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October 30, 2025

Ms. Deborah Cappuccitti
Maryland Department of the Environment
Water and Science Administration
1800 Washington Boulevard
Baltimore, Maryland 21230

RE: National Pollutant Discharge Elimination System (NPDES)
MS4 Phase II General Discharge Permit No. 13-SF-5501
Progress Report - FY 2025

Dear Ms. Cappuccitti:

The Maryland Transportation Authority (MDTA) is pleased to submit our Progress Report for the NPDES Municipal Separate Storm Sewer System (MS4) Phase II General Permit, Number 13-SF-5501.

The FY25 submittal also highlights our actions during the past fiscal year (July 2024 through June 2025) to meet the Chesapeake Bay Impervious Area Restoration requirements. The following are highlights of MDTA's accomplishments:

- Continued to inspect and maintain BMPs used for baseline and restoration credit, updating the BMP database to reflect all included treatment projects and most current inspection dates.
- Reviewed and clarified category definitions in the Baseline Impervious Area Assessment and BMP Database.
- Reviewed and updated computation of restoration credits for alternative urban BMPs such as street sweeping and stream restoration based on guidance provided to MDTA in *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated* (August 2014) and *Stream Restoration Crediting Clarification for MS4 Permitting Purposes* memorandum dated April 30, 2019.

The following information is provided with this progress report:

- FY25 State and Federal Small MS4 Progress Report [Appendix D, Section I of the General Permit (using "fillable form" provided by MDE)]

- FY 25 Impervious Area Restoration Progress Report with responses to MDE comments on FY24 Annual Report, including the following appendices:
  - Appendix A: Background and Characteristics of MDTA MS4, Baseline Assessment and Impervious Area Restoration Goals
  - Appendix B: Alternative Urban BMPs – Street Sweeping
  - Appendix C: Alternative Urban BMPs – Stream Restoration
  - Appendix D: Urban BMP Database (MS Excel Format)
  - Appendix E: Restoration Activity Schedule ((MS Excel Format)

If you have any questions, please do not hesitate to contact me at zkuang@mdta.state.md.us.

Sincerely,

Kuang Zhihua

Zhihua Kuang, P.E.
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Maryland Transportation Authority
Office of Engineering and Construction - Environmental Discipline
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Enclosures:

FY25 MS4 Progress Report Fillable Form (Appendix D – State and Federal Small MS4 Progress Report)
FY25 Impervious Area Restoration Progress Report, with appendices
BMP Database and Restoration Activity Schedule data files

cc: Marley Nickle – MDTA Stormwater Compliance Lead

Maryland Transportation Authority

Phase II MS4 Annual Progress Report – FY 2025

Impervious Area Restoration Progress Report

October 30, 2025 submittal

National Pollutant Discharge Elimination System General Permit for Discharges from State and Federal Municipal Separate Storm Sewer Systems Permit Number 13-SF-5501

SUBMITTED TO:
Maryland Department of the Environment
Water and Science Administration
Program Review
1800 Washington Boulevard
Baltimore, Maryland 21230

SUBMITTED BY:
Maryland Transportation Authority
Office of Engineering and Construction
Environmental Division
300 Authority Drive
Baltimore, Maryland 21222

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Appendix C: Alternative Urban BMPs – Stream Restoration

Appendix D: Urban BMP Database
(Digital Submission in MS Excel Format)

Appendix E: Restoration Activity Schedule
(Digital Submission in MS Excel Format)

Phase II MS4 Annual Progress Report - FY 2025
Impervious Area Restoration Progress Report

October 2025

Maryland Department of the Environment (MDE)
Water and Science Administration (WSA)

National Pollutant Discharge Elimination System (NPDES)
General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4)

This annual reporting form is intended for those agencies covered under General Discharge Permit No. 13-SF-5501. Submitting this report constitutes notice that the entity identified below is making progress to comply with all terms and conditions of the General Permit.

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ACRONYMS AND ABBREVIATIONS

BHT	Baltimore Harbor Tunnel
BMP	Best Management Practice
ESD	Environmental Site Design
ETL	Express Toll Lanes
FMT	Fort McHenry Tunnel
FSK	Francis Scott Key Bridge
FY	Fiscal Year
GIS	Geographic Information System
HWN	Harry W. Nice Memorial Bridge
ICC	Intercounty Connector
JFK	John F. Kennedy Memorial Highway
MCM	Minimum Control Measure
MD	Maryland
MDE	Maryland Department of the Environment
MDTA	Maryland Transportation Authority
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System(s)
NPDES	National Pollutant Discharge Elimination System
TJH	Thomas J. Hatem Bridge
TMDL	Total Maximum Daily Load
WO	Work Order
WPL	William Preston Lane Jr. Memorial (Bay) Bridge

1 Introduction

The Maryland Transportation Authority (MDTA) has maintained coverage of its properties since September 8, 2005 under the *National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from State and Federal Small Municipal Separate Storm Sewer Systems (MS4)* issued by the Maryland Department of the Environment (MDE). The goal of the NPDES MS4 Phase II Permit is to control and improve the quality of stormwater discharged from state and federal properties covered under the General Permit by requiring permittees to comply with the six minimum control measures (MCM). The first-generation permit was administratively extended after its expiration date on November 12, 2009. The NPDES MS4 Phase II Permit was renewed and updated by MDE and became effective on October 31, 2018. This permit incorporates the Chesapeake Bay Total Maximum Daily Load (TMDL) requirements for nutrients and sediment issued by the United States Environmental Protection Agency (EPA). The permit requires treatment of twenty (20) percent of the untreated impervious area as of a permittee-established baseline year using MDE-approved best management practices (BMPs) with implementation by 2025. This report presents MDTA's analysis demonstrating compliance with the Impervious Area Restoration Goal.

Properties covered by MDTA's permit include 124 miles of MDTA toll roadways and their crossings, as well as their related campuses and maintenance facilities. The roadways covered under the permit are: I-95 of John F. Kennedy Memorial Highway (JFK), including the Millard E. Tydings Memorial Bridge; US 40 at the Thomas J. Hatem Memorial Bridge (TJH); I-95 and I-395 by the Fort McHenry Tunnel (FMT); I-895 at the Baltimore Harbor Tunnel (BHT) Throughway; I-695 at the Francis Scott Key Bridge (FSK); US 50/301 at the William Preston Lane Jr. Memorial (Bay) Bridge (WPL); US 301 at the Harry W. Nice Memorial Bridge (HWN); and the Intercounty Connector (ICC) / MD 200. Please see Appendix A for further detail on the individual properties included in the MDTA Municipal Separate Storm Sewer System (MS4).

2 Response to MDE's Comments on FY24 Report

The MDE Compliance Review of the MDTA FY24 MS4 Progress Report was received electronically on June 11, 2025. The Office of Engineering and Construction's Environmental Engineering Team reviewed the comments contained in the review and made appropriate changes to documentation and reporting as necessary for the FY25 Progress Report. Detailed responses to each comment are provided below:

Comment 1:

Reference: Section 1: Restoration Planning and Implementation

Acceptable progress was made on planning and implementation to comply with the General Permit. MDOT MDTA has met and exceeded the 20% restoration target, with 191 acres of excess restoration to be applied to the upcoming general permit through redevelopment projects, retrofit of BMPs, and alternative urban BMP projects. MDOT MDTA reported continuing to identify new restoration opportunities and pursuing new partnerships.

MDTA Response:

MDTA Acknowledges comment and would like to highlight changes in the calculation based on a review of Alternative BMP operations and crediting for Street Sweeping and Stream Restoration as well as the Restoration and Redevelopment designations in the Urban BMP Database. MDTA has met and exceeded the 20% restoration goal as of the end of FY 2025 and has planned activity to meet the 10% additional restoration goal anticipated in the next permit.

