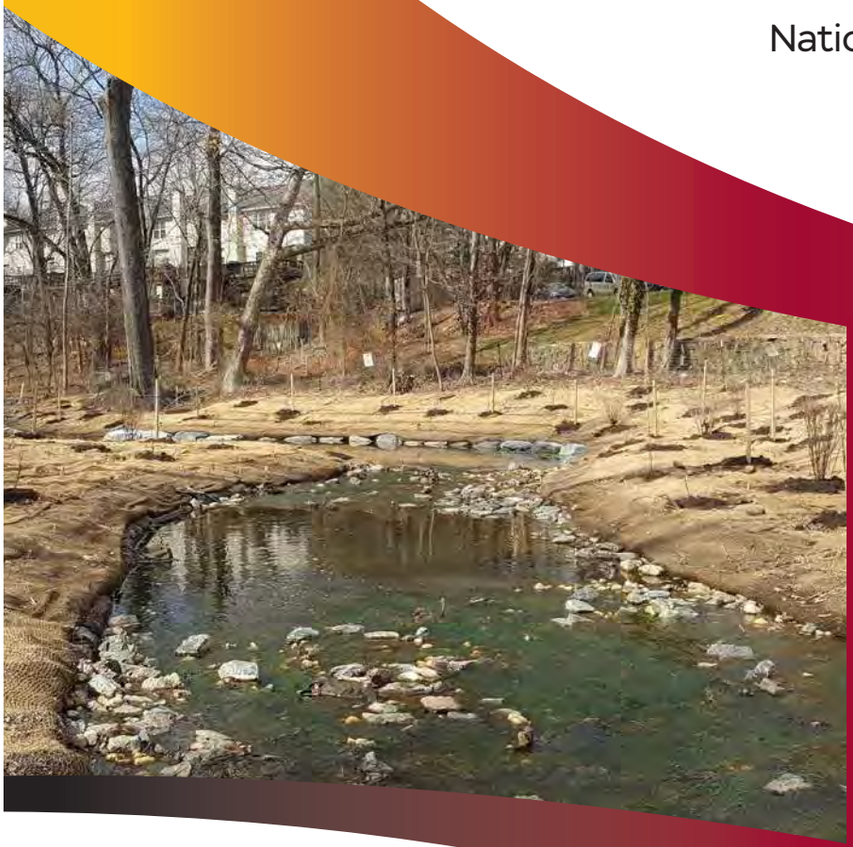
Annual Report

October 9, 2019

National Pollutant Discharge Elimination System
Municipal Separate Storm Sewer System
Permit No. 11-DP-3313 MD0068276
Permit Term
October 2015 to October 2020



Submitted to:
Sediment, Stormwater, and Dam Safety Program
Water and Science Administration
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230

Submitted by:
Maryland Department of Transportation
State Highway Administration
Office Of Environmental Design
707 North Calvert Street, C-303
Baltimore, MD 21202

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

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STATE HIGHWAY ADMINISTRATION

Larry Hogan
Governor
Boyd K. Rutherford
Lt. Governor
Pete K. Rahn
Secretary
Gregory Slater
Administrator

October 9, 2019

Mr. Stewart Comstock, Chief
Sediment, Stormwater & Dam Safety Program
Water and Science Administration
Maryland Department of the Environment
1800 Washington Boulevard, Suite 440
Baltimore MD 21230

Dear Mr. Comstock:

The Maryland Department of Transportation State Highway Administration (MDOT SHA), Office of Environmental Design (OED) is pleased to submit this fourth annual report to the Maryland Department of the Environment (MDE), Water and Science Administration's (WSA) Sediment, Stormwater & Dam Safety Program (SSDS) addressing conditions under the MDOT SHA National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) discharge permit (#11-DP-33133 MD 0068276) effective October 9, 2015. The report covers compliance efforts for fiscal year 2019 from July 1, 2018 to June 30, 2019.

Noteworthy items related to this report have been summarized in Attachment A. In accordance with Part V.C. of the permit, Attachment B contains an executive summary of the NPDES MS4 program administered by MDOT SHA that serves as the MDOT SHA reapplication for coverage under the MS4 individual permit for large or medium jurisdictions. An updated Gantt chart of programmed projects for fiscal year 2020 to meet the current permit term twenty percent restoration goal is provided in Attachment C. Included also is one hard copy of the report and a compact disc containing an electronic version with accompanying digital geodatabase.

If you have any questions or need additional information regarding this delivery, please contact Ms. Karen Coffman at 410-545-8407 and kcoffman@mdot.maryland.gov or me at 410-545-8640 and sram@mdot.maryland.gov. Ms. Coffman and I will be happy to assist you.

Sincerely,

Sonal Ram, P.E.
Director
Office of Environmental Design

Attachments

cc: Mr. Brian Cooper, SSDS, WSA, MDE
Ms. Dorothy Morrison, Director, Office of Environment, MDOT
Ms. Karen Coffman, Chief, Water Programs Division, OED, MDOT SHA
Mr. Kevin Wilsey, Deputy Director, OED, MDOT SHA

ATTACHMENT A

NOTEWORTHY COMPONENTS OF THIS MDOT SHA FOURTH ANNUAL REPORT

The following list highlights important components of this fourth annual report for MDE consideration:

- MDE supplied comments to MDOT SHA dated September 16, 2019 related to the results of the MDE review of the MDOT SHA third annual report (2018). In accordance with Part V.A.3. of the MS4 permit, within 12 months and before September 16, 2020, MDOT SHA responses addressing the September 16, 2019 MDE comments will be submitted to MDE subsequent to this fourth annual report.

- The MDOT SHA annual report to MDE for the Delegation of Sediment and Stormwater Approval Authority is not included as an appendix to this fourth annual MS4 report (as was done with the 2018 annual report) but is instead submitted concurrently with it to better align with the requirements described in Section 8.B.ii. of the Memorandum of Understanding between MDOT SHA and MDE, executed July 8, 2014, that granted MDOT SHA the approving authority for erosion and sediment control and stormwater management plans for MDOT SHA projects.

- In accordance with commitments made by MDOT SHA in its third annual report (2018) and with requirements established by MDE in its review of that report, MDOT SHA is providing with this fourth annual report both Appendix B, an updated Part II of the Impervious Restoration and Coordinated Total Maximum Daily Load (TMDL) Implementation Plan (referred to as "Implementation Plan" hereafter) that integrates the MDE-approved impervious baseline and twenty percent restoration goal of 4,621 acres, and Appendix D, a 2019 revision to the MDOT SHA Restoration Modeling Protocol.

- In accordance with commitments made during an interagency meeting between MDE and MDOT SHA on April 10, 2017, as documented in Attachment III of the letter to MDOT SHA from MDE dated April 26, 2017 regarding its review of the first annual report (2016) submitted by MDOT SHA for the current permit term, Appendix C is provided with this fourth annual report and contains an addendum to Table 3-2, submitted with Part III of the revised Implementation Plan on October 9, 2018, that includes targeted WLAs in addition those included as Attachment B of the permit as requested by MDE.

- Memorandums were distributed by MDE to the MS4 regulated community on October 17, 2018 and April 30, 2019 regarding clarifications for stream restoration crediting for MS4 permitting purposes. In response, MDOT SHA has updated its credit accounting for stream restoration projects and provides a summary of the adjustments in Table 23 found in Section E.2.a. of this fourth annual report.

ATTACHMENT B

MDOT SHA Reapplication for NPDES MS4 Stormwater Discharge Permit
Permit Number: 11-DP-3313 (MD0068276)
October 9, 2019

Introduction

MDOT SHA is reapplying for authorization under the NPDES MS4 individual discharge permit for large or medium jurisdictions. The current permit expires October 8, 2020. There are four areas that the permit requires we address at a minimum in this re-application. They are:

1. *SHA's NPDES stormwater program goals;*

2. *Program summaries for the permit term regarding:*

    a. *Illicit discharge detection and elimination results;*

    b. *Restoration plan status including SHA totals for impervious acres, impervious acres controlled by stormwater management, the current status of watershed restoration projects and acres managed, and documentation of progress toward meeting stormwater WLAs developed under EPA approved TMDLs and compliance with Part VI.A.;*

    c. *Pollutant load reductions as a result of this permit and an evaluation of whether applicable TMDLs are being achieved;*

    d. *Impervious acres compared to the baseline and twenty percent restoration requirement in PART IV.E.2.a.; and*

    e. *Other relevant data and information for describing applicable SHA programs;*

3. *Program operation and capital improvements costs for the permit term; and*

4. *Descriptions of any proposed permit condition changes based on analyses of the successes and failures of SHA's efforts to comply with the conditions of this permit.*

1. MDOT SHA NPDES MS4 Program Goals

MDOT SHA views the MS4 permit and NPDES program as an important tool that gives our Administration needed resources to address MDOT SHA impacts to local waters and the Chesapeake Bay. Our Administration has sought to partner with MDE and other MS4 jurisdictions in achieving the water quality goals stated in Part III of the permit as summarized below:

- To effectively prohibit pollutants in stormwater discharges or other unauthorized discharges into the MS4 as necessary to comply with Maryland's receiving water quality standards;
- To work to attain wasteload allocations (WLAs) for each established or approved TMDL for each receiving water body consistent with State and federal regulations; and
- To comply with all other provisions and requirements contained in the MS4 permit, and in plans and schedules developed in fulfillment of the MS4 permit.

MDOT SHA is very proud of its comprehensive MS4 internet site that provides many valuable resources to the public regarding the MDOT SHA MS4 program including:

- MDOT SHA MS4 Permit and Annual Reports,
- TMDL Implementation Plans developed by MDOT SHA and submitted to MDE,
- Opportunity for public review of draft Implementation Plans and submittal of comments,
- Educational Outreach and Contacts,
- Bay Restoration Strategies describing BMPs used for pollutant reductions and impervious surface restoration, and
- Chesapeake Bay Viewer tool to view MDOT SHA restoration projects in a GIS environment.

The website can be accessed from this link:
https://www.roads.maryland.gov/Index.aspx?PageId=333

2. Program Summaries for Permit Term

Illicit Discharge Detection and Elimination (IDDE)

Our current IDDE program has proven effective at discovering illicit discharges. The results of the MDOT SHA IDDE program are summarized in **Table 1**, including total screenings performed and the number of discharge reports submitted in follow up to those screenings. **Table 2** provides a summary of illicit discharges, discovered by the IDDE program and other MDOT SHA operations, that were subsequently reported to the appropriate jurisdiction or to MDE for follow up elimination enforcement.

Table 1: Illicit Discharge Screenings to Date (Fiscal Year 2016* through Fiscal Year 2019)

County	Outfalls Screened	Outfalls W/ Flow Observed	Illicit Discharge Reports
Anne Arundel	94	17	
Baltimore	153	33	1
Cecil	40	19	
Frederick	121	48	
Harford	19	5	
Montgomery	96	21	
Prince George's	76	38	1
Washington	12	0	
Totals	**611**	**181**	**2**

**Fiscal year 2016 was a transition year from calendar year to fiscal year reporting; 180 screenings were performed for calendar year 2016 and 62 screenings were performed for fiscal year 2016 (instead of the minimum 150)*

Table 2: Illicit Discharges Requiring Follow-up (Fiscal Year 2016 through Fiscal Year 2019)

Illicit Discharge Report Number	County	MDOT SHA Structure Number	Potential Pollutant	Date Identified	Year Delivered to Surrounding Jurisdiction	Status
1*	Prince George's	1600052.001	Detergents	08/03/2016	2016	Closed
2	Baltimore	BMP 0305091	Fats and Grease	03/30/2017	2017	Closed
3	Frederick	BMP 100085	Solids	05/10/2017	2017	Closed
4	Prince George's	BMP 160660	Detergents	10/04/2017	2018	Open, referred to MDE
5	Harford	1202700.001	Detergents	08/09/2018	2019	Closed
6*	Baltimore	300806.001	Chlorine	06/27/2019	2019	Open, referred to County

**Denotes a discharge report in response to detection via the required outfall screenings, as referenced in Table 1*

Impervious Surface Restoration

MDOT SHA completed and resubmitted an impervious accounting to MDE on June 29, 2018. As documented in the MDE review of that submission, MDOT SHA has 25,663.5 acres of impervious surfaces within 12 MS4 jurisdictions. Of this, 9.9 percent, or 2,558.7 impervious acres, is recognized as "baseline treatment" or treatment provided by stormwater management prior to October 21, 2010. The MDE-approved baseline for untreated impervious surfaces owned by MDOT SHA is 23,104.8 acres. The MDE-approved 20 percent restoration goal is 4,621 acres restored by October 8, 2020.

The MDOT SHA Impervious Restoration Plan, summarized in Part II of the MDOT SHA Impervious Restoration and Coordinated TMDL Implementation Plan (referred to hereafter as the "Implementation Plan"), includes capital projects that implement stormwater management and

alternative best management practices (BMPs) such as new stormwater controls, retrofits to existing stormwater control structures, impervious surface elimination, outfall stabilization, stream restoration, and tree planting as well as annual operational activities, such as inlet cleaning and street sweeping, that provide water quality improvements. Part II of the Implementation Plan was revised and resubmitted as Appendix B to the fiscal year 2019 (FY19) MS4 annual report.

During the first four reporting years of its current MS4 permit, MDOT SHA has implemented built and annual BMPs that have cumulatively treated 3,472 impervious acres. Table 22 and Figure 21 in Section E. of the FY19 MS4 annual report can be referenced for the current status of MDOT SHA water quality improvement projects.

At the conclusion of FY19, MDOT SHA has achieved 75 percent of the necessary treatment to meet the 4,621 acres restoration goal. Table 21 in Section E. of the FY19 MS4 annual report can be referenced for a summary of this progress. It is anticipated that MDOT SHA will surpass the established restoration goal and intends to allocate restoration credit in excess of this permit goal towards the next permit restoration compliance.

Pollutant Load Reduction

Parts III and IV of the revised 2018 Implementation Plan document current strategies and targeted end dates for meeting EPA approved WLAs. Individual TMDL implementation plans for TMDLs issued subsequent to the 2018 Implementation Plan and submitted to MDE for approval can be found on the MDOT SHA website at the link provided above. These Implementation Plans are still under review by MDE and are anticipated for approval within the next annual reporting cycle by October 2020.

MDOT SHA has consistently documented its progress toward meeting stormwater WLAs in its annual reports submitted to MDE throughout the current permit term. Table 25 and Figures 23 through 26 in Section E. of the FY19 MS4 annual report can be referenced for the current MDOT SHA progress toward reduction targets and pollutant reductions as a result of this permit.

Based on modeling at the end of FY19, MDOT SHA is on schedule to meet 14 TMDLs by 2020. Projects to be implemented beyond 2020, the end of this current permit term, have not yet been programmed for design and construction so reductions expected beyond 2020 are difficult to estimate. MDOT SHA is committed to working with MDE to reduce pollutants to meet WLAs by target years established in the Implementation Plans.

3. Program Operation and Capital Improvement Costs

The MDOT SHA NPDES program has spent over $405.7 million over the course of the current permit term. During the final year, MDOT SHA anticipates spending another $113.3 million, bringing the total up to over $519 million.

4. Proposed Permit Condition Changes

Maintaining compliance with the NPDES MS4 permit is a high priority for MDOT SHA and fluid and clear communication between MDE and MDOT SHA throughout the current permit term has been vital to MDOT SHA. MDOT SHA appreciates the collaboration, cooperation, and support provided by MDE this permit term and looks forward to future work toward improved water quality and ultimately a restored Chesapeake Bay. Several topics are presented that can foster discussion for the next permit.

Transportation Separate Storm Sewer System (TS4)

MDOT SHA recognizes that, in the past, MDE has worked to craft and tailor the MS4 permit language to address the unique nature of MDOT SHA as a transportation corridor rather than a county or municipality. Some of the challenges encountered by MDOT SHA in administering the MS4 include:

- Because MDOT SHA is not a governing authority, it cannot enact laws and regulations and therefore lack enforcement authority over both users of and residents/businesses adjacent to MDOT SHA facilities;
- MDOT SHA roadways traverse many different MS4 jurisdictions and watersheds making coordination at the local level complicated and compliance at the local watershed level complex; and
- MDOT SHA facilities serve a transient population of drivers and passengers making communicating a sense of ownership and community impossible.

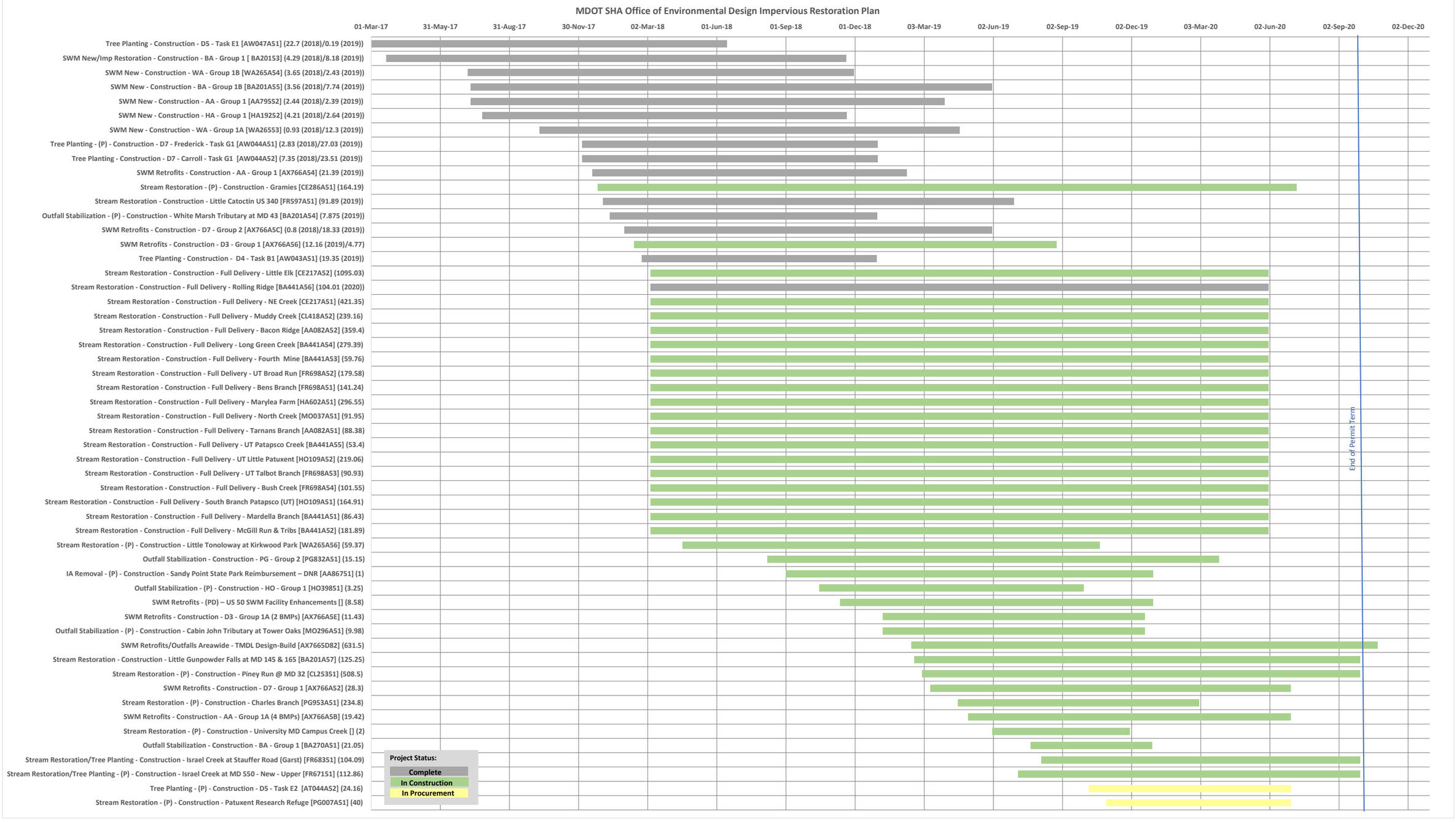
With the increasing importance of TMDL compliance and anticipated expansion of permit coverage, MDOT SHA requests that MDE continue to recognize these challenges when negotiating development of the next permit for MDOT SHA MS4 coverage.

Expanded Coverage

The current MDOT SHA MS4 permit includes designated Phase II areas of Washington County, Cecil County, and the city of Salisbury in Wicomico County. Until the reissuance of the current Phase II General Permit for State and Federal Agencies on April 27, 2018, the requirements for MDOT SHA in these areas was much more restrictive with the 20 percent restoration and TMDL compliance conditions than the requirements placed on these counties and city under the previous Phase II permit. Coverage under the new Phase II permit expanded to include Calvert, Queen Anne's, St. Mary's and Wicomico Counties plus the City of Easton in Talbot County. MDOT SHA recognizes that MDE allowed us to refrain from submitting Notice of Intent for coverage under this MS4 Phase II permit and will include the expanded coverage areas in the next generation of the MS4 individual permit for MDOT SHA. While incorporating these areas into one comprehensive permit is convenient for MDOT SHA when preparing data and reporting compliance, MDOT SHA asks MDE to qualify any conditions that cover Phase I jurisdictions as not being required for the Phase II areas under this combined permit. MDOT SHA is not requesting to separate the permit coverage.

ATTACHMENT C

GANTT CHART OF REMAINING PROJECTS TO MEET 2020 RESTORATION GOAL



MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

Larry Hogan
Governor
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Secretary
Gregory Slater
Administrator

October 23, 2019

Mr. Stewart Comstock, Chief
Sediment, Stormwater & Dam Safety Program
Water and Science Administration
Maryland Department of the Environment
1800 Washington Boulevard, Suite 440
Baltimore MD 21230

Dear Mr. Comstock:

The Maryland Department of Transportation State Highway Administration (MDOT SHA) submitted its MS4 fourth annual report to the Maryland Department of the Environment (MDE) on October 9, 2019. Following that submittal, MDOT SHA proactively identified some discrepancies that it wishes to correct with this submittal. See the enclosed *List of Revisions* for additional details.

Enclosed you will find pages intended to replace those where issues were identified. Pages are numbered to correspond exactly with the pages in the annual report. Also enclosed is a new set of compact discs that contain the revised pages, integrated into the annual report PDFs, and a revised MS4 geodatabase.

If you have any questions or need additional information regarding this submission, please contact Mr. Christopher Zink at 410-545-5501 and czink@mdot.maryland.gov or me at 410-545-8407 and kcoffman@mdot.maryland.gov. Mr. Zink and I will be happy to assist you.

Sincerely,

For Karen Coffman, Chief
Water Programs Division
Office of Environmental Design

Enclosures

cc: Mr. Brian Cooper, SSDS, WSA, MDE
Ms. Dorothy Morrison, Director, Office of Environment, MDOT
Ms. Sonal Ram, Director, OED, MDOT SHA
Mr. Kevin Wilsey, Deputy Director, OED, MDOT SHA
Mr. Christopher Zink, Team Leader, Water Programs Division, OED, MDOT SHA

List of Revisions

The following list summarizes revisions to the MDOT SHA MS4 fourth annual report (initially submitted to MDE on October 9, 2019) included in the submittal to MDE dated October 23, 2019.

- In Attachment B to the cover letter (*MDOT SHA Reapplication for NPDES MS4 Stormwater Discharge Permit*), revised language on page 6, correcting the number of TMDLs MDOT SHA is on schedule to meet by 2020 to 14.

- In the annual report, pages 75 through 80, corrected Table 25 (*Local TMDL Pollutant Reduction Progress Through June 30, 2019*). Adjusted columns, "MDOT SHA Reduction Target" and "2020 Interim Reduction Target", such that data entries match those reported to MDE in the revised MDOT SHA Impervious Restoration and Coordinated Total Maximum Daily Load Implementation Plan, submitted to MDE on October 9, 2018 (referred to as "Implementation Plan" hereafter). Adjusted data entries in the "% Reduction Achieved Relative to Total Reduction Target" and "% Reduction Achieved Relative to 2020 Target" columns in response to adjusted targets as necessary. Data entries describing progress in the "Reduction Achieved as of 6/30/2019" column are unchanged.

- In the annual report, pages 81 and 82, corrected MDOT SHA "Target Load Reductions" as labeled on respective bars in Figure 23 (*Sediment Reductions Achieved to Date*) and Figure 24 (*Phosphorus Reductions Achieved to Date*).

