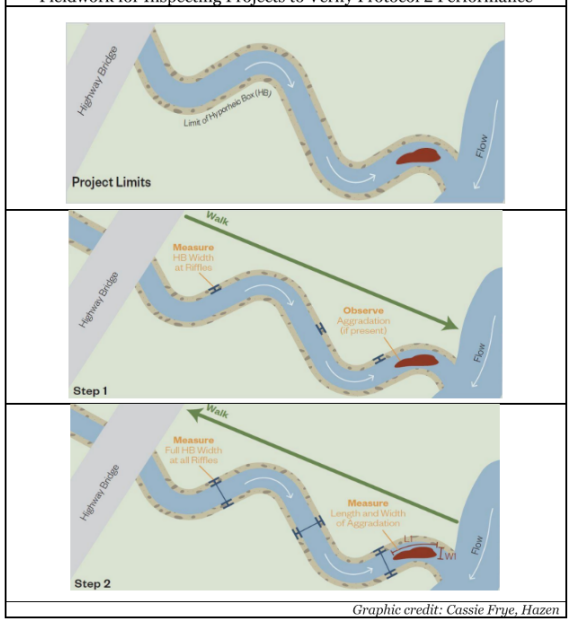
Reference: **Industrial Drive Stream Restoration Verification**

Figure 1:
Fieldwork for Inspecting Projects to Verify Protocol 1 Performance



Graphic credit: Cassie Frye, Hazen

Figure 2:
Fieldwork for Inspecting Projects to Verify Protocol 2 Performance



Graphic credit: Cassie Frye, Hazen

Per the Verification guidance, the project is then inspected to determine if the degree of change, relative to the original design, is severe enough to warrant management actions (Table 1). The stream restoration project will fall into one of three possible categories:

1. Functioning or Showing Minor Compromise (Pass)
2. Showing Major Compromise (Action Needed)
3. Project Failure (Fail)

Table 1:
Framework for Relating Reach Conditions to Management Decisions

Status	*% of Failing Project Reach*	*Inspections*	*Management Actions*
Functioning or Showing Minor Compromise	**0 to 10%**	Re-inspect in 5 years	None Needed Credit Renewed for 5 Years
Showing Major Compromise	**20 to 40%**	Conduct immediate forensic investigation to identify cause(s)	Do project maintenance and repairs, as warranted
Project Failure	**50% or more**	Lose credit and abandon the project or reconstruct a new stable channel	

The method for calculating the percentage of the project reach in poor condition for Protocols 1 and 2 is described in Table 2.

Reference: **Industrial Drive Stream Restoration Verification**

Table 2:

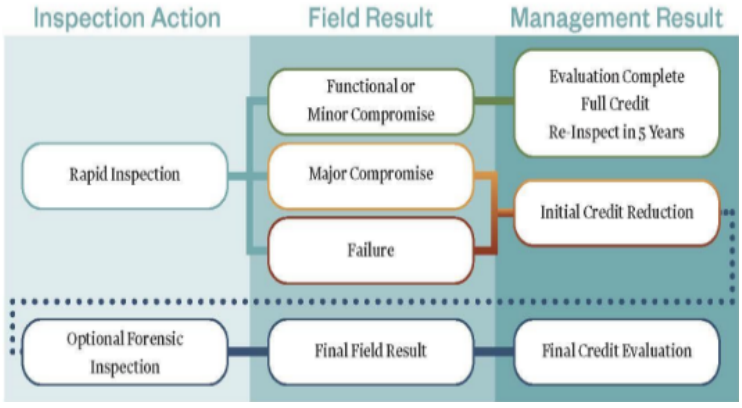
Protocol 1	Protocol 2
A. Define Restored Banks Over Reach Length[1]	*A.* Define Hyporheic Zone Over Reach Length[2]
Example: 1000 ft reach has 2000 LF of restored banks	*Example: 1000 ft reach has 400 LF of reconnected hyporheic zone, both banks would be 800 LF*
B. Estimate Total Impaired Reach Length, for all indicators [4]	*B.* Estimate Length of Impaired Hyporheic Zone, for all indicators [5]
Example: 100 ft of right bank and 50 ft of left bank are compromised, for a total of 150 ft *(150/2000=7.5%)*	*Example: 100 ft of tight bank and 300 ft of left bank are compromised, for a total of 400 ft* *(400/800 = 50%)*
C. Compute Percent Function Loss Over Reach[7] and Compare to Decision Thresholds	
Example: Functioning or showing minor compromise	*Example: Project failure* / *Example: Showing major compromise*

Notes:

[1] Restored bank length can be up to two times greater than the restored reach length
[2] Length of the hyporheic box along the channel from its initial disconnection extending downstream until connection is resumed, excluding bedrock sections, per design.
[3] Area of floodplain with new or increased reconnection with the channel, per design
[4] Calculated by dividing estimated linear feet of eroding/bare earth by the linear feet restored banks (e.g., 400 feet of eroded bank observed over a 1,000 feet restoration project would be 400/2000=20%).
[5] Done in the same general manner as Protocol 1
[6] Can be measured as % bank height length exceeding design tolerances or % floodplain area not vegetated or otherwise connected
[7] The workgroup selected the minimum (10%) threshold using its knowledge of typical pre-restoration channel condition and assuming a 50% (default) post-restoration load-reduction. Specifically, the workgroup determined that restoration is very unlikely unless at least 20% of a reach, measured linearly, was eroding. Pre-restoration reaches containing less than 20% erosion would be incorrectly verified using the 10% post-restoration threshold and the 50% default reduction, in the absence of lower post-restoration banks and/or lower lateral erosion rate (*Source; Scott Cox, PADEP*).