Comment 2:

Reference: Restoration Activity Schedule (RAS) – Stream Restoration

Please make the following updates in the next progress report submittal:

The Department notes that MDOT MDTA can use the equivalent impervious area factor (EIA_f) of 0.02 or 0.03 acres per linear foot of restoration for the stream restoration projects per the Department's memorandum on Stream Restoration Crediting Clarification for MS4 Permitting Purposes. This will award MDOT MDTA additional credits in the RAS for associated projects.

MDTA Response:

MDTA has taken the direction of MDE and revised the reporting of all Stream Restoration Projects in the Restoration Activity Schedule to reflect the planning credit per-square-foot values. In addition, a new Stream Restoration Project has been added to the RAS. Please see Appendix C for further information on individual stream restoration projects and credits.

Comment 3:

Reference: Restoration Activity Schedule

Please make the following updates in the next progress report submittal: Continue to populate and update all required fields as projects come to fruition.

MDTA Response:

MDTA has several BMPs that will become active for credit in the RAS over the next fiscal year(s), particularly following the JFK/I-95 ETL Northbound Expansion projects. MDTA is developing capacity in the GIS database to project these credits as the BMPs are near completion and as-built certification.

Comment 4:

Reference: BMP Database

Please make the following updates in the next progress report submittal:

The BMP database contains a total of 659 BMP records, but Appendix D reports a total of 667 BMPs combined; please reconcile.

MDTA Response:

The reported number of 667 listed in Appendix D was related to baseline assessment crediting and not updated to include changes to the BMP database/inventory based on work performed since the previous reporting year. This number has been corrected, and background assessment information has been moved to Appendix A.

Comment 5:

Reference: BMP Database:

Please make the following updates in the next progress report submittal:

There are 229 BMPs in the database with the last inspection date from FY2022. Please ensure that BMPs are inspected at a minimum once every three years.

MDTA Response:

All BMPs on the Restoration Activity Schedule with an FY25 inspection due date have been inspected.

Comment 6:

Reference: BMP Database:

Please make the following updates in the next progress report submittal:

The two stream restoration BMPs do not have any inspection dates recorded in the database. Please ensure that all stream restoration projects are inspected at least every 5 years to ensure stream channel stability/morphology and that plantings are growing well.

MDTA Response:

Following completion, all Stream Restoration Projects are re-evaluated at 1 and 3 years to ensure that the restoration is progressing as expected and Rapid Assessments are done annually thereafter to ensure that any remediation is done in a timely manner. Please see the database for documentation of the assessment dates and Appendix C for further detail on the projects added for this reporting year and completed assessment documentation for all projects. All Stream Restoration Projects in the Restoration Activity Schedule were completed less than 5 years ago. MDTA plans to comply with the 5-year inspection compliance interval for Stream Restoration Projects going forward.

Comment 7:

Reference: BMP Database:

Please make the following updates in the next progress report submittal:

BMP ID “MDTA19BMP0618”, “IMPP”, has no inspection date. Please ensure that all land cover conversion BMPs are inspected triennially to verify that the BMP is still performing as intended.

MDTA Response:

This impervious area removal acreage BMP was created based on changes in the impervious area found on the updated 2018 flyover imagery after the baseline was calculated, not a specific conversion project. We have removed this record from the database and Restoration Activity Schedule because it is not a designed conversion that can be inspected for performance. More recent Impervious Area reductions are incorporated elsewhere as part of Redevelopment BMPs. At this time, no specific land cover conversion BMPs are documented in the Restoration Activity Schedule, however, if stand-alone land cover conversion projects are included in the future, they will be inspected on the triennial BMP schedule.

Comment 8:

Reference: BMP Database:

Please make the following updates in the next progress report submittal:

Continue to inspect and maintain BMPs and provide updated information in the BMP database.

MDTA Response:

MDTA Acknowledges comment.

Comment 9:

Reference: Minimum Control Measures (MCM)

Acceptable progress was made in implementing stormwater management programs.

MDTA Response:

MDTA Acknowledges comment.

Comment 10:

Reference: Minimum Control Measures (MCM)

Be advised that MDOT MDTA is responsible for performing routine maintenance on all BMPs throughout the year. Maintenance actions should be consistent with the Department's Technical Memorandum #9- Maintenance Schedules.

https://mde.maryland.gov/programs/water/StormwaterManagementProgram/Documents/Technical%20Memorandum%20No.%209%20-%20Maintenance%20Schedules.pdf

MDTA Response:

MDTA Acknowledges comment.

3 MS4 Progress Report Requirements

Part VI of the Small MS4 General Discharge Permit (No. 13-SF-5501) specifies the reporting information that must be submitted to MDE to demonstrate compliance with permit conditions. The specific information required in the Annual MS4 Progress Report includes progress toward compliance with impervious area restoration requirements in accordance with Part V of the general permit.

All requested information and supporting documentation must be submitted as specified in Section I of the Progress Report, including:

- Permit Appendix D, Section I - State and Federal Small MS4 Progress Report (fillable .pdf form);
- Digital Submission of data files:
    - Urban BMP database in accordance with Appendix B, Tables B.1.a, b, and c;
    - Updated Restoration Activity Schedule;

- Narrative discussing progress made toward completing the database and performing routine maintenance and inspections;
- Additional supporting documentation, proactively and/or at the request of MDE.

4 Impervious Area Restoration Goal

As part of the implementation of the Phase II MS4 Permit, MDTA conducted a thorough Impervious Area Baseline Assessment of all MDTA-owned and maintained property. See **Appendix A** for detail on the impervious area included in the baseline assessment and the water quality treatment provided by existing BMPs at the time of the assessment. This area was used to develop Impervious Area Restoration Goals of 20% untreated impervious area by 2025 and an additional 10% (30% total) by 2030.

Table 1: Chesapeake Bay Restoration Goal

	Description		Impervious Area (acres)
A	Baseline Impervious Cover		2,329.70
B	Total impervious area treated by BMPs providing full water quality treatment	501.25	
C	Total impervious area treated by BMPs providing partial water quality treatment	30.53	
D = B + C	Treated impervious area		531.78
E = A – D	Existing untreated impervious area		1,797.92
F = 20%*E	**20% GOAL (in acres)**		**359.58**
G = (20%*E) + (10%*E)	**30% Planning Goal (in acres) treated by 2030**		**539.38**

BMPs = best management practices

5 Impervious Area Restoration Credits

The types of projects that MDTA is currently undertaking to meet its Chesapeake Bay Restoration requirements are described below:

5.A Redevelopment Projects

MDTA has implemented several redevelopment projects since January 1, 2006, and the impervious area treated by BMPs implemented for these projects can be applied toward MDTA's Chesapeake Bay Restoration goal. Based on review of as-built plans and stormwater management plans for redevelopment projects, redevelopment BMPs provide approximately 269.5 acres of treatment credits toward the Chesapeake Bay Restoration requirements. MDTA continues to update the BMP database as new as-built certifications are received. Several BMPs are expected to be included in the database as the JFK Highway/I-95 ETL Northbound Extension projects near completion.

5.B Stormwater Retrofit Projects

MDTA has developed a water quality strategy to provide a framework for identifying viable and cost-effective stormwater retrofits that address TMDL requirements along MDTA roadways and facilities. Since January 1, 2006, several retrofit projects were implemented along JFK, BHT, and FSK, including biofiltration practices and modified bioswales. These practices treat

17.9 acres of impervious area and can be counted toward the Chesapeake Bay Restoration requirements.

5.C Alternative Urban BMPs

The MDTA MS4 is a system consisting almost entirely of limited access, high-speed roadways, elevated highways, bridges and tunnels. The specific scope of the property use provides limited opportunity to repurpose impervious area, but also the opportunity to implement innovative drainage and treatment strategies as part of redevelopment and retrofit associated with highway construction projects. Due to these limitations and the time involved in project design and completion, alternative urban BMPs approved by MDE are important tools for achieving the impervious area treatment requirements on a year-to-year basis. Equivalent Impervious Area Credit for these strategies are included in the MDE guidance document *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated (August 2014)*. MDTA has adopted several alternative urban BMPs, including street sweeping and stream restoration to provide additional water quality improvement and stormwater treatment inside the MDTA right-of-way and the surrounding communities.