- In the annual report, page 83, removed incorrect bar labels "Antietam Creek" and "Catoctin Creek" from the x-axis and replaced with appropriate labels "Mattawoman Creek" and "Non-Tidal Back River" on Figure 25 (*Nitrogen Reductions Achieved to Date*).

- In Appendix C to the annual report, Table 3-2 (*MDOT SHA Additional Attachment B Nutrient, Sediment, and Bacteria Modeling Results*), corrected "MDOT SHA Proposed 2020 Interim Reduction Target" data entries to not exceed "MDOT SHA Reduction Target". Retitled three columns/column headers as follows:
    - "% 2020 Reduction Relative to Baseline" changed to "% 2020 Reduction Relative to Reduction Target"

  - "% 2025 Reduction Relative to Baseline" changed to ""% 2025 Reduction Relative to Reduction Target"
  - "% Target Year Reduction Relative to Baseline" changed to ""% Target Year Reduction Relative to Reduction Target"

  Updated data entries and in these three percentage columns so they are representative of progress relative to corresponding data in the "MDOT SHA Reduction Target" column rather than data in the "MDOT SHA Baseline Load" column.

- In Appendix E (Optional Worksheets for MS4 Stormwater WLA Implementation Progress Documentation) to the annual report, all pages were edited to adjust the "Treated Baseline Load" and "Target Load" to align with BMP treatment data and modelling in the Implementation Plan (October 9,2018 revision).

- In the MS4 geodatabase, changes were made to data entries in the "BASELINE_LOAD" and "TARGET_LOAD" fields of the "*LocalStormwaterWatershedAssessment*" geodatabase table (identifying code: LSW) to ensure baseline load and target load data matches what was reported to MDE in the Implementation Plan (October 9, 2018 revision) and the 2018 MS4 annual report.

National Pollutant Discharge Elimination System
Municipal Separate Storm Sewer System
Permit No. 11-DP-3313 MD0068276
Permit Term October 9, 2015 to October 8, 2020

Fourth Annual Report

October 9, 2019

Submitted to:
Sediment, Stormwater, and Dam Safety Program
Water and Science Administration
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230

Submitted by:
Maryland Department of Transportation
State Highway Administration
Office of Environmental Design
707 North Calvert Street, C-303
Baltimore, MD 21202

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List of Abbreviations

AAH	Adopt-A-Highway
AB	As-Built
ABE	As-Built Engineer
ADE	Assistant District Engineer
AMT	Automated Modeling Tool
BMP	Best Management Practice
CFR	Code of Federal Regulations
COMAR	Code of Maryland Regulations
CWA	Clean Water Act
CCMS	Customer Care Management System
CSCE	Comprehensive Site Compliance Evaluations
DEC	District Environmental Coordinator
DLA	Direct Liquid Application
ECD	Environmental Compliance Division
ECU	Environmental Crimes Unit
EPA	Environmental Protection Agency
ESC	Erosion and Sediment Control
ESCM	Erosion and Sediment Control Manager
ESD	Environmental Site Design
FY	Fiscal Year
GIS	Geographic Information System
GP	General Permit
HEC-2	Hydrologic Engineering Centers – Water Surface Profiles
HEC-RAS	Hydrologic Engineering Centers River Analysis System
HHD	Highway Hydraulics Division
HSPF	Hydrologic Simulation Program – Fortran
HOV	High Occupancy Vehicle
ID	Illicit Discharge
IDDE	Illicit Discharge Detection and Elimination
IVMM	Integrated Vegetation Management Manual
JPA	Joint Permit Application
lbs.	Pounds
LDG	Landscape Design Guide
LMG	Landscape Maintenance Guide
LOD	Limit of Disturbance
MBSS	Maryland Biological Stream Survey
MD	Maryland
MDE	Maryland Department of the Environment
MDOT SHA	Maryland Department of Transportation State Highway Administration
MET	Maryland Environmental Trust
MES	Maryland Environmental Service
MEP	Maximum Extent Practicable
MOU	Memorandum of Understanding
MTBMA	Maryland Transportation Builders and Materials Association
MS4	Municipal Separate Storm Sewer System
N	Nitrogen
NOI	Notice of Intent
NTP	Notice to Proceed
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation Service
NTWP	Nontidal Wetland Permit
OAG	Office of the Attorney General

OC	Office of Communication
OED	Office of Environmental Design
OHD	Office of Highway Development
OHDU	OHD University
OOM	Office of Maintenance
P	Phosphorus
PCB	Polychlorinated Biphenyls
PDF	Portable Document Format
PRD	Plan Review Division
QA	Quality Assurance
REC	Regional Environmental Coordinator
RBP	Rapid Bioassessment Protocol
ROW	Right-of-way
S	Sediment
SAH	Sponsor-A-Highway
SHA	State Highway Administration
SMP	Salt Management Plan
SOIRP	Storm Drain and Outfall Inspection and Remediation Program
SOP	Standard Operating Procedure
SPCC	Spill Prevention, Control, and Countermeasure
SWM	Stormwater Management
SWPPP	Stormwater Pollution Prevention Plan
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorous
TPH	Petroleum Hydrocarbons
TSS	Total Suspended Solids
TWIS	Truck Weigh Inspection Station
WLA	Waste Load Allocation
WSA	Water and Science Administration
WPD	Water Programs Division
WQ	Water Quality
WQv	Water Quality Volume

Introduction

The Maryland Department of Transportation State Highway Administration (MDOT SHA) is committed to continuing its National Pollution Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Program efforts and is pleased to partner with the Maryland Department of the Environment (MDE) Water and Science Administration (WSA), the Environmental Protection Agency (EPA), and other NPDES jurisdictions to achieve the program goals.

The original MDOT SHA NPDES Phase I permit, MS-SH-99-011, was issued on January 8, 1999 and expired in 2004. This permit guided MDOT SHA through establishment of its NPDES MS4 program.

The Phase II State and Federal Small MS4 General Permit (GP), 05-SF-5501, MDR 055501, was issued November 12, 2004 and expired November 12, 2009. MDOT SHA submitted a Notice of Intent (NOI) for coverage under the Phase II MS4 GP and received authorization for coverage May 25, 2005. Under the authority of this Phase II permit, MDOT SHA extended the same MS4 program elements established under the Phase I permit to the MDOT SHA storm drain systems in Phase II areas.

The next Phase I permit (99-DP-3313, MD0068276, issued October 21, 2005 and expired on October 21, 2010) focused on improving water quality benefits, developing an impervious accounting database, and developing a watershed-based outlook for stormwater management and MS4 program elements.

MDOT SHA submitted a re-application for the Phase I permit on October 21, 2009 and a new permit was issued to MDOT SHA on October 9, 2015. This current permit covers MDOT SHA storm sewer systems in both the originally designated, Phase I jurisdictions as well as those designated for Phase II. This report covers compliance with the permit that was issued in 2015. MDOT SHA has provided the permit general information in the Permit Information table (PER) as specified in the May 2017 MDE Geodatabase Guideline format.

Report Format and Deliverables

This fourth annual report covers Fiscal Year 19 (FY19) from July 1, 2018 through June 30, 2019, in accordance with Part V.A.1. of the current permit. Geographically, this report covers MDOT SHA compliance for storm drain systems owned or operated by MDOT SHA located within the NPDES counties of Anne Arundel, Baltimore, Carroll, Cecil, Charles, Frederick, Harford, Howard, Montgomery, Prince George's, and Washington, as well as the City of Salisbury (See **Figure 1**).

Hereafter, this report lists permit conditions and discusses MDOT SHA compliance activities throughout the FY19 reporting period. Wherever possible, future activities and schedules for completion are provided.

A compact disk is included with this report that contains portable document format (PDF) files of the report, database tables, and spatial Geographic Information System (GIS) data in accordance with Part V.A.2. of the permit.

MDE Comments on MDOT SHA 2018 MS4 Annual Report

MDE supplied comments dated September 16, 2019 related to the results of the MDE review of the MDOT SHA 2018 MS4 annual report and data submittal. In accordance with Part V.A.3. of the MS4 permit, within 12 months and before September 16, 2020, MDOT SHA responses addressing the September 16, 2019 MDE comments will be submitted to MDE subsequent to this fourth annual report.

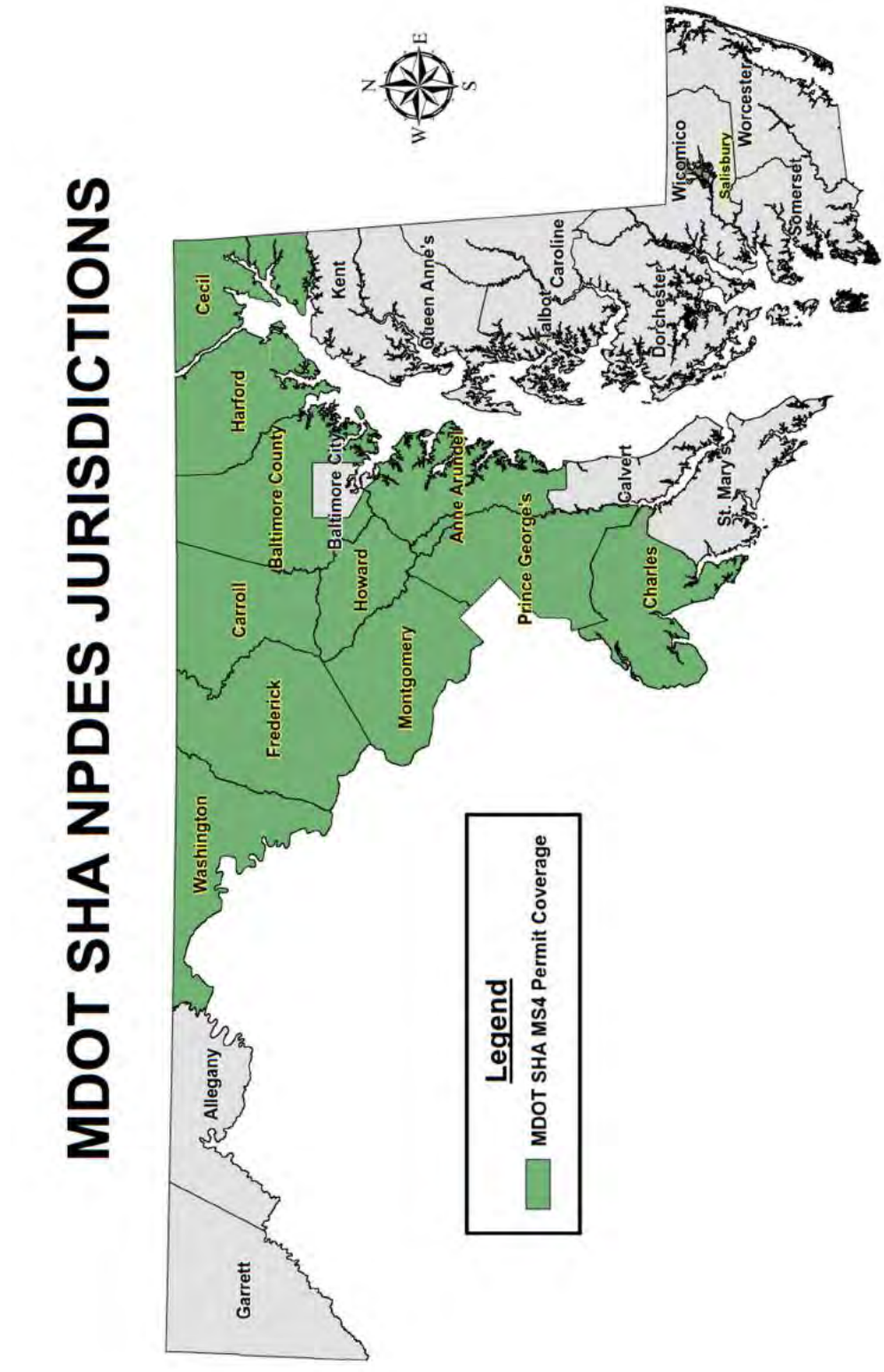

Figure 1: Municipal Separate Storm Sewer System (MS4) Jurisdictions

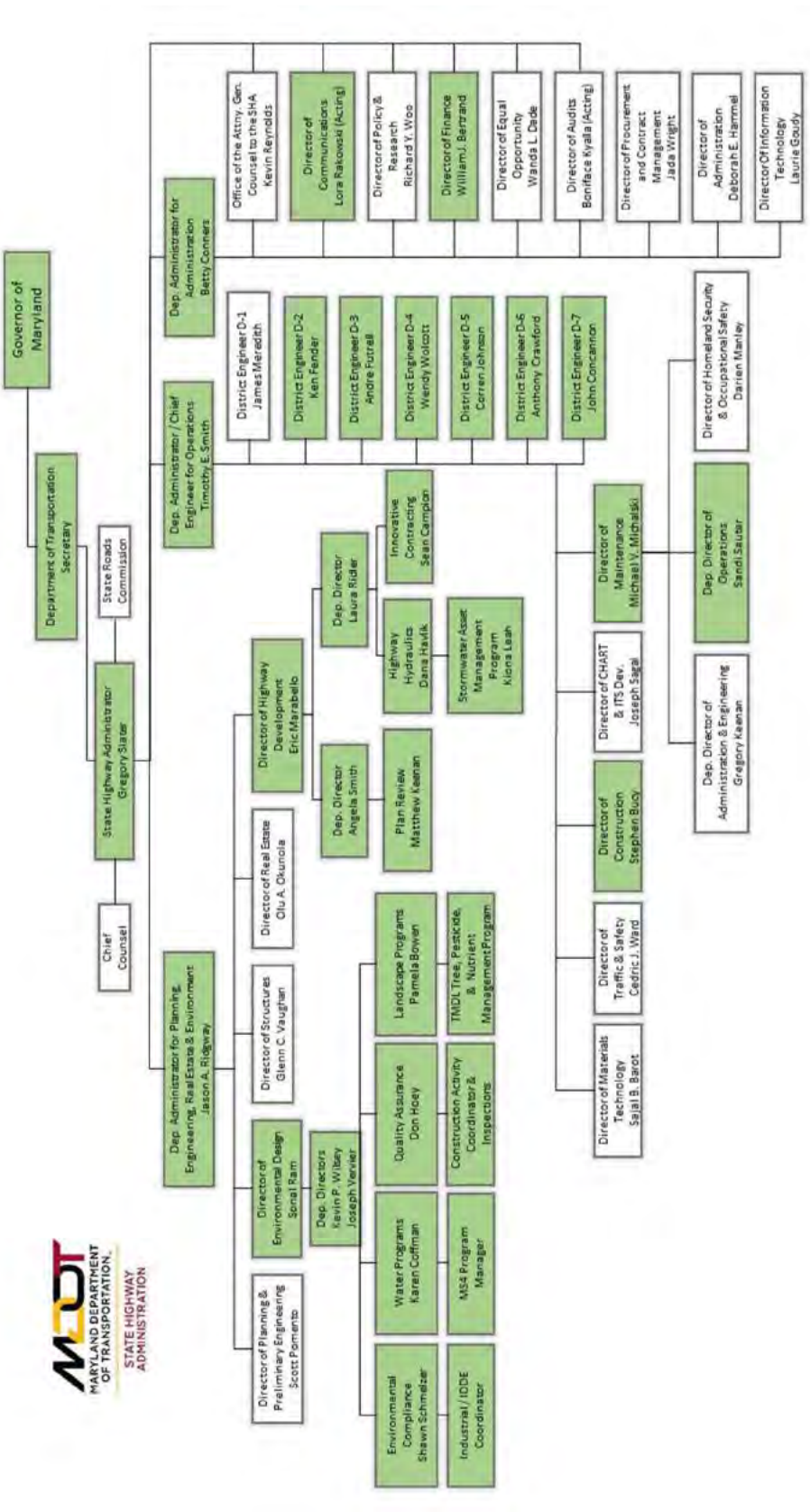

Figure 2: 2019 Organizational Chart for MDOT SHA NPDES MS4 Permit Administration

A. Permit Administration

The MDOT SHA liaison and coordinator for the NPDES Program is listed below and an organizational chart detailing personnel responsible for major program components is included in **Figure 2**.

Mr. Kevin Wilsey
Deputy Director
Office of Environmental Design
(410) 545-8605
kwilsey@mdot.maryland.gov

The MDOT SHA Program Manager for the MS4 permit is:

Ms. Karen Coffman
Division Chief
Water Programs Division
Office of Environmental Design
(410) 545-8407
KCoffman@mdot.maryland.gov

B. Legal Authority

A description of the legal authority maintained by MDOT SHA was included in the first annual report dated October 9, 2016 and remains unchanged.

C. Source Identification

According to the permit language, sources of pollutants in stormwater runoff should continue to be identified and linked to specific water quality impacts on a watershed basis. The data collected through source identification should be used by MDOT SHA and surrounding NPDES counties for watershed restoration planning.

Requirements under this condition include submitting MDOT SHA stormwater infrastructure data within the permit area in GIS format on an annual basis:

1. *Storm drain system: Delineate all infrastructure, major outfalls, inlets, and associated drainage areas;*
2. *Industrial and commercial sources: Identify industrial and commercial land uses and sites that have the potential to contribute significant pollutants to SHA storm drain systems;*
3. *Urban best management practices (BMPs): Collect stormwater management facility data including outfall locations and delineated drainage areas;*
4. *Impervious surfaces: Delineate SHA-owned and private land owned (if within SHA BMP drainage area) controlled and uncontrolled impervious areas based on, at a minimum, Maryland's hierarchical eight-digit sub-basins;*
5. *Monitoring locations: Locations established for chemical, biological, and physical monitoring of watershed restoration efforts and the 2000 Maryland Stormwater Design Manual; and*
6. *Water quality improvement projects: Projects proposed, under construction, and completed with associated drainage areas delineated, when applicable.*

C.1 Storm Drain System

MDOT SHA continues to maintain and improve its inventory of storm drain infrastructure, major outfalls, stormwater management facilities, and associated drainage areas utilizing a spatial GIS database. All storm drains associated with SWM facilities are mapped as they are inspected and MDOT SHA continues to populate missing data within database fields to add outfall drainage areas and other records such as City, State, and zip codes. Research has continued to add as-built (AB) information for drainage outfalls, conveyances, and stormwater management facilities built before regulations were established requiring detailed documentation.

MDOT SHA has provided the outfall structure information in the Outfall feature class (OUT) and the Outfall Drainage Area feature class (ODA) as specified in the May 2017 MDE update to its NPDES MS4 *Geodatabase*

Design and User's Guide (referred to hereafter as "2017 MDE Geodatabase Guide").

During FY19, development of a new inspection schema and support tool continued. Once complete and implemented, the schema and tool should allow MDOT SHA to better track outfall condition information.

Data update schedules have been aligned with the triennial SWM facility inspection cycle. Storm drain infrastructure data will be updated based on that schedule in the future. **Table 1** presents the number of BMP inspections performed in FY19, as well as BMP inspections planned for FY20 and FY21. Industrial and Commercial Sources

Included with the MS4 geodatabase submission for this FY19 MS4 annual report is the GIS layer developed to identify industrial sites within MDOT SHA right-of-way that have the potential to contribute pollutants to MDOT SHA storm drain systems, including MDOT SHA 12-SW permitted industrial sites but also garages, parking lots, rest areas, and other highly trafficked or material storage areas as requested by MDE. There are no commercial sites on MDOT SHA properties.

C.2 Urban Best Management Practices (BMPs)

In FY19, inventory updates continued to include newly constructed SWM BMPs, associated outfalls, and delineated drainage areas. New inspection tools were launched with great success in 2019 resulting in a record number of inspections performed and many updates to the inventory. The MS4 geodatabase submitted with this FY19 MS4 annual report provides urban BMP information in the BMP Point of Investigation feature class (BMPPOI) and the BMP table (BMP)

C.3 Impervious Surfaces

MDOT SHA performed a reevaluation of its impervious baseline accounting to fall in line with MDE's 2014 *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated, Guidance for National Pollutant Discharge Elimination System Stormwater Permits* (referred to hereafter as "2014 MDE

Table 1: Storm Drain System Source ID Update Schedule

Jurisdiction	Fiscal Year 2019 BMP Inspections Performed	Fiscal Year 2020 BMP Inspections Required	Fiscal Year 2021 BMP Inspections Required
Anne Arundel County	809	93	340
Baltimore County	431	115	39
Carroll County	135	112	89
Cecil County	131	200	2
Charles County	659	53	17
Frederick County	642	88	5
Harford County	203	56	216
Howard County	975	54	20
Montgomery County	394	310	280
Prince George's County	878	406	116
Washington County	340	128	78
Salisbury	21	17	33
Total	**5,618**	**1,632**	**1,235**

Accounting Guidance") and expectations for a baseline year of 2002. The previous baseline had been established as 2010 to coincide with the expiration of the last MDOT SHA MS4 permit on October 21, 2010. Revised impervious surfaces were developed using available photogrammetry data that was closest to 2002 for each MS4 jurisdiction and the resulting baseline years range from 2002 to 2005. **Table 2** shows the MDOT SHA impervious surface baseline year by MS4 jurisdiction.

An associated GIS layer is not redelivered with this report but was included in the MDOT SHA Supplemental 2018 Geodatabase, submitted to MDE with the June 29, 2018 impervious surface accounting resubmission by *MDOT SHA* titled, "*Final Impervious Baseline Assessment.*" In the MS4 geodatabase submitted with this FY19 MS4 annual report, MDOT SHA has provided data related to its impervious area accounting in the Impervious Surface (IMP) table.

Table 2: MDOT SHA Impervious Surface Baseline Dates by County

County	Baseline Date
Anne Arundel	12/31/2005
Baltimore	12/31/2005
Carroll	12/31/2005
Cecil	12/31/2005
Charles	12/31/2004
Frederick	12/31/2005
Harford	12/31/2004
Howard	12/31/2002
Montgomery	12/31/2004
Prince George's	12/31/2005
Washington	12/31/2005
Wicomico (Salisbury)	12/31/2006

C.4 Monitoring Locations

Monitoring site locations and location information, to meet conditions described in Section IV.F. of the MS4 permit, are provided in the Chemical Monitoring (CHE), Biological Monitoring (BIO), Monitoring Site feature class (MSI), and Monitoring Drainage Area feature class (MDA) tables of the MS4 geodatabase submitted with this FY19 MS4 annual report. The MDE approved monitoring plans, developed by MDOT SHA to satisfy these permit conditions, were appended to the MDOT SHA 2016 (FY16) and 2017 (FY17) annual reports. A description of the monitoring locations and FY19 monitoring activities can be found in **Sections F.1 and F.2** of this annual report with additional details and analyses provided **Appendices F and G**.

C.5 Water Quality Improvement Projects

In the MS4 geodatabase submitted with this FY19 MS4 annual report, MDOT SHA has provided water quality improvement project information for completed projects through FY19 (restoration BMPs) using the following feature classes:

- Restoration BMP feature class (RST)
- Alternate BMP Polygon feature class (APY)
- Alternate BMP Line feature class (ALN)
- Stream Restoration Protocols table (SRP)

The submitted data includes only currently completed projects and does not include projects that are in planning or design phases or under construction. Further discussion on progress toward restoration goals and TMDL compliance is included in **Section E** of this report.

D. Management Programs

A management program is required to limit the discharge of stormwater pollutants to the maximum extent practicable (MEP). The idea is to eliminate pollutants before they enter waterways. This program includes provisions for stormwater management, erosion and sediment control, IDDE, trash and litter reduction, property management and maintenance, and public education concerning stormwater and pollutant minimization.

D.1 Stormwater Management

The continuance of an effective stormwater management program is the emphasis of this permit condition. Requirements under this condition include:

a) *Implement the stormwater management design principles, methods, and practices found in the 2000 Maryland Stormwater Design Manual;*

b) *Maintain programmatic and implementation information including but not limited to number of plans received, number of projects received, number of exemptions issued, and number and type of waivers received and issued;*

c) *Maintain construction inspection information according to COMAR 26.17.02 for all ESD treatment practices and structural stormwater management facilities; and*

d) *Conduct preventative maintenance inspections according to COMAR 26.17.02 of all ESD treatment systems and structural stormwater management facilities at least on a triennial basis.*

D.1.a Implement 2000 SW Design Manual and Regulations

MDOT SHA continues to comply with State and federal laws and regulations regarding SWM as well as MDE permit requirements. MDOT SHA also continues to implement the practices established in the *2000 Maryland Stormwater Design Manual* and the *MDOT SHA Sediment and Stormwater Guidelines and Procedures* (October 6, 2017) for all projects and remains in compliance with the Stormwater Management Act of 2007 (2007 SW Act), including the revised Chapter 5 of the *2000 Maryland Stormwater Design Manual*, by implementing environmental site design (ESD) to the MEP for all new and redevelopment projects.