If the rapid assessment indicates the potential for loss of function and thus credit, the project owner/sponsor can respond with several management decisions, which is shown in the flow chart in Figure 3.

Figure 3: Flow Chart Relating Inspection Results to Management Actions



Reference: **Industrial Drive Stream Restoration Verification**

Inspection

The Industrial Drive Stream Restoration project was inspected on April 23, 2021. Photos from the inspection are included in Appendix A and the restoration plan is included in Appendix B. Overall the site is performing as designed, with the restored channel stabilizing around the installed structures and no downcutting or floodplain abandonment noted along the reach. Vegetative cover exceeds 90% along the stream corridor, except for one area of bank downstream of S5 that has sparse. This section of bank extends approximately nine (9) feet downstream of the right bank sill rock of S5. The structures along the restoration reach continue to function as intended, creating a stable step pool sequence down the restoration reach. Flanking of a structure was noted along the right bank of S12, where high flows have created a breach at a seam between header rocks that is causing bank erosion that extends for approximately seven (7) feet. Base flow is not able to access this breach, only higher flows from storm events.

	Industrial Drive Stream Restoration % Failure – Protocol 1/2				
	Restored Stream Banks (LF)	Impaired Stream Banks (LF)	Loss of Function Over Reach (%)	Status	Management Action
Protocol 1	1,011	16	1.58%	Showing minor compromise	None needed
Protocol 2	1,011	0	0%	Functional	None needed

Recommended Actions

After inspection of the site, the vast majority of the restored stream reach is functional, with only 16 linear feet of stream bank impaired. This results in a 1.58% loss of function for the restoration reach which places it in the Functional/Showing Minor Compromise category per the approved Protocol-Specific Rapid Verification Inspection Protocol. Based on this guidance, No management actions are recommend at this time, and the project should be reinspected again in 5 years

Summary

Approximately 5 years after implementation, the Industrial Drive Stream Restoration project appears to be functioning as designed, with minor compromise observed. The credit originally assigned to this site included stabilization for 90%, therefore the minor compromise does not challenge the assigned credits. The credit taken for the site is shown below.

Industrial Drive Stream Restoration Credit				
Nutrient Reduction Efficiency	**TP**	**TN**	**TSS**	**TSS (no SDR)**
	lbs/yr	**lbs/yr**	**lbs/yr**	**lbs/yr**
Credit claimed in 2016 Annual Report (90%)	110	475	176,378	974,464

Reference: **Industrial Drive Stream Restoration Verification**

Ashley Hall

Phone: 804-461-0878
Ashley.hall@stantec.com

Attachment: Photo Log

Photographs for the VDOT Industrial Drive Stream Restoration Project

Photostation 1

1/29/2016 – Preconstruction photo

6/1/2016 – Final walkthrough

4/23/2021 – 5-year site inspection

Photographs for the VDOT Industrial Drive Stream Restoration Project

Photostation 2:

1/29/2016 – Preconstruction photo

6/1/2016 – Final walkthrough

4/23/2021 – 5-year site inspection

Photographs for the VDOT Industrial Drive Stream Restoration Project

Photostation 3:

1/29/2016 – Preconstruction photo

6/1/2016 – Final walkthrough

4/23/2021 – 5-year site inspection

Photographs for the VDOT Industrial Drive Stream Restoration Project

Photostation 4:

1/29/2016 – Preconstruction photo

6/1/2016 – Final walkthrough

4/23/2021 – 5-year site inspection

Photographs for the VDOT Industrial Drive Stream Restoration Project

Photostation 5:

1/29/2016 – Preconstruction photo

6/1/2016 – Final walkthrough

4/23/2021 – 5-year site inspection

Photographs for the VDOT Industrial Drive Stream Restoration Project

Photostation 6:

1/29/2016 – Preconstruction photo

6/1/2016 – Final walkthrough

4/23/2021 – 5-year site inspection

Photographs for the VDOT Industrial Drive Stream Restoration Project

Photostation 7:

1/29/2016 – Preconstruction photo

6/1/2016 – Final walkthrough

4/23/2021 – 5-year site inspection

Photographs for the VDOT Industrial Drive Stream Restoration Project

Photostation 8:

1/29/2016 – Preconstruction photo

6/1/2016 – Final walkthrough

4/23/2021 – 5-year site inspection

Photographs for the VDOT Industrial Drive Stream Restoration Project

Photostation 9:

1/29/2016 – Preconstruction photo

6/1/2016 – Final walkthrough

4/23/2021 – 5-year site inspection

Photographs for the VDOT Industrial Drive Stream Restoration Project

Photostation 10:

1/29/2016 – Preconstruction photo

6/1/2016 – Final walkthrough

4/23/2021 – 5-year site inspection

Photographs for the VDOT Industrial Drive Stream Restoration Project

Headcut looking upstream

11/19/2019

4/23/2021

Photographs for the VDOT Industrial Drive Stream Restoration Project

Headcut from top of right bank

11/19/2019

4/23/2021

Photographs for the VDOT Industrial Drive Stream Restoration Project

Structure Breach

High flow flanking around the right side of S12.

Bank erosion from high flows flanking S12.

Void behind structure rock due to high flows along S12.

Photographs for the VDOT Industrial Drive Stream Restoration Project

Bank area devoid of vegetation.

Sparse vegetative bank coverage along right bank downstream of S5.