MDTA conducts street sweeping and inlet cleaning throughout its right-of-way for system function preservation, pollution prevention, and as a good housekeeping measure. Based on the Mass Loading method listed in the accounting guidance document, the sediment debris and pollutants collected from paved areas and diverted from the stormwater system can be converted directly to impervious area treatment credit toward the TMDL goals using the dry tonnage. According to MDE's comment on the FY2020 Progress Report, street sweeping operations that track the total mass of dry debris removed from the roadway can be credited at 0.4 acres per ton. Street sweeping operations have improved throughout the duration of the current permit, prompting a review of the credits claimed based on these changes. See **Appendix B** for details on the past and current street sweeping operations, debris collection, monitoring and impervious area calculation. Planned improvements in tracking based on potential changes in the Wasteload Allocations Accounting Guidance are also discussed.

MDTA has initiated and partnered with other MS4 municipalities and community organizations to restore streams to their proper function as drainage and habitat. See **Appendix C** for further information and updates on legacy stream restoration projects and new projects added to the Restoration Activity Schedule this fiscal year.

5.D Total Chesapeake Bay Impervious Area Restoration Credits

As noted above, MDTA must treat 359.58 acres of impervious area to meet the Chesapeake Bay Restoration requirements of the NPDES MS4 Phase II Permit prior to the end of FY 2025. Based on the analysis presented above, MDTA has exceeded the treatment requirements through credits obtained from redevelopment and BMP retrofit projects implemented since January 1, 2006, and alternative urban BMPs. **Table 2** is a summary of MDTA's compliance with the permit's Chesapeake Bay restoration requirements.

Table 2: Impervious Area Restoration Requirements Compliance Summary

	Description		Impervious Area (acres)
A	Anticipated credits needed by 2025 (20% goal)		359.58
B	Credits from redevelopment projects		269.52
C	Credits from Alternative Urban BMPs		312.53
	Credits from street sweeping	249.24	
	Credits from Stream Restoration	63.29	
D = A-(B+C)	**Credits Needed to Meet 2025 Restoration Goal**		**-222.47**

Credits applied based on *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated (August 2014)*

6 Impervious Area Work Plan

MDTA submitted and Impervious Area Work Plan detailing the treatment strategies, restoration and redevelopment work planned to meet the goal of 20% Impervious Area Restoration work to be completed before the end of FY25. This Work Plan is updated annually with the Progress Report Submission via the Restoration Activity Schedule, which tracks the restoration credit accrued towards the goal as each BMP becomes functional and treats equivalent impervious acres in the MS4 footprint.

6.A Restoration Activity Schedule

The NPDES MS4 Phase II Permit requires a Restoration Activity Schedule that includes BMPs implemented and planned to meet the Chesapeake Bay Restoration requirements. The Restoration Activity Schedule is provided as an excel spreadsheet and a copy in **Appendix E**. BMPs installed prior to 2002 were evaluated to determine their equivalent P_E treatment and impervious area treated, and those BMPs that could potentially be enhanced for improved water quality were identified during these evaluations. Improvements are planned in anticipation of the new permit revision to include water quality BMPs and projects that are completed, but credit has not been included until as-built certification is received and treatment capacity is verified.

6.B Ongoing Inspections and Maintenance

The structural BMPs and ESD practices within MDTA right-of-way are part of MDTA's stormwater asset management program. This includes inventory information such as design plans, stormwater management reports, and stormwater as-builts. In addition, the program tracks inspections and remedial actions. MDTA also tracks year of implementation, degree of water quality treatment, and the associated impervious area treatment provided for each practice.

MDE guidelines state that only BMPs that are functioning as designed earn treatment credit. MDTA has a robust inspection and remediation program that follows the MDTA *Stormwater Best Management Practices Field Inspection Manual (January 2017)* as the standard operating procedure.

Each feature of a BMP is inspected and scored, and an overall rating is assigned to the BMP:

- Ratings of A and B indicate that the BMP is functioning as designed.
- Ratings of C and D indicate that the BMP is operational but is a potential candidate for minor or major repair.
- A rating of E indicates that the BMP is not functional and may have significant problems.

BMPs that receive a grade other than A or B are assigned for remediation under either as a work order (WO) for MDTA maintenance crews, Maryland Environmental Services (MES), or MDTA on-call contractors. The inspection date and the rating are tracked to ensure that the WO is implemented within the 3-year inspection cycle. If a BMP were to remain in failing condition past the next reporting cycle, MDTA would remove the impervious area treatment credit of that BMP from the database until the BMP is brought into working order.

MDTA's roadway maintenance crews and contractors perform routine visual inspections and maintenance throughout the year, such as vegetation management, removal of debris and trash and functions necessary to maintain functional stormwater drainage based on MDE's Technical Memorandum 9 issued June 1, 2018.

Information regarding the active BMPs in accordance with NPDES Permit 13-SF-5501 Appendix B, Tables B.1.a, b, and c is attached in **Appendix D** – Phase II MS4 Excel BMP Database FY25.

7 Anticipated Restoration Activity Through 2030

MDTA has already met its 2025 Impervious Area Restoration requirement, although opportunities to further improve water quality continue to be identified. MDTA acknowledges additional restoration will likely be required as part of next MS4 permit. MDTA will coordinate with MDE during negotiations for the next permit to establish reasonable and achievable restoration goals. MDTA is already beginning to plan for added restoration.

Although not required by the previous NPDES MS4 Phase II General Permit and the Industrial Stormwater General permit, MDTA has progressively developed an approach to meet the Chesapeake Bay TMDL requirements since 2010. Prior to the inclusion of TMDL objectives, MDTA refined the stormwater program to account for a rapid expansion of stormwater

management due to the mega-projects of ICC and the I-95 Section 100 ETL, as well as other development projects. Since the issuance of the Chesapeake Bay TMDL, MDTA's stormwater program was enhanced to address Chesapeake Bay TMDL requirements.

Key activities MDTA intends to implement to meet the anticipated restoration goals and TMDL requirements include:

- Continuously evaluating water quality opportunities associated with roadway projects and retrofit opportunities, such as bioswales and biofiltration BMPs within grassed roadway medians and shoulders.
- Continued implementation and maintenance of annual practices including street sweeping, inlet cleaning and BMP inspections, developing and improving assessment protocols and tracking for accurate calculation of Impervious Area Restoration Credits.
- Considering innovative alternatives such as stream restoration, reforestation, outfall stabilization, and shoreline stabilization.
- Promoting partnerships with adjacent MS4 permit holders on cooperative TMDL projects.

8 Conclusion

MDTA has met the 2025 Chesapeake Bay Restoration goal and continues to be proactive by planning for future stormwater management needs and employing alternative BMPs. Ongoing stormwater program activities provide additional support for permit compliance. MDTA understands that the additional restoration goals and applicable Impervious Area Restoration Credit accounting guidance are not final until the permit is renewed.

In addition to conducting internal compliance activities and maintaining existing BMPs to ensure stormwater treatment is maintained, MDTA will continue to pursue new partnerships and expand existing partnerships with entities such as adjacent MS4 permit holders and other Transportation Business Units to improve implementation of TMDL methods and opportunities. Through coordination, MDTA will share information on latest technologies, grant opportunities, and educational/engagement tactics. By strengthening partnerships, MDTA can continue to enhance the water quality of the Chesapeake Bay while managing long-term costs and efforts.

NPDES General Permit for State and Federal Small MS4s – General Discharge Permit No.13-SF-5501 expired October 31, 2023. Per email guidance from MDE (dated 10/06/2025), the permit will be administratively extended and all permit conditions remain in effect. MDTA will continue to comply with permit conditions and will submit annual progress reports on October 31st of each year.