The MDOT SHA and MDE signed a Memorandum of Understanding (MOU), dated July 8, 2014, designating MDOT SHA as an approving authority for both erosion and sediment control and stormwater management for all MDOT SHA projects. This authority was given by a letter of authorization from MDE on February 24, 2015. The MDOT SHA approval authority lies with the Plan Review Division (PRD) under the Office of Highway Development (OHD). PRD's sole responsibility is to review and approve MDOT SHA stormwater management and erosion and sediment control plans. PRD is separate and distinct from the OHD design divisions. In addition, the OHD design divisions are supervised by a different Deputy Director than PRD.

PRD tracks MDOT SHA progress toward satisfying requirements of the 2007 SW Act and identifies and reports problems and modifications needed to implement ESD to the MEP in its annual reports to MDE. However, in the FY19 reporting period, no changes were made to the PRD Sediment and Stormwater Guidelines and Procedures and Current Technical Practices documents. PRD is mandated to submit its annual report to MDE to satisfy the requirements of the MDOT SHA delegated review and approval authority.

D.1.b Maintain Programmatic and Implementation Information

PRD maintains a database to track stormwater management submittals, reviews, and approval progress for all MDOT SHA projects. PRD

has also incorporated components in the database to facilitate the review and analysis of water quality and quantity waivers and variances. These requests are associated with specific Points of Investigation (POIs) for each project. The information stored in the database includes reference to the specific regulation for which a waiver or variance is sought, documentation for why the waiver or variance is appropriate, and actions taken in response to a given request. The database now allows PRD to query and summarize requests and approvals associated with MDOT SHA development plans and to provide that information in support of the MS4 annual report. In the MS4 geodatabase submitted with this FY19 MS4 annual report, the stormwater management program information is provided in the SWM table.

Table 3 presents a summary of PRD activities for the FY19 reporting period, by MS4 jurisdiction, including submissions received, comment memoranda issued; approvals for concept design, site development, and final design; and SWM quantity or quality control waivers and variance requests for SWM quantity control that were granted. Most project reviews that originated at MDE have now been transferred to PRD for further review and approval.

Table 3: Stormwater Management Review and Approval

Jurisdiction	Number of Projects	Review Submissions	Comment Memoranda	Concept Design Submittal Approvals	Site Development Stage Approvals	Final Approvals	Granted SWM Waivers	Granted SWM Variances
Anne Arundel	66	181	88	19	13	41	65	9
Baltimore	40	118	63	10	10	9	11	0
Carroll	15	47	24	5	6	4	13	8
Cecil	9	17	4	2	2	2	1	2
Charles	9	28	18	2	2	3	3	0
Frederick	34	92	51	4	6	14	63	9
Harford	13	52	38	3	4	4	22	5
Howard	36	108	60	6	9	25	8	0
Montgomery	37	107	53	10	13	14	65	10
Prince George's	50	151	98	15	12	7	23	7
Washington	21	65	36	9	8	7	56	5
Salisbury	1	2	0	0	0	1	0	0
MS4 Totals	**331**	**968**	**533**	**85**	**85**	**131**	**330**	**55**
Outside MS4	94	328	185	33	28	29	146	17
Statewide Total	**425**	**1296**	**718**	**118**	**113**	**160**	**476**	**72**

Notes:
1. Projects included in the total number above include any project that had activity during the permit term. Activity can include submittal of any plan type, waiver or variance request, or the receipt of comments or issuance of approvals.
2. Granted SWM waivers or variances include only those requests associated with final design plans that have been approved during the reporting term.

D.1.c Maintain Construction Inspection Information

COMAR 26.17.02.10 details regulations for SWM facility inspections to be conducted during construction. MDOT SHA administers and continues to improve the SWM facility AB certification process in compliance with the SWM approval and COMAR requirements. The AB certification process facilitates the documentation and verification of the construction of SWM facilities.

A detailed description as well as a flow chart demonstrating the AB certification process was submitted with the FY18 MS4 annual report. MDOT SHA also created a shortened version of the SWM facility AB certification specification for use on remediation work orders. For future functionality inspections, copies of accepted AB packages, as well as data related to the shortened AB certification process for remediation work, are retained and integrated into the GIS inventory database previously described in **Section C**. of this FY19 MS4 annual report.

MDOT SHA standard specifications, including those related to contractor submittals for AB certification, are available on-line at: https://www.roads.maryland.gov/Index.aspx?PageId=689

D.1.d Preventative Maintenance

During the FY19 reporting period, MDOT SHA continued to conduct triennial preventative maintenance inspections in accordance with COMAR 26.17.02.11. In the MS4 geodatabase submitted with this FY19 MS4 annual report, MDOT SHA has provided the inspection program information in the following tables:

- BMP Inspections table (BIN),
- Alternative BMP Line Inspections table (LIN),
- Alternative BMP Poly Inspections table (YIN), and
- Restoration BMP Inspections table (RIN).

Included with this FY19 MS4 annual report as **Appendix A** is a revised protocol that clarifies MDOT SHA procedures for handling any BMP designated to provide baseline treatment or impervious restoration credit when it receives a failing field inspection rating. Because timeframes for remediating failures can vary based on the BMP type (SWM or alternative) and severity of the condition, this standardized method is used to determine when baseline treatment or restoration credit is removed from MDOT SHA impervious accounting and at what point it will be added back to the accounting framework.

Triennial Inspections of SWM Facilities

During the FY19 reporting period, MDOT SHA continued to locate, inspect, evaluate, and remediate SWM facilities to sustain their functionality, improve water quality and stability, protect sensitive water resources, and provide an aesthetic and safe transportation system. MDE requires all facilities be inspected at least on a triennial basis and maintained or remediated as appropriate to ensure they continue to function as originally designed and permitted. The triennial inspection protocol was included in Part Two of the FY18 MS4 annual report titled, "*Drainage and Stormwater Asset Program*".

MDOT SHA began utilizing an upgraded field inspection tool in FY19 and improved inspection efficiency, allowing inspectors to move more quickly in the field. The tool uses modern user-friendly devices running customized versions of Survey 123 and ArcCollector. While developing the training materials, rating teams created a brief visual guide to supplement the specific items called

out in the Standard Operating Procedures (SOPs). The SOPs were incorporated into the new Inspection Field Tool to provide inspectors immediate access to proper inspection techniques. The tool facilitates the inspectors to submit incremental batches of inspection results for engineering reviews in a more timely and efficient manner. Teams can now upload small batches of reports instead of submitting several hundred at a time. This also allows remediation (action) ratings to occur more frequently with multiple, smaller submissions occurring throughout the year.

Procedures have been created that assist with decisions on minor maintenance, remediation, or full retrofit of drainage or SWM assets. Engineers perform a desktop analysis of inspection records in order to assign an action rating to each facility. These ratings are then tied to the inspection protocol ratings that are then used to prioritize completion of maintenance, remedial workorders, design, and permitting.

SWM Facility Remediation Program

Routine and preventive maintenance is performed by MDOT SHA District maintenance shops as part of their roadside maintenance and other operational activities. MDOT SHA completed an operational manual for stormwater and drainage assets during FY16. The manual was distributed to all shops within MDOT SHA during the following 2 years. The practices outlined in each manual are specific to facility type and input from several offices and divisions was pooled to provide valuable information on the proper procedures and equipment needed. The manuals contain maps of the locations of all SWM facilities within the area of influence of the shop.

Major maintenance and remediation of SWM facilities is prioritized based on severity of condition, public safety, funding levels, and availability of construction contracts. The goal is to complete remediation within several years after a field inspection has demonstrated moderate problems will result in maintenance that can still be done within the facility footprint but that maintenance need is beyond the capacity of the MDOT SHA Maintenance Shops. Construction activities are directed by prescriptive work orders that have been marked on the original design plans. These abbreviated plan sets are produced for all sites and generally incur fewer design costs than full design projects. Sites that disturb over 5,000 square feet and 100 cubic yards of earth movement will require permitting activities, similar to a full design project. These activities include the following:

- Concept, Site Development, and Final SWM/ESC Approval by MDOT SHA PRD.

- Joint Permit Application (JPA) permitting process because facilities develop vegetation and wildlife habitat that resemble natural wetland environments over time. These facilities are then considered jurisdictional wetlands or Waters of the US and therefore require MDE Non-Tidal Wetland Permits (NTWP) for routine maintenance and remedial activities.

- Work in the 'Embankment Facility Maintenance Pilot Program' to establish agreed upon embankment remediation procedures on the AX9295482 contract. This is a phased process that incudes remedial actions that MDE feels comfortable to allow MDOT SHA PRD to approve on their behalf in order to allow some remediation efforts to proceed without approval from MDE on Small Ponds or Dam Safety. The program was outlined with a total of five phases. During FY19, Phase 0 was completed for all facilities included in the program and

MDOT SHA is preparing reports required in Phase 1 for approximately 8 of the facilities included in the program. Remediation of the 34 ponds originally outlined was performed at a much slower rate than anticipated because of issues with the contractor. At this time, it is unclear how many of the original facilities will have full reporting.

- Facilities located within the Severn River Watershed, require a secondary approval from Anne Arundel County Soil Conservation District (AASCD) in order to receive full MDOT SHA PRD approval. MDOT SHA worked with Anne Arundel County to verify all needed information for their approval.

MDOT SHA has prioritized completing the maintenance for BMPs published in the FY18 MS4 annual report.

Table 4 details remediation commitments for failed stormwater BMPs that require maintenance. This table has been updated to include BMPs that have recently exceeded the three-year timeframe since inspection. The table provides notes indicating status and identifies BMP remediation projects that may require additional approvals; such as a JPA permit or a small pond, dam safety, or NRCS Code 378 review; and provides commitment dates for maintenance completion.

A notable change in this presentation, relative to the similar Table 1-4 provided in Part One of the FY18 MS4 annual report, is replacement of the "Last Field Inspection Grade" column with a "Pass/Fail" column that more explicitly designates the result of the last BMP field inspection. The MDOT SHA standard for determining the impact of this result, with respect to MDOT SHA retaining or removing associated water quality treatment relative to its MS4 credit accounting, is described in **Appendix A** provided with this FY19 MS4 annual report.

Table 4 also reflects remediation progress achieved during the reporting period and below are several actions completed by MDOT SHA to further advance the maintenance and remediation program:

- Allocated funding for remediation contracts
- Established a new Area Wide contract in Anne Arundel County with capacity to perform SWM facility remediation. Worked with contractor on the remediation contract specifically for prioritized facilities with 2019 commitment dates (AX9295482)
- Allocated resources for additional engineering design, work order development, and permit processing
- Enhanced SWM remediation tracking system

During the reporting period, MDOT SHA completed remediation of 16 SWM facilities as shown in **Table 4.** To date, three previously reported SWM facilities have exceeded their completion commitment date, as shown in **Table 4**, and associated water quality treatment has been removed from reported MS4 credit in accordance with the procedures described in **Appendix A** of this FY19 MS4 annual report.

Table 4: MDOT SHA SWM Facilities for Remediation Work Orders

SWM Facility Number	Facility Type	MDE Pass / Fail	Contract	Completion Commitment Date	2019 Remediation Comments
020003	Infiltration basin	Pass	AX9295482		FY18 Construction Complete
020013	Wet pond	Fail	AX9295482	6/30/2020	Work Order Approved - Under Construction Contract
020014	Micropool extended detention pond	Pass			FY17 Construction Complete
020015	Wet pond	Pass			FY17 Construction Complete
020026	Wet pond	Fail		9/30/2020	
020036	Infiltration trench	Pass	AX9295482		FY18 Construction Complete
020038	Infiltration trench	Pass			FY17 Construction Complete
020039	Infiltration trench	Pass			FY17 Construction Complete
020040	Infiltration trench	Pass			FY17 Construction Complete
020052	Infiltration basin	Fail		6/30/2022	BMP Added to List in FY19
020061	Infiltration basin	Fail		9/30/2020	
020092	Infiltration trench	Fail		9/30/2021	In Design and Permitting Process
020094	Infiltration trench	Fail	XX1725174	6/30/2020	Work Order Approved - Under Construction Contract
020103	Wet pond	Fail	XX1725174	6/30/2022	BMP Added to List in FY19, In Design and Permitting Process
020110	Wet pond	Fail	AX9295482	6/30/2020	Work Order Approved - Under Construction Contract
020114	Wet pond	Fail	XX1725174	6/30/2022	BMP Added to List in FY19, In Design and Permitting Process
020124	Wet pond	Fail	AX9295482	6/30/2020	Work Order Approved - Under Construction Contract
020143	Infiltration trench	Pass	AX9295482		FY18 Construction Complete
020167	Dry pond	Fail		9/30/2020	
020177	Dry swale	Fail		9/30/2021	
020196	Infiltration trench	Pass	AX9295482		FY18 Construction Complete
020217	Infiltration trench	Pass	AX9295482		FY18 Construction Complete
020218	Infiltration trench	Pass	AX9295482		FY18 Construction Complete
020231	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
020240	Infiltration basin	Pass	AX9295482		FY19 Construction Complete
020241	Infiltration trench	Pass	AX9295482		FY18 Construction Complete
020242	Infiltration trench	Pass	AX9295482		FY18 Construction Complete
020243	Infiltration trench	Pass	AX9295482		FY18 Construction Complete
020244	Infiltration trench	Fail	AX3565274	6/30/2020	In Design and Permitting Process

Table 4: MDOT SHA SWM Facilities for Remediation Work Orders

SWM Facility Number	Facility Type	MDE Pass / Fail	Contract	Completion Commitment Date	2019 Remediation Comments
020257	Wet pond	Fail	AX7665D82	6/30/2020	Site Under Evaluation
020258	Infiltration basin	Fail	AA8225174		BMP Added to List in FY19, Under Construction, Facility is being retrofit.
020260	Infiltration basin	Fail	AA8225174		Under Construction
020268	Infiltration basin	Fail	AA8225174	6/30/2020	Under Construction
020271	Infiltration basin	Fail		6/30/2022	BMP Added to List in FY19, In Design and Permitting Process
020272	Wet pond	Fail		6/30/2022	BMP Added to List in FY19
020276	Wet pond	Fail	AX7665D82	6/30/2020	Site Under Evaluation
020277	Wet pond	Fail		6/30/2022	BMP Added to List in FY19, MDOT Considering Abandonment
020307	Infiltration trench	Pass	AX9295482		FY19 Construction Complete
020308	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19, In Design and Permitting Process
020338	Infiltration basin	Fail		9/30/2021	
020339	Infiltration basin	Fail		6/30/2020	
020354	Infiltration trench	Pass	AX9295482		FY18 Construction Complete
020357	Infiltration trench	Fail	AX9295482	6/30/2020	Work Order Approved - Under Construction Contract
020360	Infiltration trench	Pass	AX9295482		FY18 Construction Complete
020363	Infiltration basin	Fail		9/30/2020	
020388	Infiltration basin	Fail		9/30/2020	
020394	Infiltration basin	Fail		9/30/2020	
020396	Infiltration basin	Fail	XX1725174	6/30/2022	BMP Added to List in FY19, In Design and Permitting Process
020398	Infiltration trench	Pass	AX9295482		FY18 Construction Complete
020399	Infiltration basin	Fail		6/30/2020	
020403	Infiltration trench	Fail	XX1725174	6/30/2022	BMP Added to List in FY19, In Design and Permitting Process
020406	Dry pond	Fail		6/30/2022	BMP Added to List in FY19
020409	Infiltration trench	Fail		6/30/2020	
020410	Infiltration trench	Fail		6/30/2020	
020429	Infiltration trench	Fail	AX3565274	6/30/2020	In Design and Permitting Process
020436	Wet pond	Pass	AX9295482		FY19 Construction Complete
020480	Wet pond	Fail		6/30/2022	BMP Added to List in FY19
020484	Infiltration trench	Fail	XX1725174	6/30/2022	BMP Added to List in FY19, In Design and Permitting Process

Table 4: MDOT SHA SWM Facilities for Remediation Work Orders

SWM Facility Number	Facility Type	MDE Pass / Fail	Contract	Completion Commitment Date	2019 Remediation Comments
020486	Wet pond	Fail	XX1725174	6/30/2022	BMP Added to List in FY19, In Design and Permitting Process
020489	Infiltration basin	Fail		9/30/2020	
020490	Infiltration trench	Fail	AX7665D82		Remediation / Maintenance not completed on schedule; WQ treatment temporarily removed from reported MS4 credit.
020494	Infiltration basin	Fail		6/30/2020	
020514	Infiltration basin	Fail		6/30/2020	
020516	Infiltration trench	Fail		6/30/2020	
020517	Infiltration trench	Fail		6/30/2020	
020520	Infiltration trench	Fail		6/30/2020	
020522	Wet pond	Fail		6/30/2022	BMP Added to List in FY19
020528	Infiltration trench	Pass	AX9295482		FY19 Construction Complete
020532	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
020544	Wet pond	Fail		6/30/2022	BMP Added to List in FY19
020554	Infiltration trench	Pass	AX9295482		FY18 Construction Complete
020561	Infiltration basin	Fail		6/30/2020	
020565	Infiltration trench	Fail	AX3565274	6/30/2022	BMP Added to List in FY19, In Design and Permitting Process
020584	Wet extended detention pond	Fail		6/30/2022	BMP Added to List in FY19
020603	Bioretention	Fail		6/30/2022	BMP Added to List in FY19
020608	Bioretention	Fail		6/30/2022	BMP Added to List in FY19
020747	Grass Swale	Fail		6/30/2020	
020757	Infiltration basin	Fail	XX1725174	6/30/2022	BMP Added to List in FY19, In Design and Permitting Process
020760	Infiltration basin	Fail		6/30/2022	BMP Added to List in FY19, In Design and Permitting Process
020761	Infiltration basin	Fail		6/30/2022	BMP Added to List in FY19
020774	Infiltration trench	Fail	XX1725174	6/30/2022	BMP Added to List in FY19, In Design and Permitting Process
020782	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
020787	Infiltration trench	Fail		6/30/2020	
020795	Infiltration trench	Fail	AX3565274	6/30/2022	BMP Added to List in FY19, In Design and Permitting Process
020801	Infiltration basin	Fail	AX7665D82	6/30/2020	Site Under Evaluation
020807	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19, MDOT Considering Abandonment
020809	Wet Pond	Pass	AX9295483		FY19 Construction Complete

Table 4: MDOT SHA SWM Facilities for Remediation Work Orders

SWM Facility Number	Facility Type	MDE Pass / Fail	Contract	Completion Commitment Date	2019 Remediation Comments
020810	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
020811	Infiltration trench	Fail		6/30/2020	
020812	Infiltration trench	Pass	AX9295482		FY19 Construction Complete
020817	Surface sand filter	Fail		6/30/2022	BMP Added to List in FY19
020818	Surface sand filter	Fail	AX7665D82	6/30/2020	Site Under Evaluation
020820	Surface sand filter	Fail		6/30/2022	BMP Added to List in FY19
020823	Infiltration basin	Fail	AX7665D82	6/30/2020	Site Under Evaluation
020827	Wet pond	Fail		6/30/2022	BMP Added to List in FY19
020845	Infiltration basin	Fail	XX1725174	6/30/2022	BMP Added to List in FY19, In Design and Permitting Process
020849	Infiltration trench	Pass	AX9295482		FY18 Construction Complete
020850	Infiltration basin	Fail		9/30/2020	
020880	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
020892	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19, MDOT Considering Abandonment
020893	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19, MDOT Considering Abandonment
020896	Grass Swale	Fail		6/30/2022	BMP Added to List in FY19
030001	Grass Channel Credit	Fail	AX3565274	6/30/2020	In Design and Permitting Process
030011	Wet pond	Fail		6/30/2020	In Design and Permitting Process
030113	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
030116	Infiltration basin	Fail		6/30/2020	
030117	Dry extended detention pond	Pass			FY17 Construction Complete
030124	Infiltration trench	Fail		6/30/2020	In Design and Permitting Process
030136	Infiltration basin	Fail		6/30/2020	
030137	Infiltration basin	Fail		9/30/2020	
030175	Dry pond	Fail		6/30/2020	
030183	Infiltration basin	Fail		6/30/2022	BMP Added to List in FY19
030189	Infiltration basin	Fail		9/30/2020	
030198	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
030200	Infiltration basin	Fail		6/30/2020	In Design and Permitting Process
030214	Infiltration basin	Fail		9/30/2020	
030215	Infiltration basin	Fail		6/30/2020	

Table 4: MDOT SHA SWM Facilities for Remediation Work Orders

SWM Facility Number	Facility Type	MDE Pass / Fail	Contract	Completion Commitment Date	2019 Remediation Comments
030220	Infiltration trench	Fail		6/30/2020	In Design and Permitting Process
030225	Infiltration trench	Pass	XX1675274		FY17 Construction Complete
030226	Infiltration trench	Pass	XX1675274		FY17 Construction Complete
030227	Infiltration trench	Pass	XX1675274		FY18 Construction Complete
030227	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
030228	Infiltration trench	Pass	XX1675274		FY18 Construction Complete
030229	Infiltration trench	Pass	XX1675274		FY17 Construction Complete
030242	Infiltration trench	Pass	XX1675274		FY18 Construction Complete
030244	Infiltration trench	Pass	XX1675274		FY18 Construction Complete
030244	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
030245	Infiltration trench	Fail		6/30/2020	In Design and Permitting Process
030252	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
030253	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
030256	Infiltration trench	Fail	AX3565274		Remediation / Maintenance not completed on schedule; WQ treatment temporarily removed from reported MS4 credit.
030269	Dry pond	Fail		6/30/2022	BMP Added to List in FY19
030274	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
030284	Bioretention	Fail		6/30/2022	BMP Added to List in FY19
030333	Infiltration trench	Fail		6/30/2020	In Design and Permitting Process
030385	Surface sand filter	Fail		6/30/2020	In Design and Permitting Process
030505	Micro-Bioretention	Fail		6/30/2022	BMP Added to List in FY19
060104	Dry pond	Fail	AX7665D82	6/30/2020	Sites being evaluated
"080007"	Wet pond	Fail		6/30/2020	
080019	Infiltration basin	Fail		6/30/2022	BMP Added to List in FY19
080027	Wet Swale	Fail		6/30/2022	BMP Added to List in FY19
080028	Wet Swale	Fail		6/30/2022	BMP Added to List in FY19
080069	Wet pond	Fail		6/30/2022	BMP Added to List in FY19
080070	Wet pond	Fail		6/30/2022	BMP Added to List in FY19
080071	Wet pond	Fail		6/30/2022	BMP Added to List in FY19
080074	Wet pond	Fail		6/30/2022	BMP Added to List in FY19

Table 4: MDOT SHA SWM Facilities for Remediation Work Orders

SWM Facility Number	Facility Type	MDE Pass / Fail	Contract	Completion Commitment Date	2019 Remediation Comments
100004	Surface sand filter	Fail		6/30/2020	
100012	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
100060	Infiltration basin	Fail	AX7665D82	6/30/2020	Sites being evaluated
100061	Infiltration basin	Fail		6/30/2020	
100065	Dry pond	Fail	AX9295482	6/30/2020	Work Order Approved - Under Construction Contract
100099	Wet pond	Fail		6/30/2020	
100129	Wet swale	Fail		6/30/2022	BMP Added to List in FY19
100143	Dry swale	Fail		6/30/2022	BMP Added to List in FY19
100171	Dry extended detention pond	Pass	AX7665C82		FY19 Construction Complete
100471	Other filtering	Fail	AX3565274	6/30/2020	In Design and Permitting Process
120008	Dry pond	Fail	AX7665D82	6/30/2020	Site Under Evaluation
120009	Dry pond	Fail		6/30/2020	
120017	Infiltration trench	Fail	AX3565274	6/30/2020	In Design and Permitting Process
120019	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
120039	Infiltration trench	Fail	HA4285174	9/30/2020	
120042	Infiltration trench	Fail	HA4285174	9/30/2020	
120063	Infiltration trench	Fail	AX3565274	6/30/2020	In Design and Permitting Process
120066	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
120095	Infiltration basin	Fail		6/30/2020	
120105	Dry extended detention pond	Fail		9/30/2020	
120106	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
120112	Infiltration trench	Fail	AX3565274	6/30/2020	In Design and Permitting Process
120133	Infiltration basin	Fail		9/30/2020	
120203	Wet extended detention pond	Fail		6/30/2020	
120208	Surface sand filter	Fail		6/30/2020	
120291	Wet pond	Fail		6/30/2020	In Design and Permitting Process
130013	Dry extended detention pond	Fail		6/30/2022	BMP Added to List in FY19
130027	Dry extended detention pond	Fail		9/30/2020	
130050	Infiltration basin	Fail		6/30/2022	BMP Added to List in FY19
130072	Dry extended detention pond	Fail	AX7665282	9/30/2020	Retrofit under construction