William Walker - Sharps Nutrient Bank	Bank Data		Conversion		
Spring 2019	Submitted to VDOT with Nitrogen Bids				
	HUC - 02080104		DEQ		
	RAPPAHANNOCK		Conversion Rate	Total Sediment	
		Acres TP	S:P Ratio		
	Cropland to Forest	22.3 13.83	981.34	13571.93	**Weighted S:P Ratio:** **981.34**
	Cropland to Hay			0	
	Fallow to Forest*			0	
		Total 13.83		Total: **13571.93**	
	* from Exhibit. Combined with other agriculture in tables				

VDOT Purchase Amounts:		
TP	Date	Converted to S
13.83	(04/25/19)	13571.93
		0
		13571.93 Total S (lbs)

Project Name: *Belle Isle State Park*

Location **UPC Code or BMP ID:** *0*

Geographic (County/City):	*Lancaster*	District:	*Fredericksburg*	Residency:	*Northern Neck*	River Basin:	*Rappahannock*
		Latitude:	*37.775724*	Longitude:	*-76.605109*	12 digit HUC	*020801040602*

BMP Type: *Shoreline Stabilization*

Project Description:

Belle Isle state park project area is located behind the visitor center. Since 2007, the shorelines have experienced erosion rates of approximately 2.0 FT/YR along the unnamed tributary and up to 7.6 FT/YR along the Rappahannock. The project involves grading, terraces, breakwaters and marsh planings to address erosion.

Existing Conditions Proposed Improvements:

Average Bank Height (FT):	*4.8*	Area of Existing Marsh (SF):	*0*
Method of Stabilization:	*Protocol 1, Protocol 2, Protocol 3, Protocol 4*		
Linear Feet Stabilization:	*752.00*	Area of Proposed Marsh (SF):	*27,007.00*

Qualifying Conditions:

Does the project impact the Chesapeake Bay Preservation Act protected vegetation (SAV) without appropriate mitigation?	N
Will project comply with all state and federal permitting requirements, including 404 and 401 permits?	N

Practice-specific Qualifying Conditions (1, 2, and 3, below)

The site is currently experiencing shoreline erosion (Y/N)? (All practices)	Y
1. If living shoreline-	
-A marsh fringe habitat (a or b) or beach/dune habitat (c) is created, enhanced, or maintained (Y/N).	Y
2. If Revetment AND/OR Breakwater system without a living shoreline-	
-A living shoreline is not technically feasible or practicable as determined by substrate, depth, or other site constraints (Y/N)?	N
-When the breakwater footprint would not cover SAV, shellfish beds, and/or wetlands (Y/N)?	N
3. If Bulkhead/Seawalls-	
-The site consists of port facilities, marine industrial facilities, etc. and depths deeper than 10 ft 35 feet from shore (Y/N)?	N

Method of Estimating Bank Erosion

Erosion Rate (FT/YR):	-2				
Source of Erosion Rate:	VIMS Data (Y/N)?	Y	Manually calculated with aerials (Y/N) and years?	N	
Protocols applied:	P1-Prevented Sediment	P2-Denitrification	P3-Sedimentation	P4-Marsh Redfield Ratio	
("x" applicable)	x	x	x	x	

Estimated Credit:	TN	TP	TSS	Field-collected data and elevations (Y/N)?	Y
lbs/yr	785.00	520.00	852,756.00	Default rates applied (Y/N)?	N

Discussion

Includes 0.62 acres of marsh planting.

Est. Implementation Date:	*6/1/2021*	**Project Contact Name:**	*Tracey Harmon*
Project Completed:	*Yes*	**Contact Information (email/phone):**	*(804) 371-6834*

Photos, Plans and/or Project graphics

⑥ LOOKING WEST AT ERODED SLOPE

Photos, Plans and/or Project graphics

Plans, Profile sheets available? (Y/N) Y

Please include as attachments

York River Basin

	Reductions			
	TP (lb/yr)	TN (lb/yr)	TSS (lb/yr)	
Redevelopment				
Lakeside (UPC 13714)	3.63	15.91	1467.60	<--Previously reported in 2016 MS4 Annual Report
Rt. 17 (UPC 60843)	15.50	46.14	7355.04	<--Previously reported in 2016 MS4 Annual Report
Stream Restoration and Stabilization	0.00	0.00	0.00	
Outfall and Channel Stabilization				
Stonehouse Road (UPC 103332)- Installed 10/31/2013	1.71	1.88	379.68	<--Previously reported in 2017 MS4 Annual Report. Verified 2/14/2019
Route 199 (UPC 106844)- installed 6/24/2016-2/28/2017	5.44	6.00	1210.40	<--Previously reported in 2017 MS4 Annual Report. Verified 7/7/2021
Pasture Circle (UPC 106845)- installed 6/24/2016-2/28/2017	0.71	0.78	157.62	<--Previously reported in 2017 MS4 Annual Report. Verified 7/7/2021
Historical BMPs	9.00	55.00	2631.00	<--Previously reported in 2016 MS4 Annual Report
Forest Buffers	0.00	0.00	0.00	
Land Cover Conversion	0.00	0.00	0.00	
Culpeper District	4.50	250.50	0.00	<--Previously reported in 2019 MS4 Annual Report addendum
Mowing Practices	26.95	1485.45	0.00	<--Previously reported in 2020 MS4 Annual Report addendum
Street Sweeping and Catch Basin Cleanout	**267.17**	**667.92**	**80,150.43**	**<--New for 2021 MS4 Annual Report**
Nutrient Credit Purchase	0.00	0.00	0.00	
Healy's Pond (4/25/19)	9.54	100.00	12563.87	<--Previously reported in 2019 MS4 Annual Report. TSS updated 2021
Healy's Pond (6/30/2020)	12.10	100.00	15935.31	<--Previously reported in 2020 MS4 Annual Report. TSS updated 2021
Incidental Retrofits	0.00	0.00	0.00	
Structural BMP Enhancement and Retrofit	0.00	0.00	0.00	
Seaford AHQ MTD	1.44	4.47	558.98	<--Previously reported in 2018 MS4 Annual Report
Total Credit Reported	358	2734	122410	
Reduction Requirement (Special Condition D2- 36%)	255	868	92595	
% Complete to date (Special Condition D2- 36%)	140%	315%	132%	