Appendix A: Background and Characteristics of MDTA MS4, Baseline Assessment and Impervious Area Restoration Goals

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Table 2: Impervious Area Restoration Goal 7

1 Introduction

The Maryland Transportation Authority (MDTA) has maintained coverage of its properties since September 8, 2005 under the *National Pollutant Discharge Elimination System (NPDES) Phase II General Permit for Discharges from State and Federal Small Municipal Separate Storm Sewer Systems (MS4)* issued by the Maryland Department of the Environment (MDE), current Permit Number 13-SF-5501 (2018). This Appendix documents the area and infrastructure features covered by the permit Notice of Intent (NOI), Impervious Area Baseline Assessment and Impervious Area Restoration Goal.

Properties covered by MDTA's permit include MDTA toll roadways and their crossings, as well as their related campuses and maintenance facilities. The roadways covered under the permit are: I-95 of John F. Kennedy Memorial Highway (JFK); US 40 at the Thomas J. Hatem Memorial Bridge (TJH); I-95 and I-395 by the Fort McHenry Tunnel (FMT); I-895 at the Baltimore Harbor Tunnel (BHT) Throughway; I-695 at the Francis Scott Key Bridge (FSK); US 50/301 at the William Preston Lane Jr. Memorial (Bay) Bridge (WPL); US 301 at the Harry W. Nice Memorial Bridge (HWN); and the Intercounty Connector (ICC) / MD 200.

Figure 1 shows the location of MDTA toll roadways and crossings, followed by brief descriptions of each.

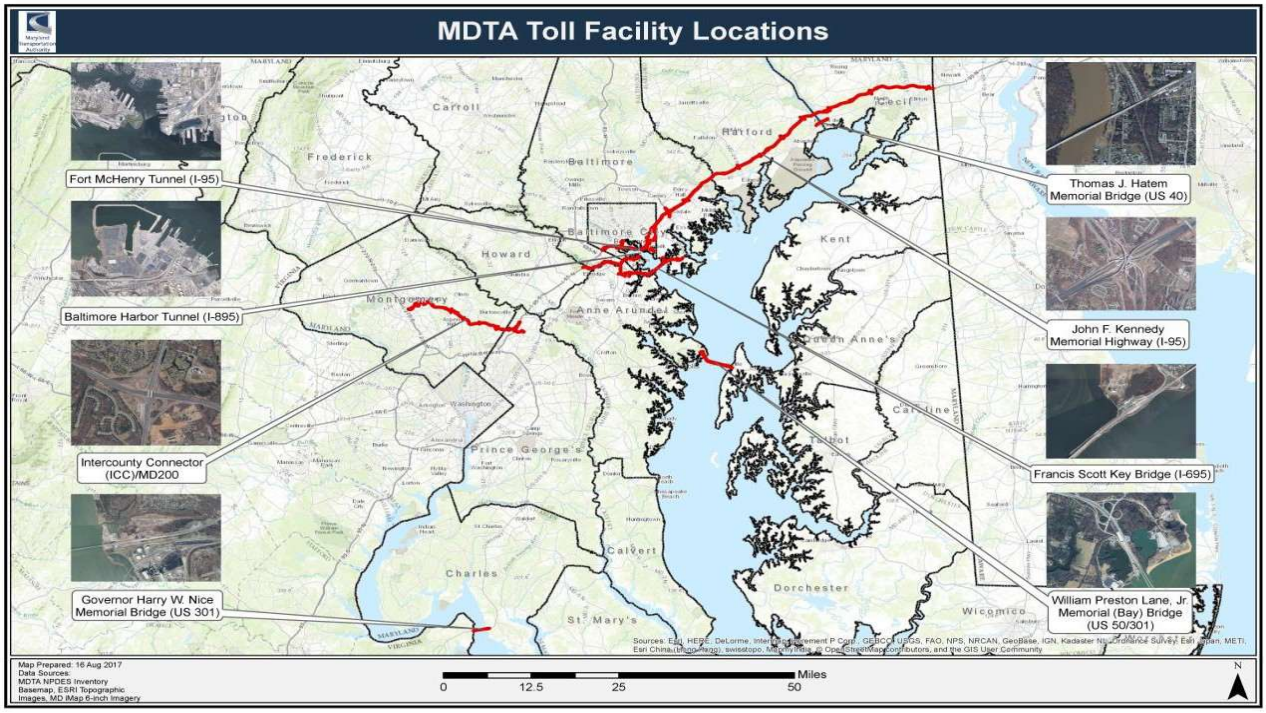


Figure 1: MDTA Toll Roadways

1.A I-95 John F. Kennedy (JFK) Memorial Highway

JFK Highway, which opened in 1963, is a 50-mile section of I-95 extending from the Baltimore city line to the Delaware state line. To the north of the MD 24 interchange, the roadway is six lanes wide with two travel plazas in the median. Tolls are collected at Millard E. Tydings Memorial Bridge electronically in the northbound direction only.

South of the MD 24 interchange, the roadway is eight lanes wide, except for a 9-mile section along the mainline of I-95 from the intersection with I-895 to north of the MD 43 interchange, where the Section 100 Express Toll Lanes (ETL) megaproject added extra lanes. This roadway section and the related I-695 interchange were widened to include the ETL. Tolls for the ETL lanes are collected automatically at highway speeds. There are additional ongoing roadway enhancement design projects. ETL lanes will be extended from north of MD 43 to north of MD 24 with some sections opening as early as 2023. ETL lanes are being constructed to meet current MDE stormwater regulations. New and/or retrofitted BMPs will be added to MDTA's urban BMP database. JFK Highway includes two maintenance facilities located in Bel Air, MD, and Elkton, MD as well as a Weight and Inspection Station with MD State Police and EZ-Pass Administration Buildings located on the same campus.

1.B US 40 at Thomas J. Hatem (TJH) Memorial Bridge

The TJH Bridge spans the Susquehanna River on US 40 and is approximately one mile long. This four-lane bridge, which opened in 1940, includes one mile of roadway approaching either side of the bridge and an electronic toll plaza in the eastbound direction. The bridge includes one maintenance facility, located in Perryville, MD.

1.C I-95 / I-395 at Fort McHenry Tunnel (FMT)

The FMT is a 1.5-mile section of I-95 below the Patapsco River, immediately south of JFK. Opened in 1985, it is an eight-lane roadway with more than 11 miles of roadway and elevated structures along I-95 and I-395 through Baltimore City. There is also an electronic toll plaza servicing both directions. The FMT includes one maintenance facility in Baltimore, MD.

1.D I-895 Baltimore Harbor Tunnel (BHT) Throughway

BHT is a 1.4-mile section of I-895 below the Patapsco River, opened in 1957. The BHT Throughway is a four-lane-wide roadway with more than 20 miles of roadway and elevated structures, and an electronic toll plaza in both directions. The BHT has one maintenance facility in Baltimore, MD.

1.E I-695 at Francis Scott Key (FSK) Bridge

The original FSK Bridge opened in March 1977 and spanned the Patapsco River. Unfortunately, the bridge was struck by a large container ship in March 2024 and collapsed. The State of Maryland, the MDTA, and many other stakeholders are currently exploring options to rebuild the bridge. There is an electronic toll plaza servicing both directions. The FSK Bridge includes one maintenance facility in Baltimore, MD.

1.F US-50 / US-301 at William Preston Lane Jr. (WPL) Memorial Bridge

The WPL Bridge, also known as the Bay Bridge, is a 4.3-mile section of US 50 that spans the Chesapeake Bay. The eastbound bridge opened in 1952 and is two lanes wide; the westbound bridge opened in 1973 and is three lanes wide. The facility includes more than 1 mile of roadway approaching either side of the bridge. The WPL includes one maintenance facility in Annapolis, MD.

1.G US-301 at Governor Harry W. Nice (HWN) Memorial Bridge

The HWN Memorial Bridge is a 1.7-mile section of US 301 that spans the Potomac River. Opened in 1940, HWN is a two-lane-wide roadway with 2.4 miles of four-lane roadway approaching either side of the bridge, and an electronic toll plaza in the southbound direction. HWN includes one maintenance facility in Newburg, MD.