Table 4: MDOT SHA SWM Facilities for Remediation Work Orders

SWM Facility Number	Facility Type	MDE Pass / Fail	Contract	Completion Commitment Date	2019 Remediation Comments
130073	Wet pond	Fail	AX7665282	9/30/2020	Retrofit under construction
130074	Micropool extended detention pond	Fail		9/30/2020	
130077	Wet pond	Fail		9/30/2020	
130078	Dry pond	Fail		6/30/2022	BMP Added to List in FY19
130134	Wet pond	Fail		6/30/2022	BMP Added to List in FY19
130136	Infiltration trench	Pass	AX9295482		FY19 Construction Complete
130136	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
130161	Infiltration trench	Pass	AX9295482		FY19 Construction Complete
130167	Infiltration basin	Fail	AX9295482	6/30/2020	Work Order Approved - Under Construction Contract
130169	Wet pond	Pass			FY17 Construction Complete
130180	Grass Swale	Fail		6/30/2022	BMP Added to List in FY19
130198	Micropool extended detention pond	Pass			FY17 Construction Complete
130204	Infiltration basin	Fail	AX9295482	6/30/2020	Work Order Approved - Under Construction Contract
130206	Wet pond	Fail		9/30/2020	
130208	Infiltration trench	Fail	AX9295482	6/30/2020	In Design and Permitting Process
130210	Wet pond	Fail		6/30/2022	BMP Added to List in FY19
130220	Dry extended detention pond	Fail		9/30/2020	
130228	Shallow marsh	Pass	AX9295482		FY19 Construction Complete
130237	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
130251	Surface sand filter	Fail		6/30/2020	
130259	Surface sand filter	Fail		6/30/2020	
130263	Surface sand filter	Fail		6/30/2022	BMP Added to List in FY19
130271	Dry pond	Fail	AX7665D82	6/30/2020	Site Under Evaluation
130292	Other infiltration	Fail	AX9295482	6/30/2020	Work Order Approved - Under Construction Contract
130294	Other infiltration	Fail	AX9295482	6/30/2020	Work Order Approved - Under Construction Contract
130317	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
130319	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
130323	Infiltration basin	Pass	AX9295482		FY19 Construction Complete

Table 4: MDOT SHA SWM Facilities for Remediation Work Orders

SWM Facility Number	Facility Type	MDE Pass / Fail	Contract	Completion Commitment Date	2019 Remediation Comments
130325	Shallow marsh	Pass	AX9295482		FY19 Construction Complete
130332	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
130341	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
130357	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19, MDOT Considering Abandonment
130358	Infiltration trench	Pass	AX9295482		FY18 Construction Complete
130365	Infiltration trench	Pass	AX9295482		FY19 Construction Complete
130366	Infiltration trench	Pass	AX9295482		FY19 Construction Complete
130366	Infiltration trench	Fail	AX9295482	6/30/2022	BMP Added to List in FY19
130369	Shallow marsh	Fail	AX9295482	6/30/2020	Work Order Approved - Under Construction Contract
130370	Infiltration trench	Pass	AX9295482		FY19 Construction Complete
130375	Infiltration basin	Fail		9/30/2020	
130377	Infiltration basin	Pass	AX9295482		FY19 Construction Complete
130417	Grass Swale	Fail	AX9295482	6/30/2020	Work Order Approved - Under Construction Contract
130421	Wet pond	Fail		6/30/2020	
130544	Bio-Swale	Fail		6/30/2022	BMP Added to List in FY19
130629	Bio-Swale	Fail		6/30/2022	BMP Added to List in FY19
130631	Bio-Swale	Fail		6/30/2022	BMP Added to List in FY19
130632	Bio-Swale	Fail		6/30/2022	BMP Added to List in FY19
132056	Micro-Bioretention	Fail		6/30/2020	
150036	Infiltration trench	Fail		6/30/2020	
150059	Wet pond	Fail		6/30/2022	BMP Added to List in FY19
150066	Dry pond	Fail		6/30/2020	
150081	Infiltration basin	Fail		6/30/2020	
150201	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
150217	Infiltration basin	Fail		6/30/2022	BMP Added to List in FY19
150232	Infiltration trench	Fail		6/30/2020	
150285	Dry pond	Fail		6/30/2020	
150295	Bioretention	Fail	AX3565274	6/30/2020	In Design and Permitting Process
150304	Surface sand filter	Fail		6/30/2020	
150312	Dry extended detention pond	Fail		9/30/2020	

Table 4: MDOT SHA SWM Facilities for Remediation Work Orders

SWM Facility Number	Facility Type	MDE Pass / Fail	Contract	Completion Commitment Date	2019 Remediation Comments
150348	Wet pond	Fail		6/30/2022	BMP Added to List in FY19
150352	Dry pond	Fail		6/30/2022	BMP Added to List in FY19, In Design and Permitting Process
150355	Wet pond	Fail		6/30/2020	
150400	Dry pond	Fail		6/30/2022	BMP Added to List in FY19
150638	Infiltration basin	Fail		6/30/2022	BMP Added to List in FY19, MDOT Considering Abandonment
150643	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
150650	Dry pond	Fail		6/30/2022	BMP Added to List in FY19
150680	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
150706	Infiltration trench	Fail	AX3565274	6/30/2020	In Design and Permitting Process
150749	Other	Fail		6/30/2022	BMP Added to List in FY19
150750	Other	Fail		6/30/2022	BMP Added to List in FY19
160061	Wet pond	Fail		6/30/2022	BMP Added to List in FY19
160131	Infiltration trench	Fail		6/30/2020	
160176	Dry extended detention pond	Fail		6/30/2020	
160187	Wet swale	Fail		6/30/2020	In Design and Permitting Process
160197	Infiltration trench	Fail		6/30/2022	BMP Added to List in FY19
160203	Shallow marsh	Fail		6/30/2020	
160224	Infiltration trench	Fail		6/30/2020	
160225	Infiltration trench	Fail		9/30/2021	
160230	Infiltration trench	Fail	AX3565274	6/30/2020	In Design and Permitting Process
160232	Infiltration trench	Fail	AX3565274	6/30/2020	In Design and Permitting Process
160378	Dry pond	Fail		6/30/2020	
160408	Infiltration trench	Fail	AX3565274	6/30/2020	In Design and Permitting Process
160427	Infiltration trench	Fail		6/30/2020	
160429	Infiltration trench	Fail		6/30/2020	
160505	Wet pond	Fail		6/30/2020	In Design and Permitting Process
160624	Infiltration trench	Fail		6/30/2020	
160662	Wet pond	Fail		6/30/2022	BMP Added to List in FY19
160737	Wet pond	Pass	AT0865182		FY18 Construction Complete
160747	Wet extended detention pond	Fail		6/30/2022	BMP Added to List in FY19, In Design and Permitting Process

Table 4: MDOT SHA SWM Facilities for Remediation Work Orders

SWM Facility Number	Facility Type	MDE Pass / Fail	Contract	Completion Commitment Date	2019 Remediation Comments
160749	Infiltration trench	Fail		6/30/2020	
160806	Wet pond	Fail		6/30/2020	
210003	Dry swale	Fail	XY1695174	6/30/2020	In Design and Permitting Process
210009	Infiltration basin	Fail	XY1695174		Remediation / Maintenance not completed on schedule; WQ treatment temporarily removed from reported MS4 credit.

D.2 Erosion and Sediment Control

Requirements under this condition include:

a) Implement program improvements identified in any MDE evaluation of SHA's erosion and sediment control program;

b) Ensure construction site operators have received training regarding erosion and sediment control compliance and hold a valid Responsible Personnel Certification as required by MDE;

c) Record program activity on MDE's annual report database and submitted as required in Part V of this permit;

d) Ensure all applicable construction projects obtain a notice of intent (NOI) for stormwater associated with construction activity.

D.2.a SHA's Erosion and Sediment Control Program

MDOT SHA continues to comply with Maryland State and federal laws and regulations for erosion and sediment control (ESC) as well as MDE requirements for permitting. MDOT SHA maintains compliance with the NPDES Stormwater Construction Activity permit for projects that disturb at least one acre of land. MDOT SHA continues to submit applications for coverage under this general permit for all qualifying roadway projects as described under **Section D.2.d** below.

As discussed in **Section D.1** above, MDOT SHA and MDE signed an MOU designating MDOT SHA as an approving authority for stormwater management and erosion and sediment control for all MDOT SHA projects. PRD maintains a database to track SWM and ESC submittals and design progress on all MDOT SHA projects.

MDOT SHA does not issue standard grading permits; the approval of final development plans typically indicates that all relevant regulations have been addressed and that work may proceed. In certain circumstances, additional approvals from other agencies may be required prior to initiating development activities.

Table 6 presents, a summary of approvals statewide projects as well as those within MS4 areas. Included also are summaries for acres of land disturbance.

In the MS4 geodatabase submitted with this FY19 MS4 annual report, MDOT SHA has provided the grading permit program information in the Quarterly Grading Permit feature class (QGP) and the Quarterly Grading Permit information table (QPI).

MDOT SHA ESC Quality Assurance Division (QAD)

The QA Program is now under the newly formed Quality Assurance Division within the MDOT SHA Office of Environmental Design. In FY19, the QA Program ensures that permits and plan approval conditions are adhered to by performing unannounced inspections at project sites applying the same protocols described in the FY18 MS4 annual report. No court enforcement actions were initiated in FY19; however, MDOT SHA utilizes liquidated damages against the contractors responsible for improper ESC activities.

Table 6 summarizes QA inspections and resultant MDOT SHA pursuit of liquidated damages for projects inside and outside MS4 jurisdictions**.** It is important to note that plans reviewed and approved by PRD will not necessarily correlate directly to the number of permits issued during any reporting period. This reflects the fact that PRD approval by itself does not constitute permit issuance as projects must meet additional regulatory criteria beyond MDE SWM and ESC standards. Additionally, the number of inspections and the associated number of projects on which these inspections were performed include projects whose approvals

were issued during previous fiscal years and are therefore not included in the sum of permit activity presented.

D.2.b MDE Responsible Personnel Certification

MDE Responsible Personnel Certification is required for anyone overseeing the installation and maintenance, or performing the installation and maintenance, of erosion and sediment control practices and measures in Maryland. All PRD personnel are required to hold a valid MDE Responsible Personnel Certification.

The MDE Responsible Personnel Certification is currently only available through an online training course through MDE's website, so the amount of individual MDOT SHA personnel certified through that website is not reported here.

MDOT SHA Erosion and Sediment Control Certification (Yellow Card)

MDOT SHA, in cooperation with the Maryland Transportation Builders and Materials Association (MTBMA), continues to offer updated erosion and sediment control training, initiated in 2004. This erosion and sediment control online training is mandatory for MDOT SHA contractor superintendents and ESC managers and is highly recommended for contractor project managers, field personnel, and personnel responsible for erosion and sediment control.

Figure 3: MDOT SHA Yellow Card Certification

The Quality Assurance Toolkit continues to track MDOT SHA's Erosion and Sediment Control Certification (Yellow Card) information related to individuals working on MDOT SHA projects, allowing QA inspectors to conduct audits of these credentials. Yellow Card Certification (see **Figure 3**) is a prerequisite for MDOT SHA's Erosion and Sediment Control Certification for designers, described in the following sections. The number of MDOT SHA personnel certified during the reporting period is summarized in **Table 5.**

MDOT SHA Erosion and Sediment Control Re-Certification (Yellow Card Re-Certification)

MDOT SHA Erosion and Sediment Control Re-Certification (Yellow Card Re-Certification) is only available for those that have previously completed the MDOT SHA Yellow Card Certification. Re-certification is contingent upon passing an exam and re-certification is valid for three years. MDOT SHA provides on-line re-certification training. The number of MDOT SHA personnel re-certified during the reporting period is summarized in **Table 5.**

Table 5: MDOT SHA ESC Training

Type of Training	Number Certified
MDOT SHA Erosion and Sediment Control Certification (Yellow Card)	502
MDOT SHA Erosion and Sediment Control Re-Certification (Yellow Card Re-Certification)	277

D.2.c Recording Program Activity

In the MS4 geodatabase submitted with this FY19 MS4 annual report, MDOT SHA has provided the erosion and sediment control program information in the Erosion Sediment Control table (ESC).

Table 6: Erosion and Sediment Control Permits and Disturbance Acreage

Jurisdiction	Number of Permits Issued	Acreage of Disturbance	Violations (Non-Compliance Inspections)	D-Grade Inspections (Shut Down Grading)	F-Grade Inspections (Shut Down Entire Project)	No-Grade Inspections (Extenuating Circumstances)	Liquidated Damages per IFB	Liquidated Damages in Progress	Liquidated Damages Taken	Liquidated Damages Outstanding	Court Cases
Anne Arundel	41	42.79	3	2	1	0	$18,468.00	3 Completed	$18,468.00	$0.00	
Baltimore	9	26.45	1	1	0	0	$2,849.00	1 Not Started		$2,849.00	
Carroll	4	102.64	0	0	0	0	--	--	--	--	
Cecil	2	4.71	2	0	1	1	$14,000.00	1 In Progress		$14,000.00	
Charles	3	1.61	1	1	0	0	$2,849.00	1 In Progress		$2,849.00	
Cumberland	--	--	0	0	0	0	--	--	--	--	
Frederick	14	82.71	7	3	3	1	$48,807.00	3 In Progress 3 Not Started		$48,807.00	
Harford	4	3.49	0	0	0	0	--	--	--	--	
Howard	25	325.736	2	1	1	0	$5,619.00	2 In Progress		$5,619.00	
Montgomery	14	54.69	8	4	4	0	$37,962.00	2 In Progress 3 Not Started 2 Completed	$11,028.00	$26,934.00	
Prince George's	7	12.93	3	0	3	0	$49,207.00	1 In Progress 1 Not Started 1 Completed	$4,015.00	$45,192.00	
Washington	7	9.83	2	2	0	0	$6,232.00	2 In Progress		$6,232.00	
Salisbury	1	0.59	0	0	0	0	--	--	--	--	
State Wide*	--	--	6	2	4	0	$0.00	--	$0.00	$0.00	
MS4 County Total	**131**	**668.176**	**35**	**16**	**17**	**2**	**$185,993.00**		**$33,511.00**	**$152,482.00**	
Non-MS4	29	165.43	3	0	3	0	$37,727.00	1 In Progress 2 Not Started		$37,727.00	
Total	**160**	**833.606**	**38**	**16**	**20**	**2**	**$223,720.00**		**$33,511.00**	**$190,209.00**	
*Certain groups within MDOT SHA conduct statewide operations – these contracts span multiple counties and sometimes districts.											

D.2.d Notice of Intent for Stormwater Associated with Construction Activity

In accordance with the General Permit for Stormwater Associated with Construction Activity (State discharge permit number 14GP, effective January 1, 2015; expiring December 31, 2019), projects that disturb one acre or more of earth must obtain coverage under a General or Individual Permit for Stormwater Associated with Construction Activity (NPDES-CA) before beginning any earth disturbance.

The OHD Highway Hydraulics Division (HHD) reviews the limits of disturbance for all MDOT SHA projects and also reviews all subsequent approval modifications, to determine if a modification to the permit coverage is needed. HHD submits completed NOI applications online via the MDE e-Permits Portal. HHD tracks the status of each NOI application and ensures that coverage under any applicable permit is obtained prior to the issuance of Notice-To-Proceed (NTP) for construction. The QA program verifies all necessary permits are in hand prior to contractors initiating earth-disturbing activities. Both the documentation of NPDES-CA coverage and a copy of the General NPDES-CA permit are posted at each applicable construction site. During the reporting period, between July 1, 2018 and June 30, 2019, a total of 93 MDOT SHA construction projects receiving NTP required coverage under an NPDES-CA permit. Due to the upcoming expiration date for the General NPDES-CA permit, MDE has extended project-specific NPDES-CA coverage for advertised MDOT SHA projects by default until a new permit is issued.

D.3 Illicit Discharge Detection and Elimination

Requirements under this condition include:

a) Field screen at least 150 outfalls annually;

b) Conduct annual visual surveys of commercial and industrial areas to discover, document and eliminate pollutant sources;

c) Maintain program to address and, if necessary, respond to illegal discharges, dumping and spills;

d) Use appropriate procedures to investigate and report illicit discharges, illegal dumping and spills to local or State authorities as applicable for control or clean-up. Report significant discharges to MDE for enforcement and/or permitting.

e) Coordinate with surrounding jurisdictions when illicit connections originate from beyond SHA's rights-of-way; and

f) Report illicit discharge detection and elimination activities as specified in Part V of this permit.

D.3.a Illicit Discharge Screening

IDDE screening is coordinated by the MDOT SHA Office of Environmental Design, Environmental Compliance Division (ECD). ECD considered pollution potential during the FY19 outfall selection process. Outfalls selected and screened during FY19 were located in commercial and industrial areas determined to be "stormwater hotspots." ECD included pipes 12" diameter and greater throughout Anne Arundel, Baltimore, and Prince George's Counties.

To meet the minimum annual requirement, a total of 182 primary (field) screenings were performed at outfalls along sections of Maryland Route 40, Route 2, Route 140, and Route 30. Of the screened outfalls with a discernible dry-weather flow that were consequently sampled, only one illicit discharge (ID) was identified in Baltimore County. Additional screenings were

performed across Baltimore, Montgomery, and Prince George's Counties as a result of information regarding potential IDs received from either citizen reporting or other MDOT SHA contractors working in our ROW. One ID resulted from these additional screenings, in Prince George's County. Details regarding any closed or open ID investigations are provided below in Section D.3.e.

Table 7 below summarizes primary and additional field screening efforts for the reporting period. In the MS4 geodatabase submitted with this FY19 MS4 annual report, MDOT SHA has provided the illicit discharge detection and elimination program information in the IDDE table (IDD).

Table 7: Field Screening Summary

County	Number of Outfalls Field Screened FY 19	Discharges requiring follow-up
Anne Arundel	62	0
Baltimore	112	1
Prince George's	11	1
Montgomery	1	0
Totals	**186**	**2**

D.3.b Annual Visual Surveys of Commercial and Industrial Areas

As discussed in **Section 0**, a GIS layer has been developed to identify industrial sites within MDOT SHA right-of-way that have the potential to contribute pollutants to MDOT SHA storm drain systems.

The MDOT SHA sites include industrial NPDES 12-SW general permitted facilities. As a best management practice, MDOT SHA sites not permitted under MDE's 12-SW permit are also included in the state-wide inspection program. These additional sites include salt domes, satellite shops, truck weigh inspection stations (TWIS), office buildings, draw bridges, and rest areas. These MDOT SHA facilities will be inspected using the same Facility Compliance Inspection tool used for general permitted activities. In FY19, 129 non-permitted sites were inspected.

There are three types of inspections performed at MDOT SHA facilities:

- Routine Facility Inspections
- Comprehensive Site Compliance Evaluations (CSCE)
- 12-SW Quarterly Visual Monitoring.

The MDOT SHA facility inspection program includes two inspections:

1. A weekly/monthly routine facility inspection performed by shop personnel
2. A routine inspection is performed by ECD's District Environmental Coordinator (DEC) on either an annual, semi-annual or quarterly basis depending on the type of facility

Inspection checklists are completed and uploaded to the MDOT SHA web-based database for both types of inspections. A separate summary report is generated by the DECs following each inspection.

For 12-SW permitted facilities an annual CSCE is performed in the fourth quarter of every calendar year. The CSCE report is generated prior to January 31 each year.

D.3.c Illegal Discharge, Dumping, and Spill Program

ECD manages a program to address and respond to illegal discharges, dumping, and spills. As part of the overarching program, ECD continues to coordinate with MDE, surrounding jurisdictions, and property owners to eliminate IDs and clean up spills and dumping.

Implementation of a new IDDE management tool is queued for FY21. The implementation will leverage a new strategic platform for application deployment and will align with MDOT SHA processes for tracking and follow-up for ID cases.

As IDs are identified through the ID screening process and other sources, ECD utilizes an agreement with Maryland Environmental Service (MES) to follow-up and collect samples for laboratory analysis in accordance with the process submitted in Appendix F of the FY18 MS4 annual report.

Discharges are deemed illicit based on two main criteria: dry weather flow and exceedance of discharge parameter(s). Any no-flow outfalls showing signs of potential pollution are investigated further to ensure no stormwater pollution is occurring.

D.3.d Investigation and Report of Illicit Discharge, Illegal Dumping and Spills

The dry weather screening process for IDs implemented by ECD is described previously in **Section D.3.a**. and the investigation and reporting process implemented by ECD was described in detail in the FY18 MS4 annual report. The investigation and reporting process did not change during the FY19 reporting period.

If an ID is still present at a site after the standard investigation and reporting steps have been taken, ECD contacts the MDE Sediment, Stormwater and Dam Safety Program for assistance. The expectation is that MDE's Stormwater program manages the investigation through to resolution. To ensure resolution, ECD will then add the reported outfall to the following year's IDDE screening list.

D.3.e Annually Report Illicit Discharge Detection and Elimination Activities

The following updates provide details regarding the status of open or reopened IDs from previous annual reports, as well as any FY19 IDs that required investigation.

1. A FY18 ID investigation in Frederick County at Rising Ridge Road in Mt. Airy associated with BMP # 100085 was closed during this reporting period. The location of this ID is a 15" reinforced concrete pipe flowing from an inlet on an off-site property. A grey milky discharge flowing into the BMP was found to be the result of a stone cutting operation in the parking lot and adjacent building. The flow is causing additional sedimentation from the cutting byproduct and staining of the downstream channel material. Frederick County representatives contacted the Mt. Airy Department of Public Works to address the ID. ECD has added this outfall to the FY20 primary screening locations to ensure the issue has been addressed.

2. In the FY18 annual report, MDOT SHA also reported an ID in Prince George's County at structure #1600828.001, which discharges into BMP# 160660. This ID was identified in a commercially developed area along the on-ramp to Interstate 495 from Ritchie Marlboro Road in Largo, MD. Since the initial identification, ECD has worked with Prince George's (PG) County code enforcement to eliminate the ID. PG County has taken the following steps to correct the issue: performed site visits, compiled stormwater mapping, and met with property owners. It is our understanding that to date no single responsible party has been identified. During this reporting period, ECD performed a follow up inspection and field

Table 8: Illicit Discharges Requiring Follow-up

Number	County	MDOT SHA Structure #	Date Identified	Potential Pollutant	Status
1	Frederick	BMP 100085	05/10/2017	Solids	Closed
2	Prince George's	BMP 160660	10/04/2017	Detergents	Open, referred to MDE
3	Harford	1202700.001	08/09/2018	Detergents	Closed
4	Baltimore	0300806.001	06/27/2019	Chlorine	Open, referred to County

testing. This follow up effort confirmed that issues with pH and detergents remain. This ID has been referred to MDE for closure and will be added to the FY20 primary screening locations.

3. In August 2018, MDE informed MDOT about a citizen complaint regarding a potential ID at Bel Air Rd in Harford County. The complaint had been relayed to MDE by EPA Region III. ECD determined that this compliant was related to a past ID that was originally identified in 2014, and subsequently closed upon referral to MDE in 2015. The original ID and recent complaint involved detergents that were found to be discharging from car washing activities. In October 2018, the property owner was again contacted and inspected by MDE and directed to resolve the repeat vehicle washing violation. In response, the property owner installed a berm to prevent wash water from leaving the vehicle wash facility (See **Figure 4)**. This corrective action was confirmed by MDE Compliance Program.

4. An ID involving chlorinated discharge was identified during the FY19 primary outfall screening along Rt. 40 near the intersection with Charing Cross Road in Baltimore County. The ID is suspected to be a water line break and has been referred to the County for correction.