Stantec

Memo

To:	Tracey Harmon	From:	Daniel Reese Jr., PE Ashley Hall, PE
	Virginia Department of Transportation		Stantec Consulting Services Inc.
File:	203401484	Date:	July 14, 2021

Reference: BMP Verification- Route 199 Outfall Stabilization

Introduction

The Route 199 outfall stabilization project is located on the north side of Route 199 east of Merrimac Trail (Route 143) and Highway 60 (Route 60) in Williamsburg, Virginia and is in the York River watershed. Before repair, scour at the outlet and endwall failure was observed with multiple culvert segments of a double barrel culvert disconnected, leading to a migrating headcut along the roadway slope. To stabilize the outfall, Virginia Department of Transportation (VDOT) portions of the existing storm network and imported fill to stabilize the eroded roadway embankment within the VDOT drainage easement. A curb cut was observed with riprap installed on the slope face spanning from the curb cut to the top of bank of the channel. See attachment for photos of the outfall before and after stabilization.

The outfall stabilization was completed prior to the inspection. Sediment and nutrient reduction credits from the project were taken by VDOT to address the Chesapeake Bay Total Maximum Daily Load (TMDL) and were reported in the 2017 Annual Report. Projects used to meet the Chesapeake Bay TMDL reductions are required to be inspected every 5 years after implementation to insure the practice is functioning correctly. The observations from the Route 199 outfall stabilization inspection are reviewed below.

Inspection

The Route 199 outfall stabilization project was inspected on July 7th, 2021. Photos from the inspection are included in the attachments. The slope from the roadway down to the channel limits appears to be stable. There is no evidence of erosion occurring on the slope with the slope covered with riprap. The vegetation adjacent to the riprap is a mixture of woody plants and grasses. A stream crossing and silt fence was observed at the toe of slope.

The curb cut appears to discharge into a stable area of the channel within the restoration limits. No sediment deposition was observed within or adjacent to the channel limits.

Recommended Actions

Recommendations include removal the old stream crossing and remaining silt fence that was not removed following construction.

Summary

Following implementation, the Route 199 outfall stabilization project appears to be stable with a variety of vegetation growing in the adjacent areas of the riprap slope. Riprap did not appear to be dislodged throughout. It is recommended to remove erosion and sediment control measures no longer needed for implementation. The project has accomplished the goal of reducing erosion downstream of the pipe outfall.

Reference: **BMP Verification- Route 199 Outfall Stabilization**

Stantec Consulting Services Inc.

Daniel Reese Jr PE
Water Resources Engineer
Phone: (540) 340-2376
Daniel.Reesejr@stantec.com

Attachment: Photos

c. Ashley Hall, PE (Stantec)

Photographs for the VDOT Route 199 Outfall Stabilization Project

Figure 1: Plan sheet for stabilization activities

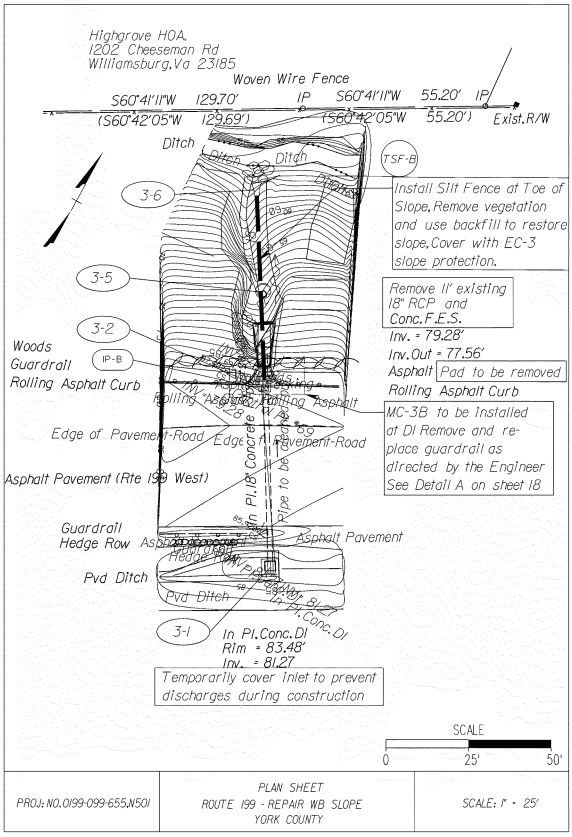


Figure 2: Outfall stabilization project during inspection (2021)

Photos from 2021 were taken by Stantec on 07/07/21.

Photographs for the VDOT Route 199 Outfall Stabilization Project

Figure 3: Stabilized slope with riprap (2021)

Figure 4: Stream crossing and silt fence (2021)

Photos from 2021 were taken by Stantec on 07/07/21.

Stantec

Memo

To:	Tracey Harmon	From:	Daniel Reese Jr., PE Ashley Hall, PE
	Virginia Department of Transportation		Stantec Consulting Services Inc.
File:	203401484	Date:	July 14, 2021

Reference: BMP Verification – Pasture Circle Outfall Stabilization

Introduction

The Pasture Circle Outfall Stabilization project is located on Pasture Circle in a rural residential area off Rt. 607 (Croaker Rd.), north of I-64 in James City County, Virginia and is within the York River watershed. This project was designed to replace the aging 30" culvert beneath the cul-de-sac portion of Pasture Circle and to repair a washed out sideslope upstream of the culvert outlet within the utility easement. The Virginia Department of Transportation (VDOT) installed a drop inlet with 55' of 15" storm pipe draining into a manhole conveying drainage from the west side of Pasture Circle. A 54' and 78' of 30" storm pipe upstream and downstream respectively of the manhole to convey drainage from the east side of Pasture Circle. The eroding sideslope was re-graded to match adjacent grades and re-vegetated. See attachment for photos of the outfall after stabilization.