A new four-lane bridge opened in early 2023, with some of the roadway area still under construction. All construction meets current MDE stormwater management regulations. As BMPs constructed and as-built acceptance letters are received, they are added to the urban BMP database for tracking.

1.H MD 200 Intercounty Connector (ICC)

The ICC is an 18.8-mile, east-west highway that links the corridors of I-270 and I-95 / US 1. The six-lane-wide roadway opened in 2011 and was completed in 2015. This state-of-the-art, multimodal highway has an unprecedented integration of stormwater management and environmental restoration projects (e.g., stream restoration, fish passages, wetlands). Tolls for the ICC are collected electronically. The ICC includes two maintenance facilities in Laurel, MD, and Derwood, MD.

1.I Campuses and Maintenance Facilities

The NPDES MS4 Phase II Permit covers campuses affiliated with MDTA operations and the E-ZPass customer service centers. The operations campuses include office buildings for administration, finance, human resources, and engineering-related operations along with the associated parking lots. The MDTA operations campuses are located at FSK and Point Breeze in Baltimore. The E-ZPass customer centers are located adjacent to the BHT, TJH, JFK, WPL, FMT, and HWN roadways.

There are 11 maintenance facilities, which are located along the MDTA roadways where maintenance activities occur (e.g., garages, storage bins, salt barns, vehicle maintenance). These maintenance facilities are regulated under the General Permit for Stormwater Associated with Industrial Activities (Permit 20-SW-A). The impervious areas at the maintenance facilities and campuses are included as a part of the MS4 impervious area estimates for compliance with the Chesapeake Bay Restoration requirements.

2 Baseline Impervious Area Assessment

As required by the NPDES MS4 Phase II Permit, MDTA performed a baseline impervious Area Assessment identifying:

- Total impervious area covered under the MS4 Phase II Permit
- Total impervious area treated by existing stormwater quality BMPs
- Total impervious area treated by existing BMPs providing partial water quality treatment
- Total impervious area treated by nonstructural practices (e.g., rooftop disconnections, non-rooftop disconnections)
- Verification that any impervious area draining to BMPs with missing inspection records is not considered treated
- Calculation of the required 20 percent treatment goal

This analysis was conducted considering the combined requirements of all MDTA facilities as they are covered under the same NPDES permit per the Notice of Intent filed by MDTA in October 2018.

To meet the Chesapeake Bay Restoration requirements, the baseline year recommended for the impervious area assessment is 2002, the year the MDE *Stormwater Management Design Manual* was fully implemented. BMPs implemented after 2002 are typically designed according to the current MDE regulations.

In the FY2020 Annual Report, to respond to MDE's comments, MDTA adjusted the baseline impervious area using 2018 aerial imagery and land use data for all MDTA facilities, including the Inter-County Connector. Based on this data, MDTA's (roadways, campuses, and maintenance facilities) impervious area is estimated to be **2,329.70 acres**.

2.A Existing Stormwater Management

As a part of the impervious baseline assessment, stormwater management provided by BMPs implemented prior to the baseline year was determined.

BMP data includes the year of implementation, water quality treatment volume, and associated impervious area treatment provided. The treated impervious area credits assigned to each BMP depend on the type of BMP and the extent of water quality treatment provided. The year of construction was also used as a reference to evaluate the water quality treatment that should be provided by the BMP. For example, MDE required water quality BMPs built between 1985 and 2002 to treat the stormwater runoff from 0.5 inch of rainfall, which is half the current stormwater management standard of 1 inch.

Certain BMP types implemented prior to 2002, such as dry pond and dry extended detention structures, provide no water quality treatment per MDE guidelines. Some of these were planned

for enhancement to current standards. BMPs constructed after 2002 follow current MDE stormwater management guidelines and provide water quality treatment to the maximum extent practicable.

Per the guidelines in the General Permit, impervious area treated by BMPs implemented for retrofit or redevelopment between January 1, 2002 and December 31, 2005 may be subtracted from the baseline number. The impervious area treated by BMPs enhanced or implemented for redevelopment projects after January 1, 2006 can be counted toward Chesapeake Bay Restoration goals. Therefore, MDTA used the documented BMP type combined with the year of implementation and the construction purpose to determine if the impervious area treatment credits should be included in the baseline assessment or toward meeting the Chesapeake Bay Restoration treatment goals.

Disconnections of rooftop and non-rooftop runoff were not evaluated for MDTA facilities, and therefore are not included in the baseline assessment calculations.

BMP records also indicate if the BMP was originally built to meet MDE's stormwater management requirements for new development/redevelopment or if the BMP was enhanced to provide additional water quality treatment.

Structural BMPs and ESD practices constructed prior to Jan. 2006 and constructed for new development impervious area between 2006 and 2018 are included in the baseline with a total treatment of 531.78 acres of impervious area. This includes treatment credits from BMPs providing full and partial water quality volume treatment. **Table 1** is a summary of the drainage area and equivalent impervious area treated by structural BMPs and ESD practices included in the baseline assessment.

Table 1: BMPs at MDTA Properties Included in the Baseline

Property	Structural or ESD	Drainage Area (acres)	Equivalent Treated Impervious Area (acres)
I-95 John F. Kennedy Memorial Highway (JFK)	Structural Practices	224.35	43.58
	ESD	-	-
US40 Thomas J. Hatem Memorial Bridge	Structural Practices	0.15	0.04
	ESD	-	-
i-95 Fort McHenry Tunnel	Structural Practices	-	-
	ESD	-	-
I-895 Baltimore Harbor Tunnel	Structural Practices	-	-
	ESD	-	-
I-695 Francis Scott Key Bridge	Structural Practices	23.82	4.58
	ESD	0.86	0.68
US50 William Preston Lane Jr. Memorial Bridge	Structural Practices	7.21	2.86
	ESD	1.02	0.57

Table 1: BMPs at MDTA Properties Included in the Baseline, cont.

Property	Structural or ESD	Drainage Area (acres)	Equivalent Treated Impervious Area (acres)
US8301 Harry W. Nice Memorial Bridge	Structural Practices	-	-
	ESD	-	-
Point Breeze Campus	Structural Practices	0.70	0.47
	ESD	-	-
I-95 JFK Express Toll Lanes (ETL)	Structural Practices	391.40	175.50
	ESD	-	-
MD200 - Intercounty Connector	Structural Practices	977.70	303.50
	ESD	-	-
	Total	**1,627.20**	**531.78**

3 Impervious Area Restoration Goal

As described in Section 2, the baseline impervious cover at all MDTA facilities is 2,329.70 acres. Approximately 531.78 acres of baseline impervious area are treated by BMPs providing full and partial water quality treatment, as shown in **Table 1** above. **Table 2** below shows the impervious restoration target, calculated as 20% of the untreated baseline impervious area to be restored by the end of FY 2025.

The total Equivalent Impervious Acres to be restored by 2025 is 359.58 acres.

Table 2: Chesapeake Bay Restoration Goal

Description			Impervious Area (acres)
A	Baseline Impervious Cover (based on 2018 imagery)		**2,329.70**
B	Total impervious area treated by BMPs providing full water quality treatment	501.25	
C	Total impervious area treated by BMPs providing partial water quality treatment	30.53	
D = B + C	Treated impervious area		531.78
F = A – D	Existing untreated impervious area		**1797.92**
G = 20%*F	**20% GOAL (acres)**		**359.58**

BMPs = best management practices

APPENDIX B: ALTERNATIVE URBAN BMPs - STREET SWEEPING

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1 Introduction

MDTA property covered by the Phase II MS4 Permit consists almost entirely of high-speed limited-access highways, bridges, tunnels and the buffer areas around them, referred to as the "right-of-way". These roadways total 124 non-contiguous miles in 7 Maryland counties and Baltimore City. The environment surrounding the right-of way includes rural and suburban areas. Elevated highways provide express travel over heavy urban areas and bridges provide travel directly over the Chesapeake Bay and major tributaries. Due to the specialized purpose of these tollways for passenger and freight vehicular traffic, impervious area reduction and conversion opportunities are limited. As a result, alternative BMPs such as street sweeping become vitally important to meet Impervious Area Restoration and Chesapeake Bay TMDL goals.