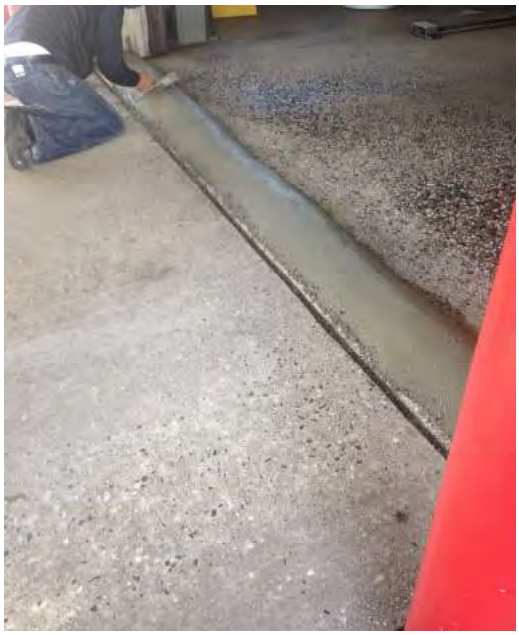

Figure 4: Wash Water Berm Install

Table 8 above summarizes the above information for IDs requiring follow-up.

D.4 Trash and Litter

Requirements under this condition include:

a) Document litter problems on properties, ways of eliminating litter, and opportunities for overall improvement;

b) Within one year of permit issuance, as part of the public education program, SHA shall develop and implement a public education and outreach program with specific performance goals to reduce littering. This shall include:

i) Educating the transportation community on the importance of reducing, reusing, and recycling;

ii) Disseminating information by using signs, articles and other media outlets; and

iii) Promoting educational programs for SHA employees, consultants, contractors, travelling/trucking public, vacationers and commuters, etc.;

c) Evaluate annually the effectiveness of the education program; and

d) Submit an annual report that details progress toward implementing the public education and outreach program and trash reduction strategies.

D.4.a Litter Control Problems and Methods for Elimination

The MDOT SHA has long maintained an anti-litter program and continues to implement improvements to this program to minimize litter. This helps to increase safety, improve the health of our environment, and keep our state beautiful. MDOT SHA currently collects a substantial amount of litter and trash including pick-up along state roads, inlet cleaning, and structural stormwater control structures.

MDOT SHA uses a multi-pronged approach to control litter utilizing MDOT SHA employees, state workers, contractors, correctional services, as well as labor donated through the Sponsor-A-Highway (SAH) program and partnerships with Adopt-A-Highway (AAH) volunteers. This approach was described comprehensively in the FY18 MS4 annual report. Updates relative to the various components of MDOT SHA's litter control program are provided here.

MDOT SHA Maintenance Crew and Contracted Clean-ups

MDOT SHA currently has 28 maintenance shops across the state, and 17 are responsible for areas within the MS4 jurisdictions. Each maintenance shop is responsible to perform several routine activities including trash clean-up as well as mowing, plowing, and other activities to ensure safety and environmental stewardship along the ROW.

In addition to MDOT SHA maintenance crew clean-ups, MDOT SHA enters contractual agreements for supplemental clean-ups along the right-of-way. This includes contracts with private companies as well as inmate crews contracted with various state penitentiaries. MDOT SHA provides dump trucks, maintenance of traffic, crash attenuators, and other safety precautions for field crews working to pick up trash along the roadway. Contracted clean-up activities occur throughout the state, including MS4 jurisdictions. Trash pick-up by MS4 Jurisdiction is summarized in **Table 9**.

Table 9: Maintenance/Contracted/Inmate Right-of-Way Trash/Litter Removal

Jurisdiction	Truckloads	Conversion to Pounds
Anne Arundel	913	319,550
Baltimore	1,966	688,100
Carroll	77	26,793
Cecil	166	57,995
Charles	162	56,840
Frederick	202	70,700
Harford	147	51,552
Howard	360	126,070
Montgomery	312	109,340
Prince George's	1,121	392,196
Washington	135	47,089
Totals	**5,561**	**1,946,225**
Data extracted for period 7/1/2018 to 6/30/2019		

Adopt-A-Highway Program (AAH)

Since the AAH program's conception in 1989, MDOT SHA has partnered with thousands of civic organizations and volunteer groups to pick up litter along one to two mile stretches of non-interstate roadways four times a year for a two-year period. MDOT SHA provides each

group with training, safety vests, trash bags, and tips on how to pick-up trash and recyclables. The trash collected is placed in bags that are picked up by MDOT SHA maintenance crews. MDOT SHA will also place signs recognizing the organization or group at both ends of the adopted roadside.

Table 10 identifies the participation for the AAH program throughout the current reporting period.

Table 10: AAH Program
Right-of-Way Trash/Litter Removal

Jurisdiction	# of Groups	Number of Bags	Miles Adopted
Anne Arundel	2	21	2
Baltimore	36	355	38
Carroll	4	52	4
Cecil	20	218	21
Charles	1	2	1
Frederick	3	27	3
Harford	15	177	16
Howard	12	176	13
Montgomery	0	0	0
Prince George's	3	17	3
Washington	5	29	1
Salisbury	0	0	0
Totals	**101**	**1,074**	**102**
Data extracted from the AAH database for the period 07/01/2018 to 06/30/2019.			

Sponsor-A-Highway Program (SAH)

The MDOT SHA corporate sponsorship program allows corporations to sponsor sections of Maryland roadways by funding contracted clean-ups for one-mile sections. The sponsor enters into an agreement with a maintenance provider to remove litter from the sponsored highway segment, typically an interstate roadway. Maintenance providers are then responsible for removal of trash per the terms of the agreement.

Each sponsor is acknowledged by a sign containing a recognition panel that is placed by MDOT SHA at the beginning of the highway segment they are sponsoring. MDOT SHA does not receive any reimbursement from the corporate sponsor or maintenance provider. MDOT SHA ensures that litter removal is properly performed and sponsor recognition signs are installed to standards established in the Federal Highway Administration's "*Manual on Uniform Traffic Control Devices*". Additionally, MDOT SHA manages the inventory of segments available for sponsorship, reviews additional areas for inclusion in the program, and approves artwork submitted for sponsor recognition signs.

Table 11 shows the miles currently being sponsored through the SAH program within the MS4 jurisdictions.

Table 11: SAH Program

Jurisdiction	Available Miles	Miles Sponsored
Anne Arundel	37	91
Baltimore	13	112
Carroll	2	-
Cecil	-	-
Charles	20	4
Frederick	9	15
Harford	8	1
Howard	15	41
Montgomery	1	50
Prince George's	20	72
Washington	11	6
Salisbury	3	2
Totals	139	394
Data extracted from the SAH database for the period 07/01/2018 to 06/30/2019.		

D.4.b Public Education and Outreach

In addition to the programs described previously in **Section D.4.a**. that directly reduce and control litter along roadways, which ultimately reduces litter to local waterways, MDOT SHA continues to make impacts through its multi-faceted public education program with goals to educate the public on environmental stewardship and litter reduction. Some key components of the

MDOT SHA public education program are discussed below.

Outreach

The MDOT SHA Office of Communication (OC) and Office of Maintenance (OOM) collaborate on program components which include disseminating information through press releases, websites, social media (See **Figure 5)**, informational materials, and special events. Special event locations include, but are not limited to schools, festivals, and civic events. The program offers materials such as coloring books, brochures, and speakers to educate the public.

MDOT SHA hosts a webpage entitled 'Educational Outreach' which provides resources to members of the transportation community interested in reducing pollutants in local waterways and the Chesapeake Bay. The webpage includes outreach materials to the public that discourages littering behavior, including information on proper litter and trash disposal, and links to learn more about plastics in the aquatic environment, and ways to reduce the volume of trash entering our waterways. The webpage also encourages individuals or groups to participate in trash cleanups through MDOT SHA's AAH and SAH programs. This website can be found at the follow address:

https://www.roads.maryland.gov/Index.aspx?pageid=48.

Figure 5: Example of MDOT SHA's Use of Social Media in Promoting Litter Education

Litter Education and Prevention

MDOT SHA's statewide 'Where Does It Go?' campaign is an education effort to help citizens realize the harmful effects of litter on our natural resources and roadways. This campaign is currently focused on increasing its outreach through social media and special events.

As part of the campaign, MDOT SHA hosted an exhibit at the 2018 MD State Fair where staff interacted directly with MDOT SHA customers about MDOT SHA services and spread the word about MDOT SHA's, "From Roadways to Waterways: Where Does It Go?" litter campaign. Talking points focused on conveying to Maryland residents how a bottle discarded from a car window will eventually find its way into their treasured Chesapeake Bay. The campaign was incorporated into MDOT SHA's Maryland State Fair display where children had the opportunity to remove litter from a pool and win a prize (**Figure 6**).

Figure 6: MDOT SHA Tweet Promoting MD State Fair Booth

Earth Day

MDOT SHA held Earth Day events from April 22-25 to promote environmental education to all MDOT SHA employees, consultants, contractors and the public. On April 23rd, MDOT SHA hosted nature interpreters from the Maryland Department of Natural Resources (DNR) "Wings and Things" interactive Lunch and Learn program. The intended outcome was to increase awareness of native Maryland wildlife and the associated impact of human behaviors, such as littering. Over 100 employees attended the DNR presentation.

Figure 7: Earth Day "Wings and Things" Event

On April 24th over 30 MDOT SHA employees attended a workshop to construct bird feeders from plastic bottles with the goal of demonstrating how to reuse plastic materials. Employees could take home their personally constructed feeders as a reminder that plastic materials can be repurposed to reduce plastic consumption and waste.

Figure 8: MDOT SHA Tweet About "Build a Bird Feeder" Workshop

In addition to these events, MDOT SHA's Environmental Action Team distributed agency-wide emails the month of April, highlighting ways to be a good steward of the environment. These e-mails included facts regarding the effects of waste and litter on our environment, as well as things each of us can do to keep litter off our roads and waterways.

PARK(ing) Day

On September 21, 2018, MDOT SHA participated in the 13th annual, worldwide PARK(ing) Day event, where artists, designers and citizens transform metered parking spots into temporary public parks. The mission of PARK(ing) Day is to call attention to the need for more urban open spaces, to generate critical debate around how public space is created and allocated, and to improve the quality of urban human habitat.

MDOT SHA volunteers, in cooperation with Baltimore City Department of Transportation converted a parking space located at the corner of Calvert Street and Monument Street in Mt. Vernon into an urban garden for the day. The MDOT SHA theme was "A Tale of Two Parks", with one half of the parking space showing impacts of litter, and the other side illustrating a litter-free park. MDOT SHA volunteers remained on-site to answer questions from MDOT SHA staff and the public. Volunteers also engaged participants through trivia, focusing on how plastic harms the environment and ways to reduce plastic consumption.

Figure 9: MDOT SHA's 2018 PARK(ing) Day Display

Keep Maryland Beautiful Grant Program

The Maryland Environmental Trust (MET) awards grants to nonprofits, community groups, and schools to support cleaning and greening activities, environmental education and stewardship practices across the state. In Fiscal Year 2019, 71 grants were awarded totaling $215,505. These annual grants are funded by MET, the Maryland Department of Housing and Community Development (DHCD), and MDOT.

D.4.c Evaluation and Effectiveness

The MDOT Excellerator is a performance management system that is updated and publicly shared on a quarterly basis. This report is available at the following link:

http://www.mdot.maryland.gov/newMDOT/Planning/Excellerator/MDOTExcellerator

The MDOT Excellerator includes performance measures focused on the positive impact MDOT has on the Statewide litter problem.

Performance Measure 9.2A – Office Waste Recycled

This performance measure is focused on the percentage of office waste diverted from the landfill or incineration through recycling.

Office Waste Includes:

- Commingled containers (glass, metal, and plastic);
- Glass (fluorescent light tubes, mixed glass containers);
- Metals (mixed cans, and tin/steel cans);
- Paper (corrugated cardboard, mixed paper, shredded paper and newspaper);
- Plastic (mixed plastic bottles, other plastics);
- Electronics; and
- Printer cartridges

Performance Measure 9.2B – Non-Office Waste Recycled

This performance measure is focused on the percentage of non-office waste diverted from the landfill or incineration through recycling.

Non-Office Waste Includes:

- Lead-acid batteries (vehicle);
- Compostables (grass, leaves, brush, branches, mixed yard trimmings, food waste, and other);
- Metals (white goods - refrigerators, stoves, washing machines, dryers,
- water heaters, and air conditioners);
- Animal protein/solid fat;
- Tires;
- Antifreeze;
- Industrial fluids;
- Motor oil;
- Scrap automobiles; and
- Scrap metals.

Performance Measure 9.2D – Litter Pickup

This performance measure is focused on addressing litter across the MDOT transportation system. As discussed in **Section D.4.a**, MDOT SHA addresses roadside litter with internal forces, correctional personnel, SAH, and AAH efforts.

D.5 Property Management and Maintenance

Requirements under this condition include:

a) Ensure that an NOI has been submitted to MDE and a pollution prevention plan developed for each SHA-owned facility requiring NPDES stormwater general permit coverage. The status of the pollution prevention plan development and implementation for each SHA-owned municipal facility shall be reviewed, documented and submitted to MDE annually;

b) Continue to implement a program to reduce pollutants associated with maintenance activities at SHA-owned facilities including garages, roadways parking lots, rest areas and park and rides. The maintenance program shall include, but not be limited to, these activities:

i) Street sweeping;

ii) Inlet inspection and cleaning;

iii) Minimizing the use of pesticides, herbicides, fertilizers and other pollutants associated with vegetation management through increased use of integrated pest management;

iv) Minimize to the MEP the use of winter weather deicing materials through research, continual testing and improvement of materials, equipment calibration, employee training and effective decision-making; and

v) Ensure that all SHA staff receives adequate training in pollution prevention and good housekeeping practices.

SHA shall report annually on the changes in any maintenance practices and the overall pollutant reductions resulting from the maintenance program. Within one year of permit issuance, an alternative maintenance program may be submitted for MDE approval indicating the activities to be undertaken and associated pollutant reductions.

D.5.a 12-SW NOI Submission and Pollution Prevention Plan Development

As described in detail within the FY18 MS4 annual report, MDOT SHA has implemented an Environmental Management System (EMS) to ensure multi-media compliance at maintenance facilities statewide.

The EMS includes routine multimedia compliance inspections of 162 MDOT SHA facilities. These inspections include recommendations for stormwater improvements and pollution prevention. As shown in **Table 12**, certain facilities are currently covered under the General Discharge Permit (12-SW). Actions taken during this reporting period to meet 12-SW requirements include:

- Updated Storm Water Pollution Prevention Plans (SWPPP) and maps following site changes and renovations

- Performed quarterly visual monitoring and reporting
- Continued to train staff on developed standard operation procedures
- Updated internal self-assessment compliance checklists for routine and annual inspections
- Trained shop personnel on pollution prevention requirements and incorporated updates in annual environmental awareness training provided to all MDOT SHA maintenance staff
- Completed annual comprehensive site compliance evaluations

Table 12: Industrial NPDES Permit Status

District	Maintenance Facility	Permit Type
1	Berlin	General
	Cambridge	General
	Princess Anne	General
	Salisbury	General
	Snow Hill	General
2	Centreville	General
	Chestertown	General
	Denton	General
	Easton	General
	Elkton	General
3	Fairland	General
	Gaithersburg	General
	Laurel	General
	Marlboro	General
4	Churchville	General
	Golden Ring	General
	Hereford	General
	Owings Mills	General
5	Annapolis	General
	Glen Burnie	General
	La Plata	General
	Leonardtown	General
	Prince Frederick	General
	Hanover Auto Shop	General
6	Hagerstown	General
	Keyser's Ridge	Individual – GW
	La Vale	General
	Oakland	General
7	Dayton	General

Table 12: Industrial NPDES Permit Status

District	Maintenance Facility	Permit Type
	Frederick	General
	Thurmont	General
	Westminster	General
Notes: SW = Surface Water, GW = Groundwater		

The MDOT SHA maintenance facility staff are continuing to perform monthly inspections and the ECD continues to perform inspections at all MDOT SHA facilities through its DECs and manage resultant maintenance needs identified in accordance with the process previously described in the FY18 MS4 annual report

As a MS4 permit holder, MDOT SHA has assessed the Bay Restoration requirement for facilities covered under the 12-SW permit and included them in the MDOT SHA MS4 20 percent impervious baseline and restoration implementation.

MDOT SHA continues to maintain an effective Industrial Stormwater NPDES Program through its ECD to ensure pollution prevention and permit requirements are being met at MDOT SHA maintenance facilities. Annually, and as change dictates, MDOT SHA updates its SWPPP and Spill Prevention, Control, and Countermeasure (SPCC) Plans. As a continuing best management practice, MDOT SHA has developed SWPPPs for facilities that are typically not required to have one (e.g. salt storage facilities).

Throughout the reporting year, MDOT SHA continued to address potential stormwater pollution issues by implementing BMPs and designing/constructing capital improvements. BMPs were identified during pollution prevention plan updates and routine facility inspections. The status of BMP implementation for maintenance facilities is tracked by each DEC during routine inspections. Potential capital improvements

are prioritized based on risk to human health and the environment, and funding availability. The following list details the major pollution prevention efforts and maintenance facility improvements since the last annual report.

Completed Projects:

- 12-SW quarterly visual monitoring and annual comprehensive site compliance evaluations
- Standard Operating Procedure creation and updates to ensure compliance with 12-SW permit
- Updating existing and creation of a new training program to ensure compliance with 12-SW permit
- Petroleum storage tank system upgrades at various MDOT SHA maintenance facilities

Ongoing Projects / Efforts:

- Statewide brine tank upgrades and replacement
- Salt barn repair and replacement
- Statewide discharge sampling and reporting program for facilities with Individual Discharge Permits
- Compliance inspections at all MDOT SHA facilities
- Annual multimedia compliance training provided to maintenance shop personnel

Table 13 shows MDOT SHA capital expenditures for industrial pollution prevention BMPs since 2005. Projected expenditures for FY20 are also included.

Table 13: Capital Expenditures for Pollution Prevention BMPs

Fiscal Year	Expenditure
2005	$ 613,210 - actual
2006	$ 592,873 - actual
2007	$ 450,608 - actual
2008	$ 590,704 - actual
2009	$ 478,889 – actual
2010	$ 613,766 - actual
2011	$ 595,984 - actual
2012	$ 664,577 - actual
2013	$ 917,902 - actual
2014	$641,512 - actual
2015	$2,339,971 - actual
2016	$1,858,544 - actual
2017	$2,006,170 - actual
2018	$5,465,375 - Actual
2019	$787,583 - Actual
2020	$200,000 - Projected

D.5.b Maintenance Activity Pollution Reduction Program

MDOT SHA continues to implement programs and activities aimed at reducing pollutants associated with maintenance activities along MDOT SHA owned roadways and MDOT SHA owned facilities. These activities, including street sweeping, inlet cleaning, and storm drain vacuuming, are discussed in the following sections. In addition, MDOT SHA is implementing methods to minimize the use of winter weather deicing materials and the use of pesticides, herbicides, and fertilizers associated with vegetation management.

Chemical application information (i.e., data for deicing materials, herbicides, and fertilizers) is provided in the Chemical Application table (CAP) in the MS4 geodatabase submitted with this FY19 MS4 annual report.

i. Street Sweeping

The current MDOT SHA street sweeping program is predicated upon operational and safety needs for maintaining drainage from roadways, keeping roadsides free of lose debris

thrown by turning wheels, and keeping roadsides visually attractive. Sweeping of the roadway results in the collection and disposal of loose material including dirt, sand, trash, and other debris. By removing this material from the roadway surface before it can be washed away in runoff, street sweeping also reduces pollutants in the storm drain network.

MDOT SHA sweeps a selected number of roadways regularly during the spring, summer, and fall months of April through November. The collected material is then disposed of in an approved landfill.

ii. Inlet Cleaning & Storm Drain Vacuuming

Inlet cleaning and storm drain vacuuming are two additional operational practices that MDOT SHA has identified as beneficial in improving water quality. Inlet cleaning and storm drain vacuuming removes accumulated material from inlets and connecting storm drain pipes. This maintains clear drainage systems for roadway runoff, deters flooding, minimizes ice development during winter storms, and prevents damage to underground inlets and pipes. Sediment and trash make up most of the material that is removed. See **Figure 10** for before and after results for an inlet cleaning operation.

Figure 10: Inlet Before and After Cleaning

MDOT SHA owns and operates vacuum pump trucks (see **Figure 11**) and tow-behind vacuum trailers (see **Figure 12**) for routine inlet and storm drain vacuuming. MDOT SHA personnel operate this equipment in central Maryland in the following counties: Anne Arundel, Baltimore, Calvert, Carroll, Charles, Frederick, Harford, Howard, Montgomery, Prince George's, and St. Mary's.

Figure 11: MDOT SHA Vacuum Pump Truck

Figure 12: MDOT SHA Tow-Behind Vacuum Trailers

In late FY19 and early FY20, MDOT SHA activated four contracts with private contractors to perform inlet cleaning services. One of these contracts also includes storm drain cleaning/vacuuming. These contractors use similar or better vacuum trucks than the MDOT SHA owned equipment to provide these services.

Table 14 presents the number of inlets and tons of material collected from inlet cleaning and storm drain vacuuming operations by the MDOT SHA Office of Maintenance staff and contractors and as a component of HHD (Fund 77) repaving contracts in FY19.

Table 14: Number of Inlets Cleaned, Storm Drain Vacuuming Totals and Estimated Tons Collected in FY19

County	MDOT SHA Shop	Total Number of Inlets Cleaned	Tons[1] Collected	Tons Collected from Storm Drain Vacuuming
Anne Arundel	Annapolis	34	4	9
	Glen Burnie	118	12	12
Baltimore	Golden Ring	284	30	47
	Hereford	211	22	5
	Owings Mills	211	22	22
Carrol	Westminster	0	0	9
Cecil	Elkton	2	0	0
Charles	La Plata	2	0	6
Frederick	Frederick	5	1	3
Harford	Churchville	115	12	31
Howard	Dayton			5
Montgomery	Fairland	113	12	22
	Gaithersburg	211	22	11
Prince George's	Laurel	82	9	2
	Upper Marlboro	392	41	5
Wicomico County	Salisbury	8	1	0
	Subtotal	**1788**	**188**	**189**
Fund 77 Repaving Projects		371	39	0
	Grand Total	**2159**	**227**	**189**

[1]Assumed 210 lbs. (dry weight) cleaned from each inlet and converted to tons (rounded to the nearest whole number).

iii. Minimize Use of Pesticides, Herbicides, Fertilizers and Other Pollutants

Landscape management by MDOT SHA is directed towards efficient use of resources with the least environmental impacts. To promote best practices, MDOT SHA develops guidance documents, provides training, invests in cooperative research programs, and develops specifications such as Nutrient Management Plans.

Landscape Management Guide

During the previous reporting period, work continued on the *MDOT SHA Landscape Management Guide* (LMG) to fully revise and replace the *MDOT SHA Integrated Vegetation Management Manual for Maryland Highways* (IVMM, 2003), the *SHA Turfgrass Management Guidelines*, and the *SHA Mowing Policy*.

This new document presents a performance-based guide for managing green assets along Maryland highways, and a major step forward to minimizing pesticide and fertilizer use on MDOT SHA ROW. Key concepts and draft chapters of the LMG were discussed at all pesticide applicator training sessions presented by OED to MDOT SHA pesticide applicators in FY19. A test draft of the LMG was released for use in October 2018, and the final draft is nearing completion.

Chemical Application

MDOT SHA has provided the chemical application program information in the Chemical Application table (CAP) as specified in the MDE 2017 Geodatabase Guideline format.

OED offers the following four pesticide applicator training classes each year:

- ENV 100 allows participants to become a Registered Pesticide Applicator with the Maryland Department of Agriculture
- ENV 200 provides recertification credits for MDOT employees, consultants, and contractors
- ENV 210 is a Pesticide Core and ROW Certification preparation class
- ENV 220 is an aquatic pesticide training to qualify MDOT personnel to take the Pesticide Category 5 Aquatic test (ENV 221 was discontinued and the contents were incorporated into ENV 220)

Table 15 shows classes and participation during the FY19 reporting period.