Inspection

The Pasture Circle Outfall Stabilization project was inspected on July 7th, 2021. Photos from the inspection are included in the attachment. The sideslope between the roadway down to the pipe outlet appears to be stable with mature and uniform vegetation. No signs of erosion or sediment was observed in areas upstream of the inlets for the 15" and 30" storm pipe.

The outlet of the pipe appears to discharge into a stable area at the bottom of the slope and there are no obvious signs of erosion directly around the outlet or downstream of the outlet. Sediment deposition was observed downstream of the pipe outlet and is believed to be from an adjacent single-family lot being developed east of the cul-de-sac. Erosion and sediment control measures associated with the adjacent lot development was present during the inspection.

Recommended Actions

Sediment may be present within the storm pipe network from the adjacent lot development, potentially reducing the pipe's capacity to convey runoff. It is recommended to confirm the source of sediment observed downstream of the pipe and ensure no issue is present underneath the road. Remove any sediment from the storm pipe network to restore its design capacity.

Summary

Approximately 4 years after the site was identified for restoration, the Pasture Circle Outfall Stabilization project appears to be stable with uniform and mature vegetation growing on the slope. There was sediment deposition observed downstream of the outlet of the pipe, possibly due to the adjacent lot development. It is recommended that the source of sediment be confirmed and restore the capacity of the storm pipe network to its original condition. The project has accomplished the goal of reducing erosion between the roadway and pipe outfall with no signs of erosion or failure.

Reference: **BMP Verification – Pasture Circle Outfall Stabilization**

Stantec Consulting Services Inc.

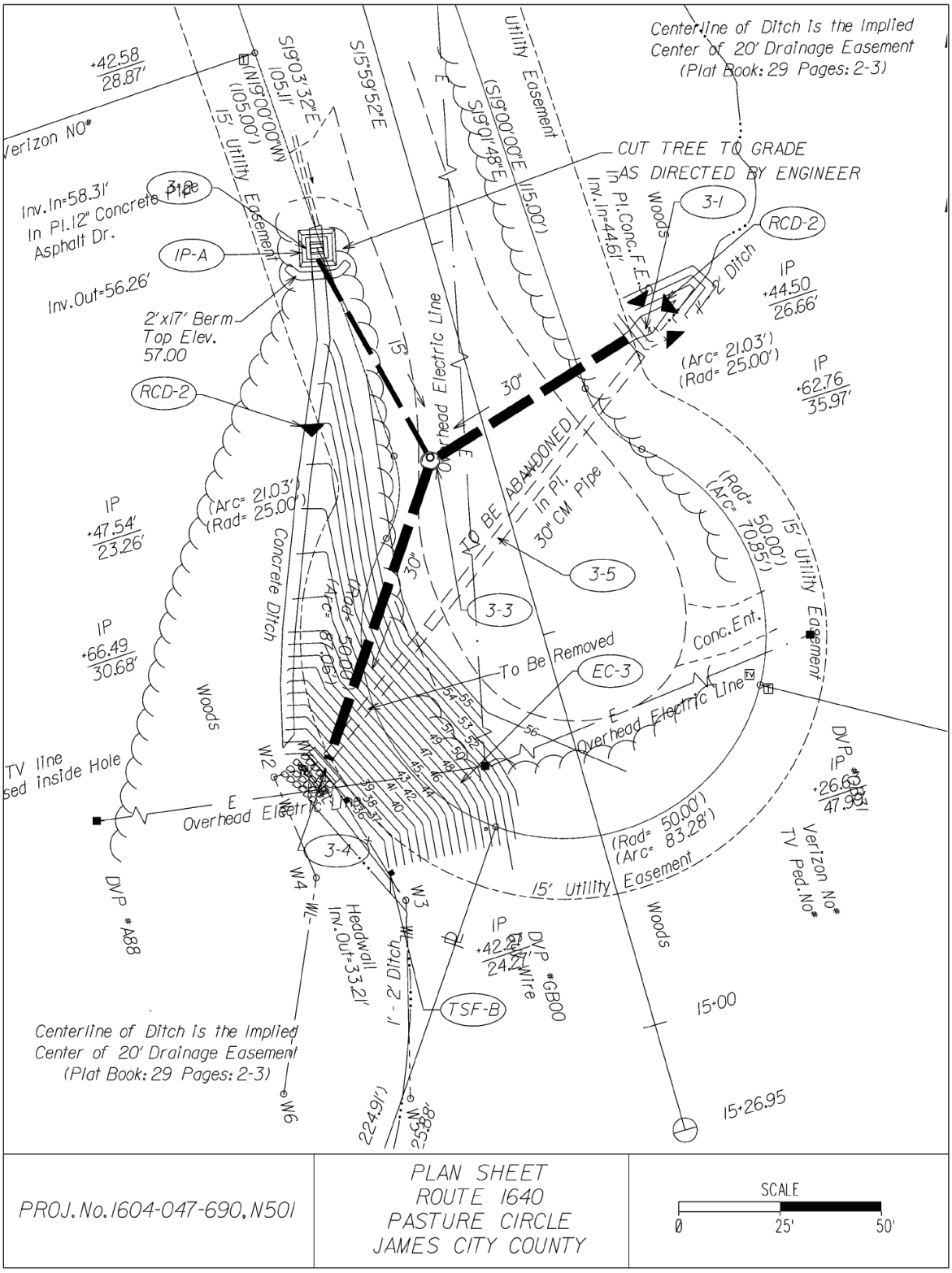
Daniel Reese Jr PE
Water Resources Engineer
Phone: (540) 340-2376
Daniel.Reesejr@stantec.com