2 Street Sweeping Operations and Restoration Credit Calculation

MDTA conducts street sweeping and inlet cleaning throughout its right-of-way for stormwater system preservation and maintenance. Many of the highway segments, particularly those with heavily populated areas in closer proximity to the right-of-way or those with narrow or no median, are bound by concrete Jersey barriers that direct stormwater flow directly to inlets at the surface or scuppers on elevated roads and bridges. Street sweeping directly removes debris from the roadway and prevents it from entering the storm system.

2.A Current Operations and Data Collection

Roads are swept with advanced vacuum street sweeping vehicles such as the International 4300 Schwarze A7 Tornado with an 8.4 CU YD hopper for debris. The sweeping is water-assisted to reduce dust and contain the debris for vacuuming. Once the hopper is full, it is emptied at one of 4 covered dewatering bays located at the following facilities:

- JFK Memorial Highway Maintenance Facility 1 (JFK1)
- Fort McHenry Tunner (FMT) Maintenance Facility
- Inter-County Connector (ICC) East Maintenance Facility
- Governor Harry W. Nice Bridge (HWN) Maintenance Facility

Each dewatering bay drains to an oil-water separator and the sanitary sewer where available or in the case of JFK 1, to a holding tank for pumping. The dry mass of roadway sediment is loaded into MDTA dump trucks licensed for waste and taken to the Quarantine Road or Baltimore County Eastern Sanitary Landfill. Receipt tickets are provided by the landfill to document the date, time and net weight in tons of the material received. It is important to note that the actual weight of debris per segment of the highway cannot be separated because the debris is delivered to the maintenance facilities for dewatering based on the closest facility at the time the truck hopper is full to return to the highway and resume sweeping efficiently.

Frequency and section of the highway is tracked using the MDTA maintenance work order system, MAXIMO, which is used to assign maintenance staff and track their time on maintenance activities. There is a code specific to street sweeping and the mile markers are included with the work order. It is the responsibility of the Chief Facility Maintenance Officer and Supervisors to ensure that the work orders area addressed with adequate resources. Reporting from the MAXIMO system displays the dates and times that each work order was accessed to track the number of sweeping events taking place on the road segment.

2.B Impervious Area Restoration Credit Calculations – Mass Loading

NPDES General Permit for Discharges from State and Federal Municipal Separate Storm Sewer Systems Permit Number 13-SF-5501 references *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated (August 2014)* for calculating Equivalent Impervious Acres based on the implementation of Alternative Urban Stormwater BMPs.

Appendix E – Alternative BMPs and Pollutant Load Reductions of the guidance document listed above describes the value of advanced technology street sweeping in removing sediment and pollutants from paved areas and the conditions under which it is a most effective:

> *"The pollutant load reductions only apply to an enhanced street sweeping program where the streets are located in commercial, industrial, central business district, or high-density residential neighborhoods that are swept on a regular basis, e.g., twice per month."*
>
> *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated (August 2014), Appendix E 1., page 46*

The MDTA right-of-way does not include any surface streets in a land use area considered "heavy urban". Stopping and/or parking along the right-of-way is only allowed in emergency situations, pedestrian traffic is strictly prohibited and there are fines for littering. Given the use of the streets for high-speed thruway traffic with no commercial activity apart from freight transit and minimal industrial use related to the maintenance of the highway and emergency vehicles, the frequency to be considered maintained on a "regular basis" may vary based on traffic and seasonal variations in debris.

Given the proximity of construction projects, the prevalence of Jersey barriers, the elevation of highways over urban areas, and bridges that directly drain to the Chesapeake Bay and its tributaries, street sweeping provides direct removal of pollutants destined for waters of the state or impacting neighboring areas. For instance, the (William Preston Lane, Jr.) Bay Bridge is a 7-mile segment with extreme variations of traffic load based on the season and day of the week, however, all material removed from bridge represents pollution that is prevented from entering the Chesapeake Bay directly.

Maintenance facilities along the right-of-way are not exclusive to particular mile-marker ranges on larger segments such as the ICC and JFK. Debris is collected and combined centrally on the major segments and cannot be attributed to any specific facility as a result. Street sweeping operations and waste management have improved throughout the duration of the current permit, prompting a review of the credits claimed based on these changes.

Table 7 in Section IV of the *Accounting Guidance* provides a conversion factor of 0.4 acres per ton to calculate Equivalent Impervious Acres using the dry mass of debris removed from roads via advanced Regen/Vacuum Street Sweeping. This conversion factor was verified in MDE's review comments to the FY2020 Impervious Area Restoration Progress Report Submitted by MDTA. See Section 3.B below for more detail.

3 Annual Implementation and Reporting History

Since the initial permit implementation year, MDTA has sought opportunities to improve the efficiency and accuracy of gathering, transporting and tracking street sweeping debris mass to calculate equivalent impervious area credits and reduce the cost of operations and dependence on outside resources to ensure the sustainability of these efforts.

Following is a summary of the operations in place for each fiscal year, the mass of debris removed from the roads and calculation of equivalent impervious area restoration credits earned. If an adjustment was made to the total reported in the annual report for that fiscal year following review, that previous number and the reason for the adjustment is given. Section 4, Table 8 gives a summary of all available data included in the calculation of sediment and debris, converted to equivalent impervious area and reported as the permit term (7 year) average of credits for the street sweeping alternative BMP in the Restoration Activity Schedule.

3.A FY2019

Operations: Street sweeping debris is collected in lined waste containers located in central areas combining the debris from multiple nearby segments. The debris is sampled to ensure it is acceptable for landfill disposal by CycleChem prior to transport to the Lewisberry, PA landfill. Weight is reported on BOL when loaded onto transport vehicle. This amount is used in the Mass Loading calculation after a reduction of 30% to account for water content in the debris as instructed in the *2014 Accounting Guidance*.

Reported: 254.3 Equivalent Impervious Acres

Updated: This number was updated to 274.4 acres for inclusion in the permit term average for the FY2025 Annual Progress Report to include the additional 39.83 tons of debris removed from the roadway by the FSK and Bay Bridge Facilities.

The FY2020 Minimum Control Measures Report acknowledges the total weight of 979.96 tons removed from the roadway in FY2019 in the Pollution Prevention and Good Housekeeping section.

Table 1: Equivalent Impervious Area (acres) Calculation – FY2019

Facility	Weight of Material Collected Wet Mass (tons)	Dry Mass (calculated) = Wet Mass * 0.7	Equivalent Impervious Area Credits (acres) = Dry Mass * 0.4
JFK1/JK2/TJH	303.5	212.5	84.9
BHT/FMT/FSK	530.7	371.5	148.6
ICC	125.9	88.2	35.3
WPL (Bay Bridge)	19.8	13.9	5.6
TOTAL	**979.9**	**686.1**	**274.4**

3.B FY2020

Operations: Street sweeping debris is collected in lined waste containers located in central areas combining the debris from multiple nearby segments. The debris is sampled to ensure it is acceptable for landfill disposal by CycleChem prior to transport to the Lewisberry, PA landfill. Weight is reported on BOL when loaded onto transport vehicle. This amount is used in the Mass Loading calculation after a reduction of 30% to account for water content in the debris as instructed in the *2014 Accounting Guidance*.

Reported: 199.1 (this is the 2-year average of the numbers reported in running average of FY2019, indicating 143.8 Equivalent Impervious Acres for FY2020)

Updated: This year's number was corrected to 252.6 acres in the FY2025 Annual Progress Report to include the total amount of debris removed.

The FY2020 Minimum Control Measures Report acknowledges the total weight of 902.15 tons removed from the roadway in FY2020 in the Pollution Prevention and Good Housekeeping section.