Table 15: Pesticide Applicator Training

Date	Training Sessions			
	ENV 100	ENV 200	ENV 210	ENV 220
8/9/2018	15		12	
8/10/2018			7	
8/24/2018	17			
10/18/2018			5	
3/28/2019	27			
4/2/2019			7	
4/11/2019		17		
4/18/2019		11		
4/25/2019		31		
5/1/2019		31		
5/7/2019	30			
5/21/2019			6	
Subtotals	**89**	**90**	**37**	**0**
Total	**216**			

Integrated Pest Management – Use of Biocontrol Insects to Suppress Invasive Plant Species along MDOT SHA ROW

MDOT SHA continued to work with the Maryland Department of Agriculture (MDA)

in cooperative research programs to control invasive plants using insect biocontrols. MDA released Mile-a-Minute Vine Weevil, *Rhinoncomimus latipes*, at 15 locations within MDOT SHA ROW during the previous year. Additionally, MDOT SHA and MDA are researching an insect biocontrol, *Aphalara itadori*, that would assist in suppressing Japanese Knotweed. Japanese Knotweed is a highly invasive, hardy, herbaceous perennial that was introduced from escaped ornamental plantings. It is a recent invader of channels, streams, wetlands, and riparian areas, although it can also be found in upland areas. It spreads by durable rhizomes, but also is a viable seed producer. These biocontrol insects consistently reduce the growth and seed production of the target plants and reduce the need for herbicide control.

Herbicide Application

Most vegetation management on MDOT SHA property is performed mechanically by mowers and similar machinery. Management objectives are defined in the LMG, and herbicides are applied when not practical or feasible to meet objectives by mechanical methods alone. Vegetation controlled by MDOT SHA includes noxious weeds, invasive weeds, and plant material that reduces highway safety and operability.

All MDOT SHA employees and contractors who apply herbicide on MDOT SHA ROW must be registered with MDA and operate under the supervision of an MDA certified pesticide applicator. Herbicide/Pesticide application records must be kept by all MDA certified pesticide applicators and must be presented to MDA inspectors upon request. MDOT SHA does not have enforcement authority with respect to, or rights to access, these records like MDA. This creates limitations with respect to accounting and reporting the amounts of pesticide/herbicide chemicals applied by MDOT SHA contractors.

To obtain a reasonable estimate of herbicide applied to MDOT SHA ROW by MDOT SHA staff and contractors, MDOT SHA applies a modeling approach that estimates contractor application from pertinent contract documents and supplements those estimated amounts with more empirical usage data from MDOT SHA's consumable inventory management system that captures actual chemical products and amounts withdrawn from MDOT SHA Maintenance Shop storage rooms.

Table 16 displays the results of the MDOT SHA modeling, showing herbicide constituents from chemical products withdrawn from MDOT SHA supply and reasonable estimates of actual amounts of each applied statewide to MDOT SHA property during the FY19 reporting period. A significant decrease can be observed in quantities of herbicide applied relative to the FY18 reporting period. This decrease is not exclusively the result of programmatic improvements but instead are a result of a change in reporting methodology.

Previous modeling methodology applied assumptions for chemical mixture composition to extrapolate gallons of chemical solution applied to the ROW. Through internal reviews of this approach, it was determined that chemicals are diluted and mixed with notable variability by MDOT SHA staff and contractors and no current mechanism exists to capture this variance. For this reporting period, MDOT SHA reports actual concentrated chemical amounts, removing the extrapolation/assumption previously applied to get the amount of diluted/mixed chemical solution, to produce more accurate and trackable application amounts.

Table 16: Herbicides Applied to MDOT SHA Property

Chemical	Unit Applied	Quantity Applied
2,4-D	Gal.	937
Bromacil	Gal.	2
Chlosulfuron	Lbs.	127
Clopyralid	Gal.	269
Diglycoamine	Gal.	3
Dithiopyr	Gal.	0
Diuron	Lbs.	140
Fosamine	Gal.	713
Glyphosate	Gal.	2,017
Halosulfuron-methyl	Gal.	0
Imazethapyr	Gal.	1
Isoxaben	Gal.	0
Mefluidide	Gal.	113
Metsulfuron	Lbs.	8
Oryzalin	Gal.	115
Prodiamine	Gal.	0
Triclopyr	Gal.	794
Trinexapac-ethyl	Gal.	658
Total	**Gal.**	**5,622**
Total	**Lbs.**	**275**

Nutrient Management Plans

The Maryland Lawn Fertilizer Law limits the total amount and timing of fertilizer applications. MDOT SHA uses slow-release nitrogen and low or no phosphorus fertilizers when establishing and maintaining turfgrass, meadows, and other vegetation. Topsoil, both salvaged and furnished, is sampled and tested for major and minor plant nutrients, pH, organic matter, and soluble salts. The test results are used to develop Nutrient Management Plans (NMP) to ensure optimal nutrient levels and growing conditions, and to avoid excess fertilizer application.

Topsoil producer stockpiles are tested every three months, and test results are used to develop NMPs.

Fertilizer use during the reporting period includes:

- 103,863 lbs. 20-16-12 fertilizer; ureaform, monoammonium phosphate, potassium sulfate
- 36,419 lbs. 37-0-0 fertilizer; sulfur coated urea,
- 14,687 lbs. 14-14-14 fertilizer; polymer-coated fertilizer with minor nutrients, and
- 890 lbs. 20-20-20 fertilizer; water soluble fertilizer with micronutrients.

Mowing Reduction & Native Vegetation Establishment

A major initiative at MDOT SHA is to reduce the extent of frequently mowed areas within the ROW, and to limit mowing in other areas to no more than once per year in the dormant season.

The MDOT SHA standard specifications and guidance of the MDOT SHA Landscape Design Guide (LDG) specify locations where native meadow can be installed for mowing reduction. Most new construction includes one or more of the following types of meadow: upland, lowland, wet, and bioretention meadow. Forested and native meadow areas require infrequent mowing, enhance and preserve native vegetation, and provide stormwater benefits such as increased nutrient uptake.

iv. Minimize Use of Winter Weather Deicing Materials

MDOT SHA continues to test and evaluate new winter materials, equipment, and strategies in an on-going effort to improve the level of service provided to motorists during winter storms while at the same time minimizing the impact of its operations on the environment.

Table 17: MDOT SHA Deicing Materials

Material	Characteristics	FY19 Quantity Applied Statewide
Sodium Chloride (Rock and Solar Salt)	The principal winter material used by SHA. Effective down to 20° F and is relatively inexpensive.	206,162 tons (does not include the salt used to make the liquid brine)
Abrasives	These include sand and crushed stone and are used to increase traction for motorists during storms. Abrasives have no snow melting capability.	18,214 tons
Calcium Chloride	A solid (flake) winter material used during extremely cold winter storms. SHA uses limited amounts of calcium chloride.	0 gallons
Salt Brine	Liquid sodium chloride or liquefied salt is a solution that can be used as an anti-icer on highways prior to the onset of storms, or as a deicer on highways during a storm. Used extensively by SHA. Freeze point of -6° F.	3,019,832 gallons
Magnesium Chloride (Mag)	A liquid winter material used by SHA for deicing operations in its northern and western counties. It has a freeze point of -26° F and has proven cost effective in colder regions.	9,565 gallons

In FY19, MDOT SHA continued minimization practices described in the FY18 MS4 annual report, including "anti-icing" before storm events, expanding the number of direct liquid application (DLA) snow routes, and continuation of its 'sensible salting' training for State and hired equipment operators, in an on-going effort to decrease the use of deicing materials without jeopardizing the safety and mobility of motorists during and after winter storms. **Table 17** lists the types of materials and quantities applied by MDOT SHA in winter deicing operations.

New Road Salt Management

On May 20, 2010, the Governor approved Senate Bill 775, requiring MDOT SHA, in consultation with the MDE, to develop a best practices road salt management guidance document by October 2011. MDOT SHA posted the consequent Salt Management Plan (SMP) on its website in October 2011. The SMP was subsequently updated in October of 2012, 2015, and 2016. The current, October 2016 SMP can be accessed via the MDOT SHA website at the following address:

http://www.roads.maryland.gov/OOM/Statewide_Salt_Management_Plan.pdf

Table 18: Recent Salt Usage Statewide

Winter	Storms	Inches	Salt Used (Tons)
2013 to 2014	17.3	66.5	551,443
2014 to 2015	16.0	47.4	340,083
2015 to 2016	7.6	40.0	137,358
2016 to 2017	7.8	27.2	91,494
2017 to 2018	13	31.5	190,294
2018 to 2019	10.5	41.6	210,193

Roadside Deicer Application

Table 18 displays application data, starting from the adoption date of the SMP, including the yearly average number of storms fought by MDOT SHA and the average amount of precipitation in inches. The salt usage in tons, shown in **Table 18**, is a statewide seasonal total and includes areas outside of the MS4 Permit areas. Within the areas covered under the MS4 Permit, MDOT SHA applied a total of 149,432 tons of salt.

It is important to understand how MDOT SHA makes comparisons of road salt usage. MDOT SHA uses a metric of pounds of road salt per

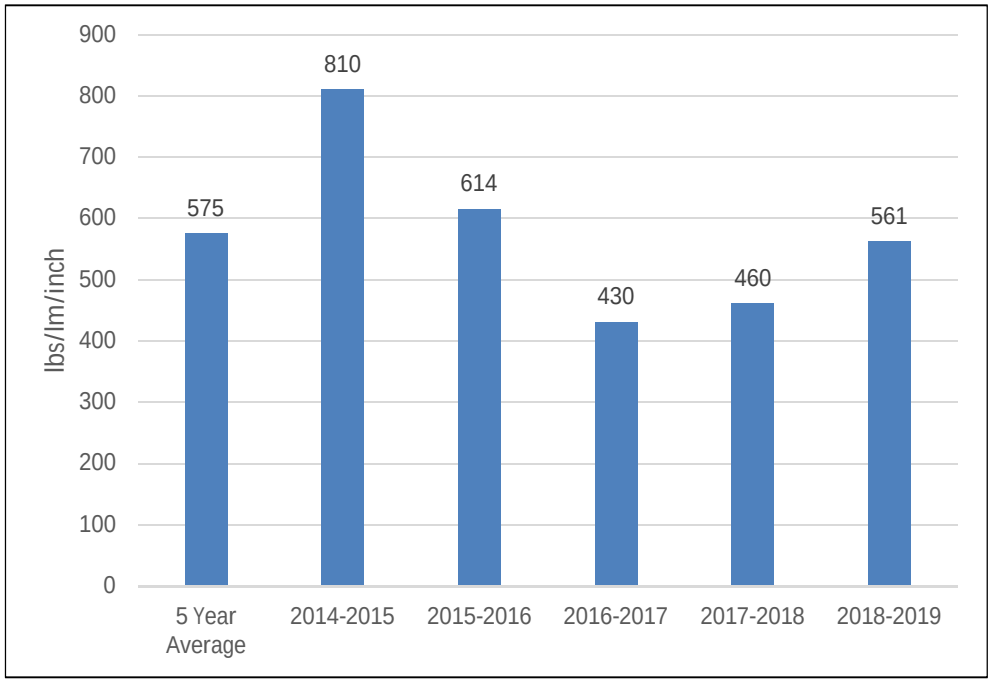

Figure 13: Comparison of Salt Usage Normalized by Snow Depth Statewide

total lane miles per inch of snow (lbs/lm/inch). This allows an equal comparison across the state in the measurement of road salt usage. The amount of salt applied during FY19 across the state is 561 lbs/lm/inch. This reflects an increase in MDOT SHA salt usage by 100 lbs/lm/inch (see **Figure 13**). This increase is attributed to increased winter storm frequency and accumulation, as well as periods of sustained freezing temperatures. MDOT SHA is still actively working on salt reduction and will continue this work into the future. Prior to the 2014-2015 winter season, a challenge was issued by MDOT SHA management to reduce road salt usage by five percent. The MDOT SHA surpassed that goal and salt usage numbers over the last four years have been consistently greater than 25 percent below the 2014-2015 season total.

MDOT SHA Annual Snow College

The Annual Snow College training presentations are included in Appendices II and III of the SMP. This training is offered annually at each of the seven MDOT SHA districts for new maintenance shop hires as well as 20 percent of veteran shop forces. Snow College was canceled in Districts 1 and 2 in FY19, due to unanticipated circumstances, and will be scheduled to include greater than average participation in FY20. The goal is to train all maintenance personnel over a five-year period and then repeat the process. This ensures that all maintenance personnel are exposed to current trends and technologies. **Table 19** summarizes the Snow College training events during the FY19 reporting period and the number of attendees for each.

Table 19: MDOT SHA Snow College Training

SHA District Shops	Dates	Attendees
1 DO, WI, WO, SO	N/A	0
2 CE, KE, QA, CO, TA	N/A	0
3 MG, MF, PL, PM	11/26/18 – 11/27/18	26
4 BG, BH, BO, HA	11/19/18 – 11/20/18	17
5 AA, AG, CV, CA, CH, SM	1/7/19 –1/8/19	19
6 GA, AL, WA	11/28/18 – 11/29/18	13
7 FR, CL, HO	12/19/18 – 12/20/18	16
	Total	**91**

Annual Maintenance Shop Winter Meetings

In 2015, MDOT SHA developed training on Best Practices for Salt Management and Environmental Stewardship during Winter Operations. Training is based on the practices outlined in the SMP and is targeted specifically at the facility maintenance employees who manage or perform winter emergency operations. During the reporting period, 28 sessions were held and approximately 1,000 employees were trained.

Hired Equipment Operator Training

Prior to the start of each winter season, MDOT SHA provides training to hired equipment contractors and operators. The training presentations are included in the SMP. During the reporting period, more than 28 sessions were held and approximately 2,100 hired equipment operators were trained.

v. Pollution Prevention and Good Housekeeping Training

SWPPP Training

MDOT SHA continues to provide annual Stormwater Pollution Prevention Plan (SWPPP) training to its maintenance personnel. Environmental compliance training covers a variety of media areas including stormwater management, spill prevention and response, pollution prevention requirements, and training for pollution prevention team members performing stormwater inspections and quarterly visual monitoring assessments.

Training and instruction regarding the SWPPP is given to employees when appropriate. Initial training occurs within six months of hiring. At a minimum, personnel training will be conducted annually, on a calendar year basis, to provide consistent understanding of pollution prevention and to notify employees of SWPPP changes.

Training documentation is maintained on the MDOT SHA Online Learning Center. **Table 20** includes information related to SWPPP training during this reporting period.

Table 20: SWPPP Training by Shop

Maintenance Facility	Training Date	Total Trained
Cambridge	Oct-18	22
Princess Anne	Oct-18	21
Salisbury	Sept-18	24
Snow Hill	Sept-18	30
Centreville	Oct-18	36
Chestertown	Oct-18	25
Denton	Oct-18	25
Easton	Oct-18	23
Elkton	Sept-18	34
Fairland	Oct-18	30
Gaithersburg	May-19	32
Laurel	Oct-18	29

Table 20: SWPPP Training by Shop

Maintenance Facility	Training Date	Total Trained
Upper Marlboro	Oct-18	34
Churchville	Apr-19	46
Hereford	May-19	29
Golden Ring	May-19	34
Owings Mills	May-19	37
Annapolis	Oct-18	41
Glen Burnie	Sept-18	38
La Plata	Nov-18	22
Leonardtown	Nov-18	44
Prince Frederick	Sept-18	23
Dayton	Dec-18	48
Frederick	Oct-18	59
Westminster	Oct-18	5
	Total:	**791**

D.5.c Changes in Maintenance Practices and Overall Pollutant Reductions

The MS4 permit also requires MDOT SHA to report annually on the changes in any maintenance practices and the overall pollutant reductions resulting from the maintenance program. MDOT SHA has reviewed its current maintenance program and determined that the program is adequately meeting the requirements.

Concerning overall pollutant reductions resulting from the MDOT SHA maintenance program, we are assuming that data relative to this condition is for deicing, fertilizer, and herbicide. The Chemical Application (CAP) has been provided along with this report in the associated MS4 geodatabase.

Section E.4, TMDL Compliance, contains details regarding the pollutant reductions associated with MDOT SHA's street sweeping and inlet cleaning programs. Additionally, these two restoration strategies are detailed within the MS4 geodatabase under the AltBMP elements.

D.6 Public Education

Requirements under this condition include:

a) *Maintain a compliance hotline or similar mechanism for public reporting of water quality complaints, including suspected illicit discharges, illegal dumping and spills;*

b) *Provide information to the transportation community about the benefits of:*

   i) *Stormwater management implementation and facility maintenance;*

   ii) *Proper erosion and sediment control practices;*

   iii) *Increasing proper disposal of vehicle fluids such as brake fluid or motor oil (not in inlets or catch basins);*

   iv) *Refraining from and reporting roadside dumping;*

   v) *Proper litter and trash disposal;*

   vi) *Decreasing vehicle idling;*

   vii) *Utilizing alternative modes of transportation (bus, train, walking, biking, carpooling);*

   viii) *Car care and washing; and*

   ix) *Proper pet waste management at rest areas and welcome centers.*

c) *Provide information regarding the following water quality issues to the regulated community when requested:*

   i) *NPDES permitting requirements;*

   ii) *Pollution prevention plan development;*

   iii) *Proper housekeeping; and*

   iv) *Spill prevention and response.*

D.6.a Mechanism for Public Reporting

MDOT SHA continues to use the Customer Care Management System (CCMS) as its centralized customer service reporting and tracking system and its operations are the same as was described in the FY18 MS4 annual report. Customers can submit their concerns or

requests directly into CCMS from the MDOT SHA webpage at the following address:

http://marylandsha.force.com/customercare/request_for_service

CCMS can be used to report a variety of service requests including water quality complaints such as suspected illicit discharges, illegal dumping, spills, and trash and litter problems along MDOT SHA roadways and facilities. During the FY19 reporting period, CCMS received approximately 28,000 service requests (also known as "tickets"). There were approximately 3,000 service requests regarding littering and illegal dumping related issues of which 2,800 are closed. Tickets reporting debris, litter, and graffiti account for 11 percent of all CCMS tickets. Such tickets peak in late February, March, and April following the winter season.

An email reporting mechanism has also been implemented via wpd@sha.state.md.us

D.6.b Provide Information to the Transportation Community

MDOT SHA provides resources to members of the transportation community interested in learning about ways to reduce stormwater pollution in local waterways and the Chesapeake Bay. As discussed in **Section D.4.b**, MDOT SHA hosts an educational outreach webpage, developed for this purpose, that can be accessed at:

https://www.roads.maryland.gov/Index.aspx?pageid=48.

The webpage includes information related to the following topics:

i. Stormwater Management Implementation and Facility Maintenance

The Bay Restoration Strategies webpage provides extensive information on the use of BMPs to reduce nitrogen, phosphorus, and sediment from reaching the Chesapeake Bay including information on structural SW controls, nonstructural SW controls, land use change strategies, as well as source control strategies. This webpage can be found at the following address:

http://www.roads.maryland.gov/Index.aspx?pageid=37

MDOT SHA also hosts several interactive maps on their webpage, including the Chesapeake Bay Restoration Viewer. The public can enter an address into the interactive mapping tool to find restoration BMPs MDOT SHA has implemented in their own neighborhood. The viewer can be accessed here:

http://www.roads.maryland.gov/Index.aspx?PageId=714

ii. Proper Erosion and Sediment Control Practices

MDOT SHA has a well-established erosion and sediment control training program which serves to educate and bring awareness to MDOT SHA designers, construction employees, design consultants, and contractors. See **Section D.2** above for information on training provided throughout the reporting period.

Since 2004, the MDOT SHA Erosion and Sediment Control Certification (Yellow Card) has served to provide up to date awareness and education, and this certification is a requirement to conduct construction business with MDOT SHA. This training now serves a greater number of participants since it is available on-line. This training is discussed in **Section D.2**.

In addition to these training courses MDOT SHA has created a variety of other media to provide education and awareness of the regulatory requirements on MDOT SHA projects. For instance, MDOT SHA has published *Environmental Guidelines for Construction* along with an erosion and sediment control field guide to support the 2011 MDE ESC specifications and standards and illustrate increased requirements. A reference library (on-line/CD) was also created for project personnel use and is available on the MDOT SHA OED QA Toolkit. This program also uses in-field education and working partnerships throughout MDOT SHA to help end users understand and meet environmental requirements.

To increase public awareness regarding proper erosion and sediment control practices, the MDOT SHA educational outreach webpage includes links to the MDE erosion and sediment control page for community members interested in learning more about the program.

iii. Increasing Proper Disposal of Vehicle Fluids (Not in Inlets or Catch Basins)

The MDOT SHA educational outreach webpage includes information about the importance of and methods for proper vehicle fluid disposal, along with links to the MDE Maryland Used Motor Oil Recycling Program webpage.

iv. Refraining from and Reporting Roadside Dumping

As part of MDOT SHA's public education initiative to discourage and report problems associated with illegal roadside dumping, MDOT SHA created a flyer titled *Keep Our State Waterways Clean*. This flyer provides information related to the definition of illegal dumping, the problems associated with illegal dumping, common items associated with illegal dumping, and steps to report illegal dumping if encountered along MDOT SHA roadways. The flyer can be found via the MDOT SHA educational outreach webpage along with links to CCMS for reporting roadside dumping. Additionally, MDOT SHA has strategically placed "No Dumping" signs throughout the state.

v. Proper Litter and Trash Disposal

As discussed in **Section D.4** above, MDOT SHA has an existing, multi-faceted public education program in effect with goals to educate the public on environmental stewardship to reduce littering.

The MDOT SHA educational outreach webpage includes information and links about proper litter and trash disposal and how members of the transportation community can help reduce the volume of trash entering local waterways.

vi. Decreasing Vehicle Idling

MDOT SHA is saving money and reducing emissions through its vehicle equipment idling policy, in effect since September 22, 2009. The policy restricts operation of a motor vehicle engine for more than five consecutive minutes when the vehicle is not in motion. The two exceptions to this policy are when a unit is deployed along a state route in preparation for winter operations or when a unit is functioning under an emergency, or maintaining traffic, using emergency lighting. The policy applies to all operators of MDOT SHA vehicles and equipment, as well as drivers of consultant support vehicles.

To increase public awareness regarding the benefits of reducing vehicle idling, educational information has been provided on the MDOT SHA educational outreach webpage.

vii. Utilizing Alternative Transportation

MDOT SHA offers several incentives to reduce the number of drivers and/or number of commuter days/miles per week by Administration employees. Fewer commuter days and miles mean less vehicle pollutants entering the watershed.

Alternate Work Schedules for Employees

Alternate work schedules include flexible work hours allowing employees to work compressed workweeks reducing the total number of commuting days and miles.

Teleworking for Employees

Teleworking allows employees to work from a remote location (presumably at or close to home) and reduces the number of commuting days and miles per week. Each office has or is developing a teleworking policy.

Carpooling

Carpooling reduces the number of commuters on the road and has been encouraged at MDOT SHA for both its employees and the traveling public for many years. MDOT SHA carpooling incentives for employees include prioritizing parking space allocation to those in a designated carpool and administrative assistance in locating a carpool within the employee's residential area for those that wish to carpool to work.

MDOT SHA promotes carpooling for the traveling public by constructing and maintaining park and ride facilities throughout the entire state. All MDOT SHA park and ride facilities are free and can accommodate carpools and van pools. Overnight parking is also permitted. MDOT SHA currently has more than 100 park and ride locations throughout Maryland that provide more than 12,000 free parking spaces for commuters.

There is an interactive map on the MDOT SHA web page to help the traveling public locate and get directions to all the MDOT SHA park and ride facilities. It can be accessed online at the following address:

http://roads.maryland.gov/pages/parkandridemaps.aspx?PageId=248&d=57

HOV Lanes

In addition to park and ride facilities, MDOT SHA has also constructed High Occupancy Vehicle (HOV) lanes on some of its interstates to promote carpooling. HOV lanes are reserved for carpools, vanpools, buses, and motorcycles during designated time periods. HOV lanes are intended to save commute time for carpool users and bus riders by enabling them to bypass areas of heavy traffic congestion. By giving carpool users and bus riders a faster and more reliable ride during peak traffic periods, HOV lanes serve as a strong incentive for ridesharing, which in turn helps to manage congestion and contributes to improved air quality. HOV lanes are generally designated via white diamonds on signage and pavements markings. MDOT SHA currently has two HOV facilities, along I-270 in Montgomery County and along US-50 in Prince George's County.