Attachment: Photos

c. Ashley Hall, PE (Stantec)

Photographs for the VDOT Pasture Circle Outfall Stabilization Project

Photo 1: Plan sheet for stabilization activities



Photos from 2021 taken by Stantec on 07/07/21.
Project: 203401484

Photographs for the VDOT Pasture Circle Outfall Stabilization Project

Photo 2: Stabilized slope with vegetated cover (2021)

Photo 3: Downstream of Pipe Outlet (2021)

Photo 4: Outfall channel downstream of outlet pipe (2021)

Photos from 2021 taken by Stantec on 07/07/21.
Project: 203401484

Photographs for the VDOT Pasture Circle Outfall Stabilization Project

Photos from 2021 taken by Stantec on 07/07/21.

RE: Street sweeping data

Hall, Ashley
To Jennings, Gary
Cc Smith, Ben

Reply | Reply All | Forward

Tue 8/10/2021 1:57 PM

Thank you Gary!

From: Jennings, Gary <gary.jennings@vdot.virginia.gov>
Sent: Tuesday, August 10, 2021 1:55 PM
To: Hall, Ashley <Ashley.Hall@stantec.com>
Subject: Re: Street sweeping data

Ashley;

We picked up an additional 468 tons of sweeping from January to June 2021. In total we disposed of 715 tons of sweeping in FY21. Let me know if you need anything else. Thanks.

VDOT | **Gary Jennings**
Richmond District IMO Administrator
Virginia Department of Transportation
757-345-1005
gary.jennings@VDOT.Virginia.gov

FY 21 Mass Loading Methodology (TMDL Guidance Memo)

Tons of Material Collected	Pounds of Material Collected	Dry Weight Ratio (lbs dry/lbs material)	TN Reduction Ratio	TP Reduction Ratio	TSS Reduction Ratio	Discount Factor
715	1430000	0.7	0.0025	0.001	0.3	

James

TN Removed	**1403**	lbs
TP Removed	**561**	lbs
TSS Removed	**168363**	lbs

Before Discount

TN Removed	**2503**	lbs
TP Removed	**1001**	lbs
TSS Removed	**300300**	lbs

James Len	504.097
James CUA	313.683
James Discount	0.561
York Len	55.403
York CUA	6.945
York Discount	0.012
Total	559.5

Chickahominy Local TMDL

Chickahominy CUA	14.841
Total Len	0.026525469

Overall CUA Discount (for Local TMDLs)

Total Len	559.5
Total Len in CUA	320.628
Total Discount	0.573061662

Good morning Ashley;

The estimated street sweeping tonnage for Fiscal Year 2021 for the Peninsula IMO is **607.95 tons**.

David W. Meador
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FY 20 Mass Loading Methodology (TMDL Guidance Memo)

Tons of Material Collected	Pounds of Material Collected	Dry Weight Ratio (lbs dry/lbs material)	TN Reduction Ratio	TP Reduction Ratio	TSS Reduction Ratio	Discount Factor
608	1215900	0.7	0.0025	0.001	0.3	

James

TN Removed	**692**	lbs
TP Removed	**277**	lbs
TSS Removed	**83089**	lbs

Before Discount

TN Removed	**2128**	lbs
TP Removed	**851**	lbs
TSS Removed	**255339**	lbs

York

TN Removed	**637**	lbs
TP Removed	**255**	lbs
TSS Removed	**76423**	lbs

	York	James	
	47.131	51.242	Peninsula interstate w/in CUA by watershed
157.471	91.504	65.967	Peninsula Interstate (total)
	0.30	0.33	

Healys Pond NRIP	Bank Data		Conversion		
11/3/2015 Submitted to VDOT with Nitrogen Bids					
HUC - 02080102			DEQ		
YORK BASIN ONLY			Conversion Rate	Total Sediment	
	Acres	TP	S:P Ratio		
Cropland to Forest	276.17	208.18	1312.25	273184.2	**Weighted S:P Ratio:** **1316.968**
Cropland to Hay	10.2	2.76	9788.65	27016.67	
Fallow to Forest*		23.79	375.41	8931.004	
	Total	234.73		Total: **309131.9**	
* from Exhibit. Combined with other agriculture in tables					

VDOT Purchase Amounts:

TP	Date	Converted to S
9.54	(04/19)	12563.87
12.1	(06/20)	15935.31
		28499.19 Total S (lbs)

Note on Sediment Delivery Ratio

The Sediment Delivery Ratio (SDR) is the sediment loss between the edge-of-field and the edge-of-stream. This ratio is multiple by the predicted edge-of-field erosion rate to estimate the eroded sediments actually delivered to a specific reach. Per the 2014 Expert Panel Recommendations [1], an SDR was required on stream restoration projects:

> "*It was initially thought that the SDR would be applied after the EOF values were reported in Scenario Builder; however, it was determined by Chesapeake Bay Program Modeling team that it would be easier to account for the SDR as part of the protocols as shown in the design example in Section 6.1.* ***Therefore, jurisdictions must apply the SDR to the sediment (TSS) loading reductions for Protocol 1 and the Interim Rate.*** *For ease of computation, the SDRs from Table B-3 have been averaged and grouped into either Coastal Plain (SDR = 0.061) or non-Coastal Plain (SDR = 0.181). The Modeling Team felt the use of these averages was sufficiently accurate.*" -pg 87

Based on this guidance, VDOT reported the sediment loading reductions from stream restoration projects with a reduced factor to account for the SDR. The following stream projects were impacted:

- **James River Basin**
  - Skiffes
  - Timsbury
  - Slatersville
- **Potomac River Basin**
  - Dry Fork
  - Pikes Branch
  - Lake Ridge
- **Rappahannock River Basin**
  - Industrial Drive

According to the most recent 2020 Expert Panel Recommendations [2], an SDR is no longer required.