MDE provided the following comment in response to the FY2020 Report:

> *"MdTA reported 199.1 acres of credit for street sweeping that collected 718 tons of debris. The impervious acre equivalent for this practice is 0.4. Based on this information the credit for this practice should be 287 acres."*

The MDTA response to this comment was as follows:

> *"Only 70% of the total mass collected (the dry mass) was multiplied by the 0.4 impervious acre equivalent. It is important to note that a reporting error was made in 2019 for JFK I mass collected. The mass reported should have been 288.6 tons, as a portion of the 303.5 tons reported was collected at JFK II, which was not a credit-eligible facility due to insufficient sweeping frequency. The average mass collected for the reporting period of FY2019-2020 should have been 710.8 tons, which would translate to a credit of 199.1 considering only the dry mass. The report has been updated to reflect street sweeping conducted in FY 2021 and a three-year average for all reporting years."*

While there is acknowledgement of the error of reporting the total mass instead of the dry mass

for debris removed, the instruction from MDE clearly states that the calculation for the Equivalent Impervious Area Restoration Credit is the mass multiplied by 0.4 because the mass represents actual sediment prevented from entering stormwater. Though debris was collected in a central location combining multiple facilities, the amount excluded was based on the percentage of the total miles in each segment for the frequency of 2+ sweepings per month could not be verified. This approximation does not consider the condition of the roads or where the equipment is stored relative to the miles noted on the work order. Less frequent sweeping would result in less debris in any case. Weight tickets from the receiving landfill are the most accurate data points to calculate the amount of sediment that is discharged from the roadway under storm conditions.

Table 2: Equivalent Impervious Area (acres) Calculation – FY2020

Facility	Weight of Material Collected Wet Mass (tons)	Dry Mass (calculated) = Wet Mass * 0.7	Equivalent Impervious Area Credits (acres) = Dry Mass * 0.4
JFK1/JK2/TJH	305.3	213.7	85.5
BHT/FMT/FSK	403.2	282.3	112.9
ICC	188.3	131.8	52.7
WPL (Bay Bridge)	5.4	3.7	1.5
TOTAL	**902.1**	**631.5**	**252.6**

3.C FY2021

Operations: Covered dewatering bays were added to the FMT, ICC and JFK1 maintenance facilities ad planned for the Nice Bridge facility following construction of the new bridge. The drain from the bays is piped to an oil-water separator before emptying to the sanitary sewer where available or a holding tank to be pumped for treatment. This allows for greater holding capacity, reduces the cost of renting containers and allows the mass from landfill weight tickets to be used directly for credit calculation instead of applying an estimate of the dry mass.

Reported: 187.5 (Average of amounts reported in FY2019-2021, or 164.3 acres FY2021)

Updated: This year's credit was corrected to 191.1 acres based on debris weights that included the BHT, FSK and Bay Bridge sweeping weights.

Table 3: Equivalent Impervious Area (acres) Calculation – FY2021

Facility	Weight of Material Collected Dry Mass (tons)	Equivalent Impervious Area Credits (acres) = Dry Mass * 0.4
JFK1/JK2/TJH	53.4	21.4
BHT/FMT/FSK	278.0	111.2
ICC	140.5	56.2
WPL (Bay Bridge)	5.8	2.3
TOTAL	**477.7**	**191.1**

3.D FY2022

Operations: Street sweeping debris is emptied from vacuum trucks into covered dewatering bays centrally located to near the right-of-way to drain into tanks or the sanitary sewer after passing through an oil-water separator. Dry tonnage is weighed at the landfill excluding the tare weight of the hauling vehicle.

Reported: 186 (FY2019-FY2022 Average), 181.5 acres FY2022 Only

Updated: This year's credit was corrected to 211.9 acres based on debris weights that included the BHT, FSK and Bay Bridge sweeping weights.

Table 4: Equivalent Impervious Area (acres) Calculation – FY2022

Facility	Weight of Material Collected Dry Mass (tons)	Equivalent Impervious Area Credits (acres) = Dry Mass * 0.4
JFK1/JK2/TJH	148.9	59.6
BHT/FMT/FSK	284.5	113.8
ICC	82.7	33.1
WPL (Bay Bridge)	13.6	5.4
TOTAL	**529.7**	**211.9**

3.E FY2023

Operations: Street sweeping debris is emptied from vacuum trucks into covered dewatering bays centrally located to near the right-of-way to drain into tanks or the sanitary sewer after passing through an oil-water separator. Dry tonnage is weighed at the landfill excluding the tare weight of the hauling vehicle.

Reported: 190.9 (Average FY2019-2023), 210.7 acres FY 2023 only

Updated: This value is corrected to 301 equivalent impervious acres for FY2023 and included in the calculated average for the permit term, found in Section 4, Table 8. There is no reason given why a conversion factor of 0.28 was used for the credits instead of the 0.4 given in the *2014 Accounting Guidance* and reinforced by MDE in the FY2020 comments.

Table 5: Equivalent Impervious Area (acres) Calculation – FY2023

Facility	Weight of Material Collected Dry Mass (tons)	Equivalent Impervious Area Credits (acres) = Dry Mass * 0.4
JFK1/JK2/TJH	156.9	62.8
BHT/FMT/FSK	414.6	165.8
ICC	181.0	72.4
TOTAL	**752.5**	**301**

3.F FY2024

Operations: Street sweeping debris is emptied from vacuum trucks into covered dewatering bays centrally located to near the right-of-way to drain into tanks or the sanitary sewer after passing through an oil-water separator. Dry tonnage is weighed at the landfill excluding the tare weight of the hauling vehicle.

Capacity for dewatering is limited by the scheduling and availability of licensed waste hauling contractors to remove the dry debris and transport to the landfill, making room for covered storage of additional debris.

Reported: 109.8 equivalent impervious acres for FY2024. This value is 0.28 multiplied by the total dry tonnage reported for JFK, FMT and ICC. The value of 10.6 acres reported for BHT is 1.3 times the amount of dry debris. There's no reason given for the difference in the conversion factors. This number was reported as a separate line on the RAS instead of a part of the permit-term average over 6 years, resulting in application of excess credits.

Updated: This value was changed to 191.5 acres for FY2024 and included in the permit-term average for equivalent impervious acre credit. Facilities, in particular the Bay Bridge with less frequent removal of debris were included in the total tonnage.

Table 6: Equivalent Impervious Area (acres) Calculation – FY2024

Facility	Weight of Material Collected Dry Mass (tons)	Equivalent Impervious Area Credits (acres) = Dry Mass * 0.4
JFK1/JK2/TJH	96.9	38.8
BHT/FMT/FSK	281.8	112.7
ICC	85.3	34.1
WPL (Bay Bridge)	14.7	5.9
TOTAL	**478.7**	**191.5**

3.G FY2025

Operations: Dewatering of street sweeping debris continues as in FY2021-2024. An opportunity for improvement was identified in FY2024 by the Operations Environmental Manager to increase through-put capacity of dewatering and reduce cost by licensing MDTA dump trucks to haul dry debris to nearby Quarantine Road and Eastern Baltimore County Sanitary Landfills. The time saved by removing the dry material as soon as it was appropriate for transport to the landfill instead of scheduling pick-up by the waste contractor allowed more street sweeping debris to be removed and more sweeping events to occur.

The amount of dry debris removed from the roads and consolidated at the dewatering facilities for FY2025 is listed in Table 7 below.

Table 7: Equivalent Impervious Area (acres) Calculation – FY2025

Facility	Weight of Material Collected Dry Mass (tons)	Equivalent Impervious Area Credits (acres) = Dry Mass * 0.4
JFK1/JK2/TJH	109.1	43.6
BHT/FMT/FSK	504.9	202.0
ICC	180.2	72.1
WPL (Bay Bridge)	11.4	4.5
TOTAL	**805.6**	**322.2**

These values are included in the Table 8: IAR Credit for Street Sweeping for Fiscal Years 2019 through 2025 in Section 4 below.

4 Summary of Restoration Credits

Table 8 below displays a summary of street sweeping debris weights and the resulting Impervious Area Credits displayed on the Restoration Activity Schedule in the FY25 Annual Progress Report.