MDOT SHA hosts an HOV page on its website that can be accessed at the link below. The page includes information about regulations concerning HOV lane usage, maps of HOV lane locations in Maryland, and contact information.

http://www.roads.maryland.gov/index.aspx?PageId=249

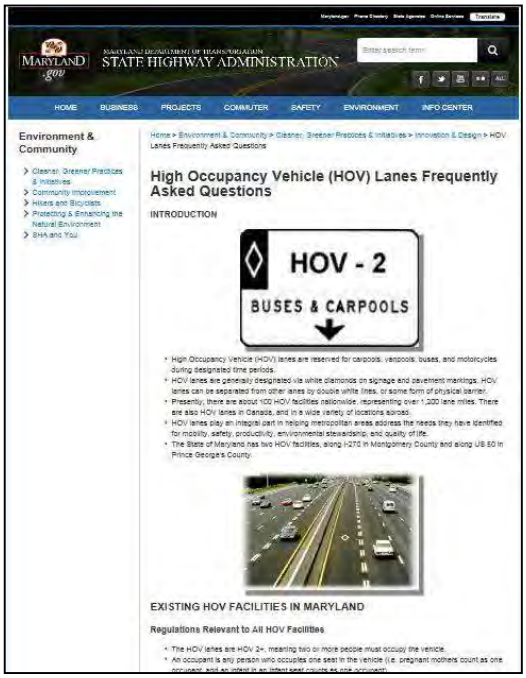

Figure 14: MDOT SHA HOV Lane

Figure 15: MDOT SHA Bike Safety Social Media Post

Bicycle Safety Awareness

MDOT SHA has continued its bicycle safety campaign, 'Look Out For Each Other', which stresses the role of the vehicle driver in bicycle safety. Featuring Maryland professionals who commute with bicycles, the campaign reminds drivers 'A Cyclist Might Be Someone You Know.' With special emphasis during the spring and summer months when bicycle crashes increase, the year-long campaign also advises bicyclists to obey the rules of the road, ride predictably, and stay visible when riding at night.

Artscape 2018

At the Annual Artscape event in Baltimore City (July 20-22, 2018), MDOT SHA sponsored a booth along West Mount Royal Avenue to enhance awareness of bicycle safety. The booth was titled 'Look Out for Each Other: A Cyclist May be Someone You Know'. At the booth, Artscape attendees learned valuable bike safety tips, and were able to make bike spin art.

Figure 16: MDOT SHA Artscape Bike Safety Booth

National Bike to Work Day

In support of Bicycle Safety Month and National Bike to Work Day, MDOT SHA hosted the Baltimore City – Mt. Vernon pit stop for Bike to Work Day on Friday, May 17, 2019. Located at the corner of Guilford Avenue and East Monument Street between 7 a.m. and 9 a.m. The MDOT SHA grassroots event reminded drivers and bicyclists to "Drive Smart, Bike Smart."

The pit stop included bike tune ups, snacks, bike accessories, and demonstrations with MTA's bus bike rack, all to promote biking as an alternative method of transportation.

Figure 17: Bus Bike Rack Demonstration at MDOT SHA Bike to Work Day Pit Stop

Mass Transit

The MDOT SHA educational outreach webpage includes information regarding the benefits of using alternative transportation as well as links to learn more about the above-mentioned programs.

viii. Proper Car Care and Washing

Improper car care and car washing can readily contribute pollutants into the adjacent storm drain system. Simply following a few simple steps when maintaining or washing your vehicle can help to conserve water and protect the quality of nearby water bodies.

To increase public awareness regarding proper car care and washing, educational information has been provided on the MDOT SHA educational outreach webpage.

ix. Proper Pet Waste Management

MDOT SHA currently owns and maintains seven welcome centers and rest areas within the MS4 jurisdictions of Charles, Frederick, Howard, and Washington Counties. MDOT SHA welcome centers and rest areas are provided as a service to the traveling public. Not only do these facilities allow humans to rest from long journeys, but they also provide areas to walk pets.

The risk of water pollution increases when pet waste is left on rest area sidewalks, parking lots, and grassy areas as stormwater runoff can carry pet waste left on the ground into storm drains and nearby waterways. MDOT SHA has addressed proper pet waste management at some of its rest areas and welcome centers.

Figure 18: Pet Waste Disposal Station at the I-70 Eastbound Rest Area

For instance, at the MDOT SHA newer welcome centers, such as the I-70 eastbound and westbound rest area and welcome center situated on South Mountain between Fredrick and Hagerstown in Frederick County, MDOT SHA has incorporated designated pet walking areas. These areas contain pet waste disposal stations which feature pet waste bag dispensers, educational signs, and trash bins specifically for the collection and proper disposal of pet waste. The disposal stations aim to educate the public on the importance of proper pet waste management and to encourage pet owners to pick up and properly dispose of their pet's waste, thereby keeping pet waste out of our waterways.

x. Other MDOT SHA Water Quality Awareness Training & Events

Chesapeake Bay Field Trips

Annual Chesapeake Bay field trips are led by the Chesapeake Bay Foundation. The trips demonstrate the link between highway runoff and its impacts on streams, rivers, and the health of the Chesapeake Bay. It is a great opportunity for MDOT SHA employees to learn about one another's careers as well as habits and actions in our daily work and home environment that may affect the health of the Chesapeake Bay.

This field trip is offered through the MDOT SHA On-line Learning Center, College of Engineering, environmental design training (ENV400). It is a class that requires no pre-requisite training and is offered to all employees seeking to improve their environmental awareness. Therefore, this class has a mixture of employees from all over the state with varied levels of experience and educational background.

The training includes visits to important environmental sites including wetlands, streams, forests, and a boat trip on the Bay. Four trips were held during this reporting period on October 18, 2018, November 1, 2018, April 10, 2019, and April 16, 2019 with 75 MDOT SHA employees attending in all. See Figure 2-17 for a photo from the April 16, 2019 training.

Figure 19: April 2019 MDOT SHA Chesapeake Bay Field Trip

OHD University

The Office of Highway Development University (OHDU) is an in-house training program initially established to provide new OHD employees with the technical and project management skills that have been identified as essential for success in OHD. The program currently includes eighteen first year classes and eight second year classes that cover a variety of topics. When first developed, the OHDU program course content was specifically developed for new OHD entry-level engineers. Since that time, this program has expanded to include all new OHD employees and other newly hired professionals within all MDOT SHA design offices.

'Basic Hydrology' is a 1st year OHDU class that provides a basic overview of the hydrologic cycle and how it is relevant to roadway projects. This class was held on January 30, 2019 and included 17 participants.

'Basic Hydraulics' is a 1st year OHDU class that provides a basic overview of managing drainage systems with an emphasis on inlets, pipes, and ditches. Students learn about the adverse impacts of uncontrolled storm water runoff and why it is important to provide stable conveyance. Students learn about the methodologies for determining inlet spacing and sizing, pipe and ditch sizing, culvert sizing, and pipe material selection. This class was held on May 1, 2019 and included 17 participants.

'SWM & Erosion and Sediment Control' is a 2nd year OHDU class that provides an overview of SWM and ESC and how both are relevant to MDOT SHA projects. Topics include current regulations, design criteria, types of facilities, and common design issues. Discussion also includes these important key aspects: the difference between SW quality and quantity management, right-of-way allocation, requesting SWM borings, aesthetics associated with SWM facilities, safety, and maintenance access. This class was held on March 20, 2019 and included 14 participants.

'Environmental Permits and Regulations' is a 2nd year OHDU class that provides information on the types of environmental permits that are typically required for projects, including SWM, ESC, JPA, wetlands and waterways, dam safety, NEPA, roadside tree, and reforestation. The class includes discussion of what is needed for each permit submittal and the regulations with which MDOT SHA must comply as it relates to the project development process. This class was held on April 3, 2019 and included 12 participants.

D.6.c Information for the Regulated Community

i. NPDES Permitting Requirements

Information relating to NPDES Construction Activity Permits is available on the MDE website, and MDOT SHA directs requests for information to that site.

ii. Pollution Prevention Plan Development

SWPPPs are required by NPDES General Permit No. 12-SW for each MDOT SHA industrial facility. The SWPPPs are available for review upon request.

iii. Proper Housekeeping

Proper housekeeping measures are identified in the MDOT SHA SWPPPs for industrial facilities. These documents are available upon request.

Proper housekeeping measures include sweeping areas in front of salt and material storage structures, pick-up and proper disposal of garbage and floatable debris, routine inspections of drums, tanks, and other containers, and conducting vehicle and equipment repairs indoors or under cover.

iv. Spill Prevention and Response

MDOT SHA maintains SOPs related to spill prevention and response that are available upon request. These documents are updated on a routine basis per MDOT SHA Environmental Management System.

E. Restoration Plans and Total Maximum Daily Loads (TMDL)

In compliance with §402(p)(3)(B)(iii) of the CWA, MS4 permits require stormwater controls to reduce the discharge of pollutants to the MEP. By regulation at 40 CFR §122.44, BMPs and programs

implemented pursuant to this permit must be consistent with applicable wasteload applications (WLAs) developed under EPA approved TMDLs.

In pursuit of these goals, SHA shall coordinate watershed assessments with surrounding jurisdictions and annually report on restoration plans, opportunities for public participation, and TMDL compliance status to MDE. As required below, watershed assessments and restoration plans shall include a thorough discussion of water quality analysis findings based on coordination with surrounding jurisdictions, TMDL documents and other resources when available, identification of water quality improvement opportunities, and a schedule for BMP and programmatic implementation to meet stormwater WLAs included in EPA approved TMDLs. SHA shall address both specific WLAs and target loads when SHA is part of larger aggregate loads. A list of EPA approved TMDLs for SHA in the permit area is included in Attachment B of the permit.

E.1 Watershed Assessments

Requirements under this condition include:

a) *Coordinate watershed assessments with surrounding jurisdictions, which shall include, but not be limited to the evaluation of available State and county watershed assessments, SHA data, visual watershed inspections targeting SHA rights-of-way and facilities, and approved stormwater WLAs to:*

   i) *Determine current water quality conditions;*

   ii) *Include the results of visual inspections targeting SHA rights-of-way and facilities conducted in areas identified as priority for restoration;*

   iii) *Identify and rank water quality problems for restoration associated with SHA rights-of-way and facilities;*

   iv) *Using the watershed assessments established under section a. above to achieve water quality goals by identifying all structural and nonstructural water quality improvement projects to be implemented; and*

   v) *Specify pollutant load reduction benchmarks and deadlines that demonstrate progress toward meeting all applicable stormwater WLAs.*

E.1.a Watershed Assessment

MDOT SHA references county watershed assessments to identify specific watershed issues and restoration project opportunities. This methodology is presented in MDOT SHA TMDL implementation plans and in the following subsections i. through v.

In some cases when it is mutually beneficial to both parties MDOT SHA may establish a partnership agreement with other MS4 jurisdictions or landowners to coordinate pollution reduction strategies related to specific projects. This coordination can facilitate data exchange and integration and encourage targeted project implementation to meet pollutant reduction goals.

i. Current Water Quality Conditions

MDOT SHA reviews county watershed assessments to determine current water quality conditions, problem areas, and suggested methods to remediate water quality issues. These reviews are included in Part IV of the MDOT SHA *Impervious Restoration and Coordinated TMDL Implementation plan* (referred to hereafter as the "Implementation Plan") under respective subsections dedicated to each individual watershed and in Section F. of the subsequently submitted individual TMDL implementation plans.

ii. Visual Inspections Targeting MDOT SHA ROW

Part III.C. of the Implementation Plan describes the MDOT SHA process for visual inspections targeting MDOT SHA right-of-way and inspection evaluations for each watershed are provided in the respective subsections of Part IV. The inspection evaluation is located in Section F. of subsequently submitted individual watershed TMDL implementation plans.

iii. Water Quality Problems for Restoration

MDOT SHA utilizes multiple approaches to identify and rank water quality problems. County watershed assessments are reviewed to identify and rank water quality problems for restoration within the local watersheds. These reviews are incorporated into MDOT SHA TMDL implementation plans as described previously in Section E.1.a.i. The visual assessment process, previously described in Section E.1.a.ii., helps evaluate field conditions. The outfall inspection protocol, developed by MDOT SHA and incorporated into Part Two of the FY18 annual report, describes a process for field inspection, assessment, and ranking based on the severity of stabilization issues. From these inspections MDOT SHA can identify outfall stabilization projects that have potential to reduce pollutant loads and support attainment of impervious restoration goals.

iv. Water Quality Improvement Projects

County watershed assessments prioritize and rank structural and non-structural improvement projects to be implemented. Watershed assessment reviews are included in MDOT SHA TMDL implementation plans as described previously in Section E.1.a.i.

v. Pollutant Load Reduction Benchmarks and Deadlines

Interim benchmarks have been established for 2020 and 2025 for all the local TMDLs and incorporated into the revised Implementation Plan and into the addendum to Table 3-2, included with this annual report as **Appendix C**. Progress in meeting these benchmarks is discussed in this annual report under **Sections E.2.b and E.4.b**.

E.2 Restoration Plans

Requirements under this condition include:

a) Within one year of permit issuance, SHA shall submit an impervious surface area assessment consistent with the methods described in the MDE document "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated, Guidance for National Pollutant Discharge Elimination System Stormwater Permits" (MDE, August 2014 or subsequent versions). Upon approval by MDE, this impervious surface area assessment shall serve as the baseline for the restoration efforts required in this permit.

By the end of this permit term, SHA shall commence and complete the implementation of restoration efforts for twenty percent of SHA's impervious surface area consistent with the methodology described in the MDE document cited in PART IV.E.2.a. that has not already been restored to the MEP. Equivalent acres restored of impervious surfaces, through new retrofits or the retrofit of pre-2002 structural BMPs, shall be based upon the treatment of the WQv criteria and associated list of practices defined in the 2000 Maryland Stormwater Design Manual. For alternate BMPs, the basis for calculation of equivalent impervious acres restored is based upon the pollutant loads from forested cover.

b) Within one year of permit issuance, a coordinated TMDL implementation plan shall be submitted to MDE for approval that addresses all EPA approved stormwater WLAs (prior to the effective date of the permit) and requirements of Part VI.A., Chesapeake Bay Restoration by 2025 for SHA's storm sewer system. Both specific WLAs and aggregate WLAs which SHA is a part of shall be addressed in the TMDL implementation plans. Any subsequent stormwater WLAs for SHA's storm sewer system shall be addressed by the coordinated TMDL implementation plan within one year of EPA approval. Upon approval by MDE, this implementation plan will be enforceable under this permit. As part of the coordinated TMDL implementation plan, SHA shall:

i) Include the final date for meeting applicable WLAs and a detailed schedule for implementing all structural and nonstructural water quality improvement projects, enhanced stormwater management programs, and alternative stormwater control initiatives necessary for meeting applicable WLAs;

ii) Provide detailed cost estimates for individual projects, programs, controls, and plan implementation;

iii) Evaluate and track the implementation of the coordinated implementation plan through monitoring or modeling to document the progress toward meeting established benchmarks, deadlines, and stormwater WLAs; and

iv) Develop an ongoing, iterative process that continuously implements structural and nonstructural restoration projects, program enhancements, new and additional programs, and alternative BMPs where EPA approved TMDL stormwater WLAs are not being met according to the benchmarks and deadlines established as part of the SHA's watershed assessments.

MDOT SHA Implementation

MDOT SHA developed and submitted its Implementation Plan on October 8, 2016. This plan integrates both Parts IV.E.2.a (Impervious Assessment and Restoration) and IV.E.2.b (Coordinated TMDL Implementation Plans) of the MS4 permit into a single document. Impervious assessment and restoration are addressed in Part II of the Implementation Plan and the coordinated TMDL implementation plans are addressed in Parts III and IV.

TMDL documents are issued by MDE frequently, and to keep pace with the E.2.b requirement to develop and issue an implementation plan within one year of issuance of a TMDL, MDOT SHA develops and submits individual implementation plans for subsequent TMDLs to MDE. Periodically, MDOT SHA will update the Implementation Plan to incorporate these individual TMDL implementation plans. A revised *Interim Review Draft* version of the Implementation Plan that integrated the latest MDOT SHA TMDL implementation plans was attached to the MDOT SHA 2018 MS4 annual report but did not include Part II because the MDOT SHA impervious baseline assessment was still under consideration by MDE.

An updated version of Part II of the Implementation Plan that integrates the MDE approved impervious restoration goal of 4,621 acres is included as **Appendix B** to this report. The Implementation Plan has also been updated on our website to include the revised Part II.

During the FY19 reporting period, MDOT SHA developed and submitted to MDE individual TMDL implementation plans in accordance with the requirement described in Part IV.E.2.b. These implementation plans are described further in Sections E.2.b. and E.3 and are made publicly accessible on the MDOT SHA website at the following web address:

https://www.roads.maryland.gov/Index.aspx?pageid=336

Sections E.2.a, E.2.b, and E.3 discuss FY19 progress relative to the Implementation Plan. Rather than reiterate content from the Implementation Plan, this reporting will reference pertinent sections as appropriate.

E.2.a Impervious Baseline Assessment and Restoration Plan

In the MDOT SHA 2016 Impervious Area Assessment, submitted to MDE on October 9, 2016, MDOT SHA proposed an impervious area restoration amount of 4,719.2 acres and MDE subsequently requested additional information prior to issuing its approval. Since then, MDE continued analysis and dialogue with MDOT SHA regarding the impervious acre baseline and MDOT SHA has submitted updated baseline calculations to MDE for review on July 31, 2017, October 9, 2017, and June 29, 2018. In its review of the latest MDOT SHA submission, MDE concluded that the impervious area restoration requirement for MDOT SHA, to satisfy Part IV.E.2.a. of the NPDES MS4 permit, is 4,620.9 acres. MDE determined this goal based on an approved

baseline 23,104.8 acres of untreated impervious area owned by MDOT SHA. MDOT SHA reporting and accounting in this FY19 MS4 annual report reflects this communication from MDE and applies 4,621 acres as the official MDOT SHA restoration goal for the current permit term.

MDOT SHA may submit a revised baseline assessment in its fifth permit year (2020) with the corresponding MS4 annual report.

Impervious Restoration Plan

The MDOT SHA impervious restoration plan, incorporated into Part II of the Implementation Plan, includes a combination of built practices, annual operations activities, and redevelopment credit. The plan has been revised and submitted as **Appendix B** of this FY19 MS4 annual report and includes revisions to Table 2-2 that provides a comprehensive list of annual operations practices as well as completed, under design, and planned built practices broken down by fiscal year with location information and estimated impervious treatment acres provided for each.

In order to track progress and adaptively manage its NPDES program to meet the 20 percent impervious restoration requirement by October 8, 2020, MDOT SHA established benchmarks in Table 2-1 of the Implementation Plan. Actual restoration achieved and relative progress toward the permit goal can be referenced in **Table 21** and is illustrated further in **Figure 20** and **Figure 21** of this FY19 MS4 annual report.

Also, the MDOT SHA MS4 permit is currently being modified to allow for nutrient credit trading for this permit term. The tentative determination was issued by MDE on June 21, 2019 with a 90-day public comment period. The comment period ended on September 19 and the final determination is anticipated October 2019. Although MDOT SHA does not anticipate using this option to meet the 20 percent restoration goal, this is an option sought during the reporting period.

Table 22 details total credit claimed by MDOT SHA at the end of its fourth permit year (FY19) with complimentary summaries by fiscal year and BMP type. The relative implementation of various BMP types in the portfolio is shown in **Figure 22**.

Year-to-year implementation levels for annual BMPs, specifically inlet cleaning and street sweeping operations, are reported in **Table 22a**. MDOT SHA has also implemented storm drain vacuuming, as described in Section **D.5.b** and summarized in **Table 14** of this report, which it has included in MDOT SHA inlet cleaning reporting. In dealing with these annual practices, MDOT SHA understands that it must ensure a consistent level of treatment be maintained annually as indicated by the annual operational goals achieved at the end of this permit term and moving forward.

In the MS4 geodatabase submitted with this FY19 MS4 annual report, MDOT SHA has provided restoration BMP information in the following:

- Restoration BMP feature class (RST)
- Alternate BMP Polygon feature class (APY)
- Alternate BMP Line feature class (ALN)
- Stream Restoration Protocols table (SRP)

Table 21: Percentage of Impervious Treatment (Benchmark versus Achieved)

	Benchmarks					Actual Achieved	
	Original (2016)	Original (2016)	Revised (2018)	Revised (2018)	Revised (2019)		
Fiscal Year	% Impervious Restoration	% Progress Toward Restoration Goal	% Impervious Restoration	% Progress Toward Restoration Goal	Projected Acres	Actual Restoration Achieved (Acres)	% Progress Toward Restoration Goal
October 21, 2010 to 2015	4%	20%	--	--	924	1,824	39%
2016	6%	30%	--	--	1,386	2,438	53%
2017	8%	40%	--	--	1,848	2,963	64%
2018	9%	45%	--	--	2,079	3,206	69%
2019	13%	65%	*10%	*50%	2,311	3,472	75%
2020	19%	95%	19%	95%	4,390		
2021	20%	100%	20%	100%	4,621		
*In FY18 annual report, the MDOT SHA restoration goal for FY19 was reduced from 13% and 65% to 10% and 50% respectively.							