> *"The coastal plain and non-coastal plain sediment delivery factors are no longer part of BMP credit calculations. Sediment and nutrient delivery factors will vary by project location and should NOT be applied to the calculated sediment reductions prior to reporting.*" -pg 10

This guidance was confirmed by the Chesapeake Bay modeling team contact, Olivia Devereux, in an email to Stantec dated 6/3/2021.

> "For the purposes of the Bay Program and CAST, the sediment credit does not include the SDR, as you noted. Older projects should not include the SDR. All projects are now credited in the new way regardless of when they were implemented as long as there is a valid inspection date."

Therefore, VDOT is updating previously reported stream restoration projects to obtain the full sediment reduction. This change in crediting is represented in the 2021 MS4 Annual Report in the

stream projects listed above and will also be reflected in future stream restoration projects. The updated sediment reductions are shown in the table below and reported elsewhere in the Annual Report.

Stream Restoration and Stabilization	Basin	SDR Previously Applied	Reported Reductions	Reductions with no SDR
			TSS (lb/yr)	TSS (lb/yr)
Skiffes Creek	James	0.061	23,000	377,049
Timsbury Creek	James	0.181	103,800	573,481
Slatersville	James	0.061	21,585	353,852
Harrisonburg (Dry Fork)	Potomac	0.181	36,680	202,652
Lake Ridge AHQ	Potomac	0.181	61,600	340,331
Pikes Branch	Potomac	0.061	434,460	7,122,295
Industrial Drive	Rappahannock	0.181	176,378	974,466

[1] Urban Stream Restoration Expert Panel (USR EP, 2014). *Recommendations of the expert panel to define removal rates for individual urban stream restoration practices*. Test-Drive Revisions Approved by the WQGIT. 9/8/14

[2] Urban Stream Restoration Expert Panel (USR EP, 2020). Consensus Recommendations for Improving the Application of the Prevented Sediment Protocol for Urban Stream Restoration Projects Built for Pollutant Removal Credit. Approved by the WQGIT. 12/9/19. Revised 2/27/20.

FY22 Project Implementation Schedule

Project Name	River Basin	Project Description	Estimated Credits
Proctors Creek	James River	Stream Restoration	TN: 100; TP: 46; TSS: 15,916
Harbor Pointe Outfall Stabilization	James River	Outfall Stabilization	TN: 122; TP: 56; TSS: 107,100
Richmond District Complex	James River	BMP Retrofits	TN: TBD; TP: TBD; TSS: TBD
York River State Park	York River	Shoreline Stabilization	TN: 793; TP: 545; TSS: 252,829
Colonial Parkway	York River	Stream Restoration	TN: 550; TP: 253; TSS: 482,000
Randolph Creek (50%)	James River	Stream Restoration	TN: 2416; TP: 1113; TSS: 384,000

Appendix G
Local TMDL Action Plan Implementation Summary

October 2021

Abrams and Opequon Bacteria and Sediment TMDLs	VDOT will address the Abrams Creek Bacteria TMDL by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. VDOT will address the Abrams Creek and Opequon Creek Sediment TMDLs by continuing to implement programmatic BMPs effective in reducing sediment discharges from VDOT's MS4. Refer to BMPs 1(A), 2(A), 2(B), 2(C), 2(D), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
Lower Accotink Creek Bacteria TMDL	VDOT will address the Lower Accotink Creek Bacteria TMDL by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
Bull Run Sediment TMDL	VDOT will address the Bull Run Sediment TMDL by continuing to implement programmatic BMPs effective in reducing sediment discharges from VDOT's MS4. Refer to BMPs 1(A), 2(A), 2(B), 2(C), 2(D), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. VDOT also conducted street sweeping in the Bull Run watershed 63,486 pounds of sediment were removed from the watershed in FY2021.
Chickahominy River and Tributaries Bacteria TMDLs	VDOT will address the Chickahominy River and Tributaries Bacteria TMDL by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.

Crab Creek Bacteria and Sediment TMDLs	VDOT will address the Crab Creek Bacteria TMDL by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. VDOT will address the Crab Creek sediment TMDL by continuing to implement programmatic BMPs effective in reducing sediment discharges from VDOT's MS4. Refer to BMPs 1(A), 2(A), 2(B), 2(C), 2(D), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. VDOT also conducted street sweeping in the Crab Creek watershed. 433 pounds of sediment were removed from the watershed in FY2021.
Difficult Run Bacteria and Sediment TMDLs	VDOT will address the Difficult Run Bacteria TMDL by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. VDOT will address the Difficult Run sediment TMDL by continuing to implement programmatic BMPs effective in reducing sediment discharges from VDOT's MS4. Refer to BMPs 1(A), 2(A), 2(B), 2(C), 2(D), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
Four Mile Run Bacteria TMDLs	VDOT will address the Four Mile Run Bacteria TMDL by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.