Table 8: IAR Credit for Street Sweeping for Fiscal Years 2019 through 2025

Facility	Schedule	Weight of Material Collected (tons)	Equivalent Impervious Area Credits (acres)
FY 2019			
JFK1/JK2/TJH	2X/Month	303.5	274.4
BHT/FMT/FSK	2-4X/Month	530.7	
ICC	Every Day	125.9	
WPL	Varies by Season	19.8	
	FY 2019 Total	**979.9 (wet mass)**	
FY 2020			
JFK1/JK2/TJH	2X/Month	305.3	252.6
BHT/FMT/FSK	2-4X/Month	403.2	
ICC	2-4X/Month	188.3	
WPL	Varies by Season	5.4	
	FY 2020 Total	**902.1 (wet mass)**	
FY 2021			
JFK1/JK2/TJH	3-4X/Month	53.4	191.1
BHT/FMT/FSK	3X/Month	278.0	
ICC	3X/Month	140.5	
WPL	Varies by Season	5.8	
	FY 2021 Total	**477.7 (dry mass)**	

Table 8: IAR Credit for Street Sweeping for Fiscal Years 2019 through 2025, cont.

FY 2022			
JFK1/JK2/TJH	3-4X/Month	148.9	211.9
BHT/FMT/FSK	3X/Month	284.5	
ICC	3X/Month	82.7	
WPL	Varies by Season	13.6	
	FY 2022 Total	**529.7 (dry mass)**	
FY 2023			
JFK1/JK2/TJH	3-4X/Month	156.9	301.0
BHT/FMT/FSK	3X/Month	414.6	
ICC	3X/Month	181.0	
	FY 2023 Total	**752.5 (dry mass)**	
FY 2024			
JFK1/JK2/TJH	3-4X/Month	96.9	191.5
BHT/FMT/FSK	3X/Month	281.8	
ICC	3X/Month	85.3	
WPL	Varies by Season	14.73	
Total		**478.7 (dry mass)**	
FY 2025			
JFK1/JK2/TJH	3-4X/Month	109.1	322.2
BHT/FMT/FSK	3X/Month	505.0	
ICC	3X/Month	180.2	
WPL	Varies by Season	11.4	
Total		**805.7 (dry mass)**	
Average for Reporting Period (FY2019-FY2025)			**249.2**

5 Alternative Calculation – Lane Miles Swept

Preliminary information regarding the next revision of the MS4 Phase II General Permit indicates that Impervious Area Restoration Credits will be calculated using the *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated* (November 2021) version, which does not include the Mass Loading calculation method. MDTA is developing a plan to calculate the equivalent impervious area credit for street sweeping based on that document in anticipation of the new guidance.

While MDTA sweepers and vac trucks do not have GPS tracking installed, there is a requirement to document odometer readings on a trip log for compliance with state resource and property use requirements. Street sweeping activities are tracked using the Maintenance Work Order System (MAXIMO) which allows maintenance technicians to apply their working hours to the work order multiple times while it remains open. Matching the work order details to the equipment use log and subtracting the distance to/from the facility to the mile marker specified will give a result in lane miles swept and insight into the number of times the segment

of highway is swept every month to determine the conversion factor for lane miles swept to equivalent impervious acreage.

6 Conclusion

MDTA has started gathering data and comparing calculations based on the 2014 and 2021 revisions of *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated* to prepare for issuance of the new MS4 Phase II General Permit. MDTA remains committed to compliance with the permit and all applicable regulations and will adjust operations to remain compliance and to maintain treatment standards met by previous reporting guidelines and continue to report annual impervious area restoration progress as instructed by MDE.

APPENDIX C: ALTERNATIVE URBAN BMPs - STREAM RESTORATION

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Links to download attachments:
Charles County as-built post-construction assessment report – 09/05/2023
Cecil County Public Schools – 1-year Assessment – 06/30/2024
Carsin's Run 3-year Monitoring Report 12/08/2023

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Table 1: Equivalent Impervious Area Credit for Stream Restoration 3

1 Introduction

The Maryland Transportation Authority (MDTA) continually identifies opportunities in neighboring communities and partnerships with local organizations and municipalities to improve water quality as alternative BMPs to those feasible within the highway system right-of-way. Stream Restoration is an important element of this strategy designed to return degraded or altered streams to a more natural and stable condition. The benefits of stream restoration are tangible and if properly monitored and managed, provide long-lasting benefits to the environment including diverse plant and animal habitats, improved water transport and drainage, and riparian buffers that provide greater stabilization of streambanks and filtration of sediment.

2 Current Stream Restoration Projects and IAR Credits

Below are the current Stream Restoration Projects that MDTA is utilizing to provide alternative impervious area restoration treatment. See Table 1 below for details on the Impervious Area Restoration credits applied to the Restoration Activity Schedule.

2.A Charles County

Located in Charles County, 8 miles from MDTA's Governor Harry W. Nice/Thomas "Mac" Middleton Memorial Bridge, this restoration project stabilized 3,007 linear feet of stream on a tributary to Gilbert Swamp Run. Added benefits of the restoration include connection with a nearby wetland restoration project to support existing and future agricultural activity, reduced flooding to improve the safety of local roads and improved habitat by transforming the previously straightened ditch to a vegetated ecologically functioning landscape. A portion of the restoration, 1,069 linear feet, was needed for stormwater management related to the Nice Bridge replacement project. The remaining 1,938 linear feet were utilized for MS4 permit impervious area restoration credit.

2.B Cecil County

Completed in October 2023, Cecil County DPW restored a 2500 linear ft section of an unnamed tributary of North East Creek on property owned by the Cecil County Board of Education. The work assisted Cecil County in meeting their Phase II permit requirements by treating impervious area and eliminating existing stream bank erosion. Approximately 5% of the total length of the project (117.62 linear feet) is located on the MDTA right-of-way, allowing MDTA to utilize this portion for impervious area restoration credits.

2.C Carsins Run

The Carsins Run Stream Mitigation Site was developed by the Maryland Transportation Authority (MDTA) to provide compensatory mitigation for unavoidable impacts to state and federally regulated aquatic resources resulting from Phase II of the I-95 Express Toll Lanes Northbound Extension Section 200 Project. However, this use is no longer necessary and 700 LF of an unnamed tributary flowing into Carsins Run was converted to TMDL crediting.

2.D Impervious Area Restoration Credits

In a memorandum dated April 30, 2019, addressed to the Maryland MS4 Community and titled *Stream Restoration Crediting Clarification for MS4 Permitting Purposes*, MDE provided guidance on the use of planning credits based on the physiographic region of the project location. The guidance allows the planning rates of 0.02 equivalent impervious acres per linear foot for Coastal Plain regions and 0.03 acres per linear foot in all other regions.

MDTA re-evaluated 2 existing projects based on this guidance and applied the revised credit values to a new project added to the Restoration Activity Schedule.

Table 1 Impervious Area Restoration Credits for Stream Restoration Projects

PROJECT	YEAR	LINEAR FEET	PHYSIOGRAPHIC REGION	EQUIVALENT IMPERVIOUS AREA (acres)
MDTA19BMP0688 (Cecil County)	2023	117.62 LF	PIEDMONT	3.53
MDTA19BMP0690 (Charles County)	2023	1,938 LF	COASTAL PLAIN	38.76
MDTA19BMP0719 (Carsin's Run)	2021	700 LF	PIEDMONT	21.00
Total IAR Credit (See RAS)				**63.29**

3 Rapid Assessment and Monitoring Reports

Stream restoration projects are monitored at one (1) and three (3) years post-construction to verify that they are functioning as designed, vegetation is well-established and any issues are addressed. Following this term, the projects are assessed through the BMP inspection program at least once every 5 years.

Due to the size of the following reports, a link is provided in the report submission email to download the following:

- Charles County – as-built post-construction assessment and design report
- Cecil County Public Schools – 1-year post-construction report
- Carsin's Run – 3-year monitoring report

Dates for these assessments are included in the BMP Database to document that the inspection frequency meets the 5-year requirement.