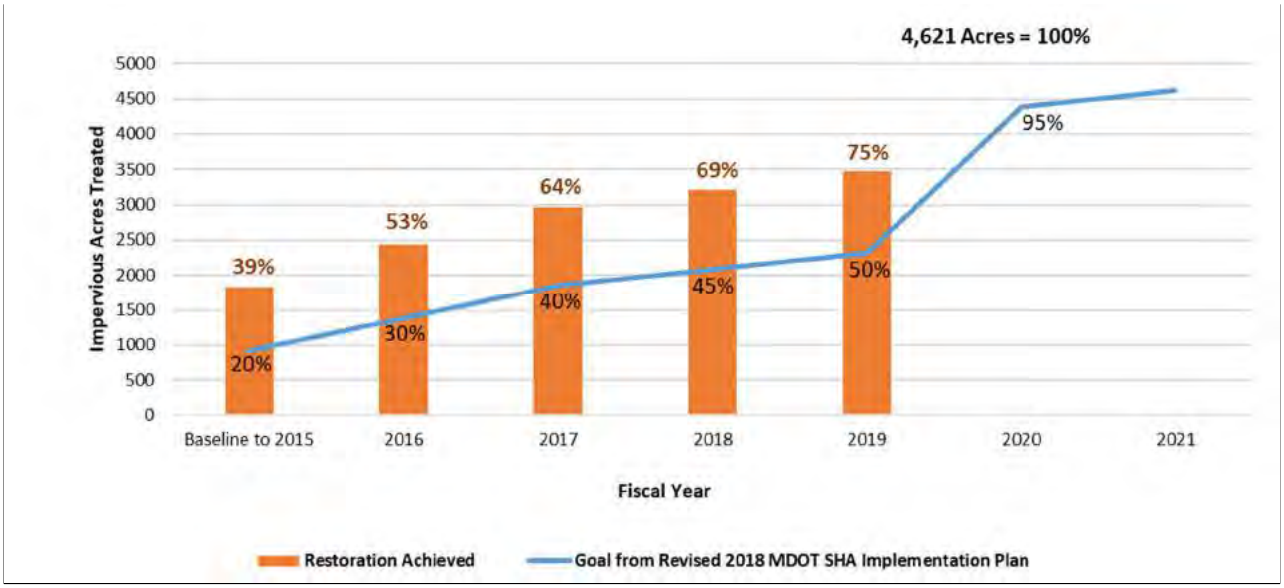

Figure 20: MDOT SHA FY Impervious Restoration Achieved Compared to Benchmark

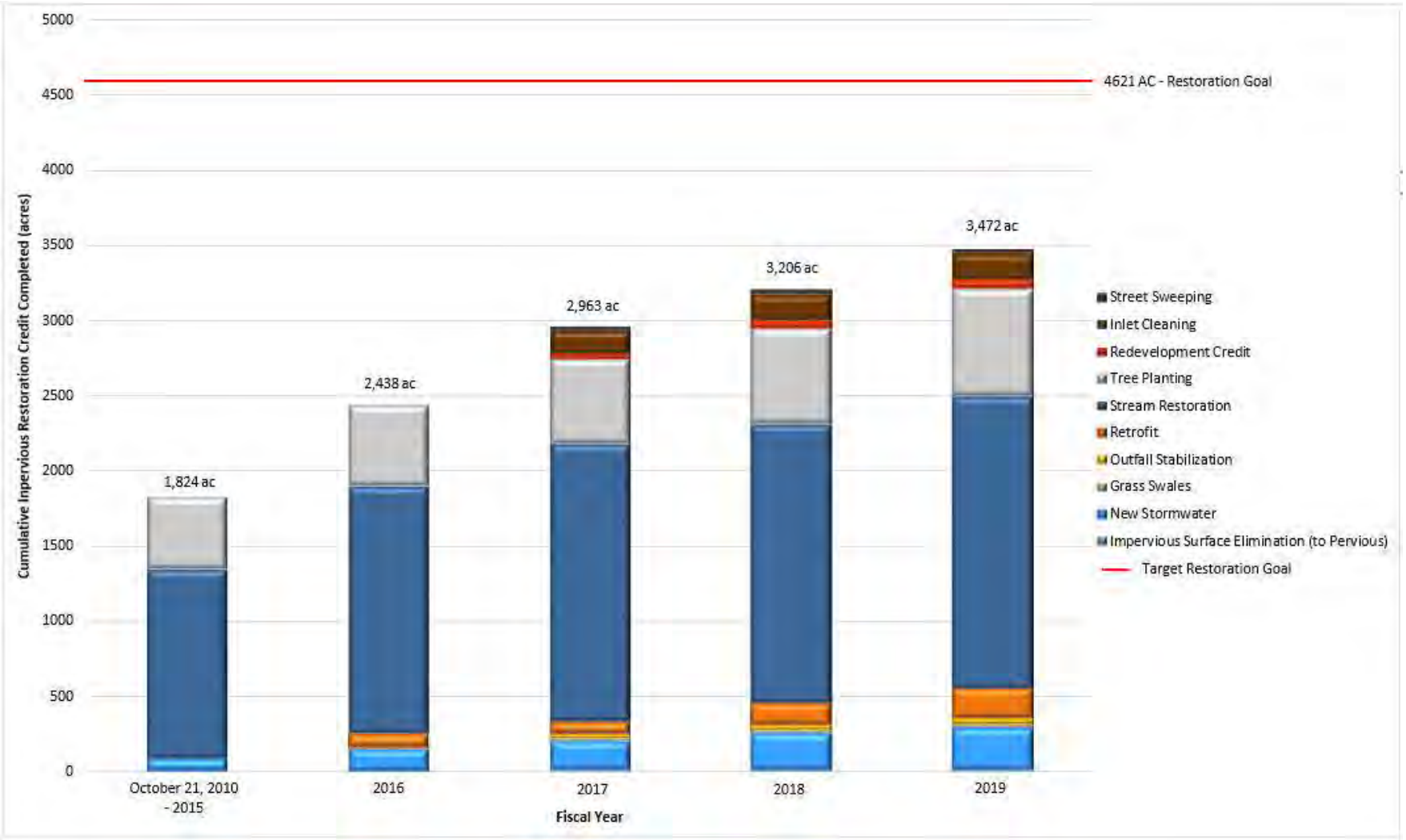

Figure 21: Cumulative Impervious Restoration Progress with BMP Types

Table 22: Impervious Restoration Credit by BMP Type through FY19

BMP Type	Oct 21, 2010 - 2015 (acres)	2016 (acres)	2017 (acres)	2018 (acres)	2019 (acres)	Total (acres)
Impervious Surface Elimination (to Pervious)	0.48	0.00	1.85	0.03	0.11	2.47
New Stormwater Control Structures	87.38	53.89	55.17	51.41	35.57	283.42
Grass Swales	0.00	9.07	11.60	0.00	0.00	20.67
Outfall Stabilization	0.00	7.50	10.89	9.40	7.88	35.67
Retrofit Existing Stormwater Control Structures	0.00	89.71	3.43	62.69	51.88	207.71
Stream Restoration	1,251.99	392.17	196.83	7.14	91.89	1,940.02
Tree Planting	483.70	62.59	20.22	77.70	70.08	714.28
Redevelopment Credit	0.00	0.00	41.85	9.71	7.82	59.38
Inlet Cleaning	0.00	0.00	150.00	25.00	0.00	175.00
Street Sweeping	0.00	0.00	33.00	0.00	0.00	33.00
Totals	**1,824**	**615**	**525**	**243**	**265**	**3,472**
20% Restoration Target						**4,621**
% Impervious Restoration						**15%**
% Progress Towards Restoration Goal						**75%**

Table 22a: Impervious Restoration Credit by Operational BMP Type Achieved Each FY

BMP Type	Oct 21, 2010 - 2015 (acres)	2016 (acres)	2017 (acres)	2018 (acres)	2019 (acres)	Annual Operational Goals (acres)
Inlet Cleaning	N/A	N/A	150.00	175.20	166.60	175
Street Sweeping	N/A	N/A	33.00	33	25.96	33
Totals	**N/A**	**N/A**	**183**	**208.20**	**192.56**	**208**

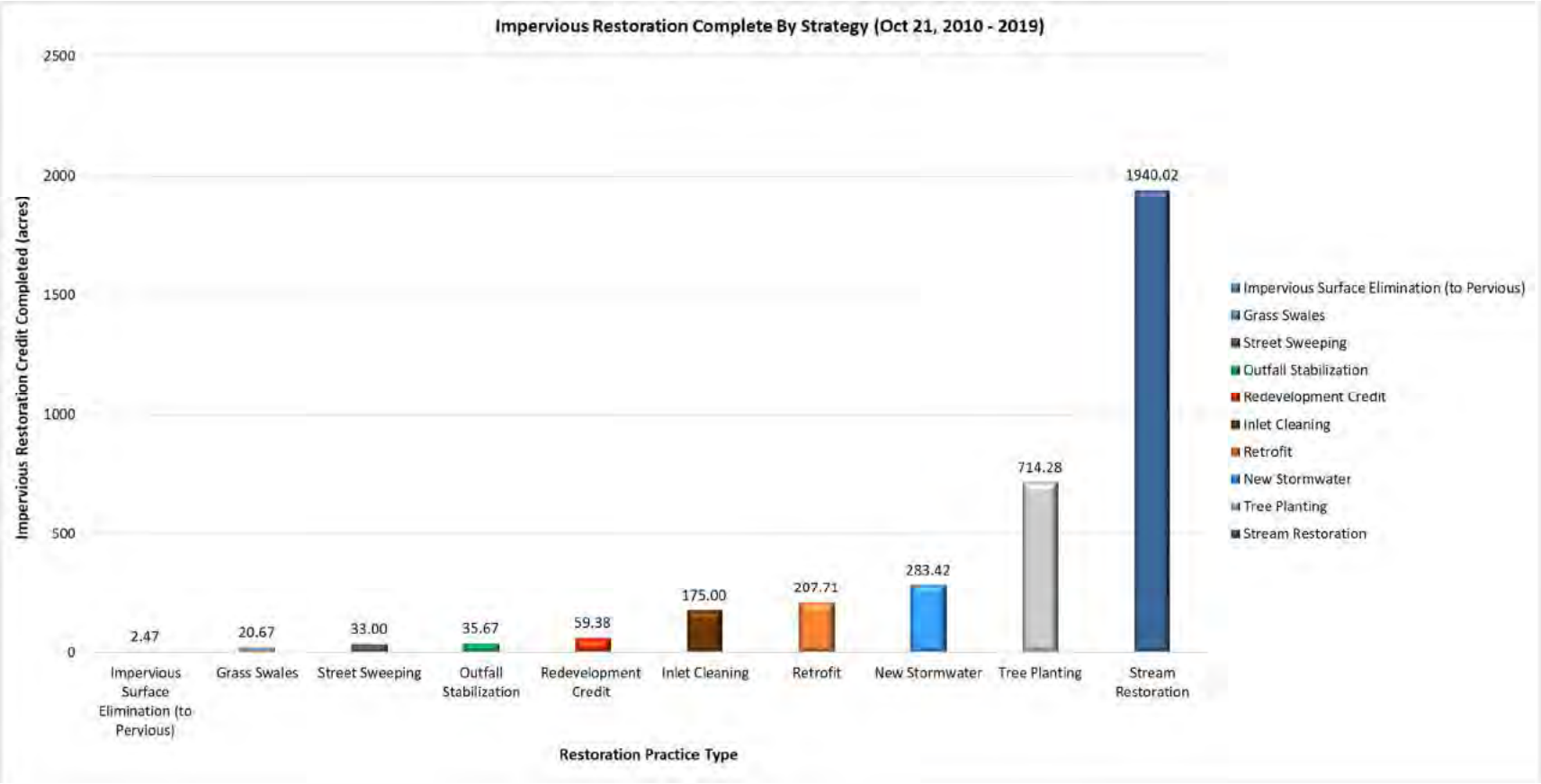

Figure 22: Impervious Restoration Completed by BMP Type (Oct 21, 2010 – June 30, 2019)

Updated Equivalent Impervious Acre Credit for Stream Restoration

On October 17, 2018, MDE distributed a memorandum to Maryland's MS4 community concerning "Stream Restoration Crediting for MS4 Permitting Purposes" that reiterated its support for the Chesapeake Bay Program's use of site specific stream restoration monitoring data for calculating nutrient credits and confirmed that MDE does allow the NPDES Phase I MS4 regulated community to, by extension, calculate individual project impervious acre equivalencies using that same site specific data with the condition that credit will be capped at the actual impervious area draining to the most downstream point of the stream restoration project.

On April 30, 2019, MDE distributed a follow up memorandum concerning "Stream Restoration Crediting Clarification for MS4 Permitting Purposes" that outlined updated guidance on stream restoration crediting. Per this updated guidance, the impervious acre credit per linear foot for stream restoration, defined as 0.01 acres in the 2014 MDE Accounting Guidance, has increased to 0.02 or 0.03 acres for respective implementation in the Piedmont or Coastal Plain physiographic regions. These revised credits are uncapped in relation to the actual impervious acres in a given project's watershed and are applicable to all projects; past, present, and future; that meet the requirements set forth in the Chesapeake Bay Program's 2014 expert panel report, "*Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects*".

MDOT SHA has verified that all stream restoration projects, for which it is claiming restoration credit for in this permit term, meet or exceed the *Basic Qualifying Conditions* described in the expert panel report. **Table 23** demonstrates how MDOT SHA is accounting for stream restoration credit; as presented by **Table 22** and **Figure 22** in this FY19 MS4 annual report, and **Table 2-2** of **Appendix D**. In accordance with MDE recommendations, for all future stream restoration projects MDOT SHA is evaluating opportunities to apply site specific monitoring data to calculation of nutrient credits and individual project impervious acre equivalencies.

Table 23: Summary of Adjustments to Stream Restoration Equivalent Impervious Acre Restoration Credit Resulting from MDE 4/30/2019 Memorandum

Unique BMP #	Project Name	Geography	Crediting Method Applied for Adjustment	Initial Credit Claimed (Acres)	Adjusted Credit (Acres)
Projects Reported from October 21, 2010 through FY15					
SH12ALN000003	Paint Branch	Non-Coastal Plain	Planning Rate	20.26	60.78
SH15ALN000004	Unnamed Tributary to Paint Branch	Non-Coastal Plain	Planning Rate	7.12	21.36
SH13ALN000005	Paint Branch	Non-Coastal Plain	Planning Rate	5.46	16.38
SH15ALN000006	Unnamed Tributary to Paint Branch	Non-Coastal Plain	Planning Rate	20.14	60.42
SH13ALN000007	Unnamed Tributary to Paint Branch	Non-Coastal Plain	Planning Rate	27.89	83.67
SH14ALN000008	Paint Branch	Coastal Plain	Planning Rate	64.50	129.00
SH15ALN000009	Indian Creek	Coastal Plain	Planning Rate	12.09	24.18
SH12ALN000013	Northwest Branch Anacostia River	Non-Coastal Plain	Planning Rate	60.11	180.33
SH13ALN000014	Mill Creek	Non-Coastal Plain	Planning Rate	48.54	145.62
SH15ALN000015	Plumtree Run	Non-Coastal Plain	Planning Rate	21.00	63.00
SH13ALN000017	Magness Run - Tributary of Deer Creek	Non-Coastal Plain	Planning Rate	11.60	34.80
SH12ALN000018	Dorsey Run	Non-Coastal Plain	Planning Rate	19.73	59.19

Table 23: Summary of Adjustments to Stream Restoration Equivalent Impervious Acre Restoration Credit Resulting from MDE 4/30/2019 Memorandum

Unique BMP #	Project Name	Geography	Crediting Method Applied for Adjustment	Initial Credit Claimed (Acres)	Adjusted Credit (Acres)
SH12ALN000029	Unnamed Tributary to Red Hill Branch	Non-Coastal Plain	Planning Rate	10.44	31.32
SH13ALN000032	Goshan Branch	Non-Coastal Plain	Planning Rate	39.91	119.73
SH14ALN000010	Unnamed Tributary to North Branch Rock Creek	Non-Coastal Plain	Planning Rate	29.07	87.21
SH15ALN000016	Upper Little Patuxent River Stream Restoration	Non-Coastal Plain	Planning Rate	45.00	135.00
			Subtotal	**442.9**	**1,251.99**
Projects Reported in FY16					
SH16ALN000031	Broad Creek	Coastal Plain	Planning Rate	24.14	48.28
SH15ALN000002	I-97 at E-W-Blvd Outfall	Coastal Plain	Planning Rate	0	0
SH16ALN000011	Manor Run	Non-Coastal Plain	Planning Rate	62.92	188.76
SH16ALN000012	Unnamed Tributary to Northwest Branch Anacostia River	Non-Coastal Plain	Planning Rate	51.71	155.13
			Subtotal	**138.77**	**392.17**
Projects Reported in FY17					
SH17ALN000046	ICC - PB-12B at Hollywood Branch	Non-Coastal Plain	Planning Rate	30.55	91.65
SH17ALN000045	ICC - PB-12A at Hollywood Branch	Non-Coastal Plain	Planning Rate	33.06	99.18
SH16ALN000044	Furnace Ave	Coastal Plain	Planning Rate	3	6
			Subtotal	**66.61**	**196.83**
Projects Reported in FY18					
SH18ALN000047	Patapsco Valley State Park - Avalon Area	Non-Coastal Plain	Planning Rate	2.38	7.14
Subtotal				**2.38**	**7.14**
Projects Reported in FY19					
SH19ALN000050	Little Catoctin Creek at US 340	Non-Coastal Plain	Planning Rate	30.63	91.89
			Subtotal	**30.63**	**91.89**
			Grand Total	**681.25**	**1,940.02**

Management of Excess Impervious Acre Credits

MDOT SHA confirmed with MDE that, as the 2020 permit deadline approaches, if the restoration requirement for this permit term is exceeded, excess impervious restoration credit can be applied to the next permit term restoration requirement.

E.2.b Coordinated TMDL Implementation Plan

Delivery of this FY19 MS4 annual report, specifically **Appendices B and C**, completes the MDOT SHA submittal, of its coordinated TMDL implementation plan to MDE for approval. MDOT SHA understands that upon approval by MDE, the Implementation Plan will be enforceable under this permit. The following subsections i. through iv. demonstrate completeness of the MDOT SHA submittal.

In accordance with commitments made during an interagency meeting between MDE and MDOT SHA on April 10, 2017, as documented in Attachment III of the letter to MDOT SHA from MDE dated April 26, 2017 regarding its review of the MDOT SHA FY16 MS4 annual report, **Appendix C** is provided with this FY19 MS4 annual report and contains an addendum to Table 3-2, originally submitted with Part III of the revised Implementation Plan on October 9, 2018. This addendum to Table 3-2 represents the analysis of reductions required and timeframes for meeting additional TMDLs not otherwise listed in Attachment B of the NPDES MS4 permit. **Table 25** has been updated to include the additional TMDLs and demonstrates progress toward 2020 reduction targets.

Additional timeframes, specifically a 2025 interim reduction target and the target year for meeting the TMDL, are currently omitted from the addendum to Table 3-2 in **Appendix C** because these are currently under development for inclusion in their respective individual TMDL implementation plans to be submitted to MDE with the fifth year (FY20) annual report in accordance with the MDOT SHA commitment. MDOT SHA will provide an updated Table 3-2, complete with all timeframes, once all individual watershed TMDL implementation plans have been developed by MDOT SHA.

Supplemental Implementation plans for Individual TMDLs

During the FY19 reporting period, the EPA approved the following six, new TMDLs for which MDOT SHA was included in aggregated WLAs:

- TMDL of Sediment in the Non-Tidal Patuxent River Lower Watershed, EPA approval date July 2, 2018.
- TMDL of Sediment in the Non-Tidal Patuxent River Middle Watershed, EPA approval date July 2, 2018.
- TMDL of Polychlorinated Biphenyls (PCBs) in the Piscataway Creek and Mattawoman Creek Tidal Fresh Chesapeake Bay Segments, EPA approval date February 19, 2019.
- TMDL of Sediment in the Non-Tidal Upper Chester River Watershed, EPA approval date April 8, 2019.
- TMDL of Sediment in the Non-Tidal West River Watershed, EPA approval date April 24, 2019.
- TMDL of Fecal Coliform in the Restricted Shellfish Harvesting Areas of Battle Creek, Buzzard Island Creek and Hog Neck Creek in the Lower Patuxent River, EPA approval date May 21, 2019.

As of the submittal date for this FY19 MS4 annual report, individual implementation plans for the two Patuxent River sediment TMDLs listed above as approved by EPA on July 2, 2018 have been finalized, submitted to MDE, and are available on the MDOT SHA website. The submittal dates for these plans falls within FY20 so are not reported as FY19 submittals in **Table 24** below. Plans for the other four TMDLs listed are in development. This is discussed further in **Section E.3** of this report.

Table 24 summarizes MDOT SHA FY19 submittals to MDE of four individual TMDL implementation plans required in response to TMDLs with EPA approval dates in FY18.

Table 24: Individual TMDL Implementation Plans Submitted to MDE in FY19

TMDL	EPA Approval Date	Date Plan Submitted to MDE
TMDL of PCBs in the Patuxent River Mesohaline, Oligohaline and Tidal Fresh Chesapeake Bay Segments	9/19/2017 (FY18)	9/18/2018 (FY19)
TMDL of Sediment in the Non-Tidal South River Watershed	9/28/2017 (FY18)	9/28/2018 (FY19)
TMDL of Sediment in the Other West Chesapeake Watershed	2/9/2018 (FY18)	2/9/2019 (FY19)
TMDL of sediment in the Non-Tidal Back River Watershed	3/5/2018 (FY18)	3/6/2019 (FY19)

i. Schedule

The final dates, or "Target Years", for meeting WLAs applicable to MDOT SHA are listed in Table 3-2 of the Implementation Plan, and the "Addendum to Table 3-2", provided in **Appendix C** of this FY19 MS4 annual report. Practices proposed to support meeting the WLAs during the current permit term are listed in Table 2-2 provided in **Appendix B** of this FY19 MS4 annual report and practices proposed for implementation beyond the 2020 impervious restoration deadline are included in Part IV of the Implementation Plan and individual TMDL implementation plans developed by MDOT SHA to date. Progress meeting the WLAs is addressed in **Section E.4.a** below.

ii. Cost Estimates

MDOT SHA advertises construction projects on eMaryland Marketplace. Detailed cost estimates for projects that are under design cannot be published due to the bidding process. Once project bids have been opened, the three lowest bids are posted on the MDOT SHA website linked below and can be found by searching for Bid Tabulations at the bottom of the page:

http://www.roads.maryland.gov/pages/cic.aspx?PageId=857

Total expenditures including design, ROW, and construction for each restoration contract advertised for this permit term are included in **Section E.4.d**, **Table 27**. Future allocations to be used for MS4 compliance and restoration are listed in **Table 26**.

Lists of proposed practices and estimated costs by FY to achieve the required reductions are included in Part IV of the Implementation Plan and individual TMDL implementation plans submitted after the 2018 plan revision.

iii. Documenting Progress

MDOT SHA models all TMDLs up to 100% attainment to determine how much restoration work must be implemented to meet interim and final targets. The MDOT SHA Restoration Modeling Protocol has been revised and provided in **Appendix D** of this FY19 MS4 annual report. **Table 25** summarizes pollutant load reduction progress achieved relative to the benchmarks and WLA provided in the Implementation Plan and individual TMDL

implementation plans submitted after the 2018 plan revision. A similar summary table has been provided in all preceding annual reports submitted by MDOT SHA to MDE during the current permit term.

iv. Adaptive Management

If benchmarks are not being met, both the Bay TMDL and the MDE MS4 permit allow for adjustments in the plan to ensure the plan goals are met. This 'adaptive management' concept is discussed in Part II, Section C of the Implementation Plan (see **Appendix B**).

E.3 Public Participation

Requirements under this condition include:

SHA shall provide opportunity to the public regarding the development of its coordinated TMDL implementation plan by allowing for public participation, soliciting input, and incorporating any relevant ideas and program improvements that can aid in achieving TMDLs and water quality standards according to the actions below. SHA is required to provide:

a) Notice in a regional newspaper and SHA's website outlining how the public may obtain information on the development of the coordinated TMDL implementation plan and opportunities for comment;
b) Procedures for providing copies of the coordinated TMDL implementation plan to interested parties upon request;
c) A minimum 30 day comment period before finalizing the coordinated TMDL implementation plan; and
d) A summary in each annual report of how SHA addressed or will address any material comment received from the public.

As previously discussed in **Section E.2.b,** MDOT SHA developed and submitted to MDE four individual TMDL implementation plans during FY19. Each plan was posted for 30 days on the MDOT SHA website for public review with instructions for downloading the plan and submitting comments. The following list summarizes notices issued during the FY19 reporting period soliciting public comments for draft implementation plans:

- **Patuxent River Mesohaline, Oligohaline and Tidal Fresh Chesapeake Bay Segments PCBs TMDL Implementation Plan**
  - Notices were posted in the classified section of the Baltimore Sun and the Washington Post on August 10, 2018.
  - The public comment period was held from August 10, 2018 to September 10, 2018. No comments were received during the public comment period.
- **Non-Tidal South River Watershed Sediment TMDL Implementation Plan**
  - Notices were posted in the classified section of the Baltimore Sun and the Washington Post on August 24, 2019.
  - The public comment period was held from August 24, 2018 to September 24, 2018. No comments were received during the public comment period.
- **Other West Chesapeake Watershed Sediment TMDL Implementation Plan**
  - Notices were posted in the classified section of the Baltimore Sun and the Washington Post on January 4, 2019.
  - The public comment period was held from January 4, 2019 to February 4, 2019. No comments were received during the public comment period.
- **Non-Tidal Back River Watershed Sediment TMDL Implementation Plan**
  - Notices were posted in the classified section of the Baltimore Sun and the Washington Post on February 4, 2019.
  - The public comment period was held from February 4, 2019 to March 5,

2019. No comments were received during the public comment period.

- **Non-Tidal Patuxent River Lower Watershed Sediment TMDL Implementation Plan**
  - Notices were posted in the classified section of the Baltimore Sun and the Washington Post on May 24, 2019.
  - The public comment period was held from May 24, 2019 to June 24, 2019. No comments were received during the public comment period.
- **Non-Tidal Patuxent River Middle Watershed Sediment TMDL Implementation Plan**
  - Notices were posted in the classified section of the Baltimore Sun and the Washington Post on May 24, 2019.
  - The public comment period was held from May 24, 2019 to June 24, 2019. No comments were received during the public comment period.

E.4 TMDL Compliance

Requirements under this condition include:

SHA shall evaluate and document its progress toward meeting all applicable stormwater WLAs included in EPA approved TMDLs. An annual TMDL assessment report with tables will be submitted to MDE. This assessment shall include complete descriptions of the analytical methodology used to evaluate the effectiveness of SHA's restoration plans and how these plans are working toward achieving compliance with EPA approved TMDLs. SHA shall further provide:

a) Estimated net change in pollutant load reductions from all completed structural and nonstructural water quality improvement projects, enhanced stormwater management programs, and alternative stormwater control initiatives;

b) A comparison of the net change in pollutant load reductions detailed above with the established benchmarks, deadlines, and applicable stormwater WLAs;

c) Itemized costs for completed projects, programs, and initiatives to meet established pollutant reduction benchmarks and deadlines;

d) Cost estimates for completing all projects, programs, and alternatives necessary for meeting applicable stormwater WLAs; and

e) A description of a plan for implementing additional watershed restoration actions that can be enforced when benchmarks, deadlines, and applicable stormwater WLAs are not being met or when projected funding is inadequate.

E.4.a Progress Achieved and Practices Implemented

Practices used to meet the impervious restoration goal were also used to model TMDL reduction strategies for both the Chesapeake Bay TMDL and local TMDLs.

Table 25 shows FY19 progress regarding reductions for each pollutant and watershed and compares this progress to 2020 interim targets and final reduction targets. Figures are also included that depict target reductions, FY19 progress, and BMPs implemented by watershed for sediment (**Figure 23**), phosphorus (**Figure 24**), nitrogen (**Figure 25**), and trash (**Figure 26**). Graphics depicting reductions for PCBs and bacteria are not provided.