Goose Creek Sediment TMDL	VDOT will address the Goose Creek sediment TMDL by continuing to implement programmatic BMPs effective in reducing sediment discharges from VDOT's MS4. Refer to BMPs 1(A), 2(A), 2(B), 2(C), 2(D), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
Hoffler Creek Bacteria TMDL	VDOT will address the Hoffler Creek Bacteria TMDL by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
Hunting Creek, Cameron Run, and Holmes Run Bacteria TMDLs	VDOT will address the Hunting Creek, Cameron Run, and Holmes Run Bacteria TMDLs by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
James River (City of Lynchburg) Bacteria TMDL	VDOT will address the James River Bacteria TMDL (Lynchburg area) by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
James River (City of Richmond) Bacteria TMDL	VDOT will address the James River Bacteria TMDL (Richmond area) by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.

Neabsco Creek Bacteria TMDL	VDOT will address the Neabsco Creek Bacteria TMDL by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
Occoquan River and Tributaries Bacteria TMDLs	VDOT will address the Occoquan River Bacteria TMDL by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
Popes Head Creek Sediment TMDL	VDOT will address the Popes Head Creek sediment TMDL by continuing to implement programmatic BMPs effective in reducing sediment discharges from VDOT's MS4. Refer to BMPs 1(A), 2(A), 2(B), 2(C), 2(D), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
Potomac River PCB TMDL Watershed	VDOT will address the Potomac River PCB TMDL by continuing to implement programmatic BMPs effective in reducing potential PCB discharged from VDOT's MS4. Refer to BMPs 1(A), 2(A), 2(B), 2(C), 2(D), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.

Rappahannock River Bacteria TMDL	VDOT will address the Rappahannock River Bacteria TMDL by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
Rivanna River Bacteria and Sediment TMDLs	VDOT will address the Rivanna River Bacteria TMDL by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 11(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. VDOT will address the Rivanna River sediment TMDL by continuing to implement programmatic BMPs effective in reducing sediment discharges from VDOT's MS4. Refer to BMPs 1(A), 2(A), 2(B), 2(C), 2(D), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. VDOT also conducted street sweeping in the Rivanna River watershed. 2,759 pounds of sediment were removed from the watershed in FY2021.
Roanoke River Bacteria and Sediment TMDLs	VDOT will address the Roanoke River Bacteria TMDL by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. VDOT will address the Roanoke River sediment TMDL by continuing to implement programmatic BMPs effective in reducing sediment discharges from VDOT's MS4. Refer to BMPs 1(A), 2(A), 2(B), 2(C), 2(D), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. VDOT also conducted street sweeping in the Roanoke River watershed. 4,117 pounds of sediment were removed from the watershed in FY2021.

Stroubles Creek Sediment TMDL Watershed	VDOT will address the Stroubles Creek sediment TMDL by continuing to implement programmatic BMPs effective in reducing sediment discharges from VDOT's MS4. Refer to BMPs 1(A), 2(A), 2(B), 2(C), 2(D), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. VDOT also conducted street sweeping in the Stroubles Creek watershed. 217 pounds of sediment were removed from the watershed in FY2021.
Back Bay, North Landing River, and Tributaries	VDOT will address the Back Bay, North Landing River, and Tributaries Bacteria TMDLs by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
Back River in York County and Cities of Hampton, Poquoson, and Newport News	VDOT will address the Back River Bacteria TMDL by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
Mattaponi River Watershed	VDOT will address the Mattaponi River Watershed Bacteria TMDL by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.

Pamunkey River and Tributaries	VDOT will address the Pamunkey River and Tributaries Bacteria TMDL by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
Poquoson River and Back Creek in York County	VDOT will address the Poquoson River and Back Creek Bacteria TMDLs by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
Potomac River Tributaries in Prince William and Stafford Counties	VDOT will address the Potomac River Tributaries Bacteria TMDL by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
Shenandoah Tributaries	VDOT will address the Shenandoah Tributaries Bacteria TMDLs by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
Sugarland Run, Mine Run, and Pimmit Run in Arlington, Fairfax, and Loudoun Counties	VDOT will address the Sugarland Run, Mine Run, and Pimmit Run Bacteria TMDLs by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.

Tye River Watershed in Nelson and Amherst Counties	VDOT will address the Tye River Watershed Bacteria TMDLs by continuing to implement programmatic BMPs effective in reducing bacteria discharges from VDOT's MS4. Refer to BMPs 1(A), 1(B), 2(C), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
Chickahominy River Sediment TMDL	VDOT will address the Chickahominy River sediment TMDL by continuing to implement programmatic BMPs effective in reducing sediment discharges from VDOT's MS4. Refer to BMPs 1(A), 2(A), 2(B), 2(C), 2(D), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. VDOT also conducted street sweeping in the Chickahominy River watershed. 7,966 pounds of sediment were removed from the watershed in FY2021.
Little Otter River, Johns Creek, Wells Creek, and Buffalo Creek	VDOT will address the Little Otter River, Johns Creek Wells Creek, and Buffalo Creek sediment TMDLs by continuing to implement programmatic BMPs effective in reducing sediment discharges from VDOT's MS4. Refer to BMPs 1(A), 2(A), 2(B), 2(C), 2(D), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. No additional BMPs are necessary at this time.
Moores Creek, Lodge Creek, Meadow Creek, and Schenks Branch	VDOT will address the Moores Creek, Lodge Creek, Meadow Creek, and Schenks Branch sediment TMDLs by continuing to implement programmatic BMPs effective in reducing sediment discharges from VDOT's MS4. Refer to BMPs 1(A), 2(A), 2(B), 2(C), 2(D), 3(A), 3(B), 3(C), 4(A), 4(B), 5(A), 5(B), 6(A), 6(B), 6(C), 6(D) and SC2(A) for further information on implementation. VDOT also conducted street sweeping in the watershed. 463 pounds of sediment were removed from the watershed in FY2021.