

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

MUNICIPAL SEPARATE STORM SEWER SYSTEM DISCHARGE PERMIT

Permit Number: MD0068357

2019 Annual Report

Submitted to:

State of Maryland
Department of the Environment
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Executive Summary

The submission of this annual progress report to the Maryland Department of Environment (MDE) fulfills requirements specified under the Frederick County National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. 11-DP-3321, MD0068357. This will be the County's fifth report on meeting the requirements under the new third-generation Phase I NPDES MS4 permit, which went into effect December 30, 2014. This progress report covers programs in effect within the annual reporting period for the entire 2019 fiscal year (July 1, 2018 – June 30, 2019).

Continuing progress has been made in the County's NPDES programs since the 2018 Annual Report was submitted. The sections in this Annual Report follow specific sections presented under Part IV, Standard Permit Conditions, of the County's NPDES Permit to document how required elements of the County's stormwater program are being implemented.

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List of Acronyms

AFF	Alice Ferguson Foundation
BayFAST	Bay Facility Assessment Scenario Tool
BIBI	Benthic Index of Biological Integrity
BMP	Best Management Practices
CCB	Coal Combustion Byproducts
CIP	Capital Improvement Program
CWP	Center for Watershed Protection
CY	Calendar Year
DEL	Delivered
DPR	Division of Parks and Recreation
DPP	Division of Planning and Permitting
DPW	Division of Public Works
DUSWM	Division of Utilities and Solid Waste Management
ECS	Environmental Compliance Section
EMC	Event Mean Concentration
EOS	Edge of Stream
EPA	United States Environmental Protection Agency
ESD	Environmental Site Design
FAP	Financial Assurance Plan
FCPS	Frederick County Public Schools
FCSS	Frederick County Stream Survey
FIBI	Fish Index of Biological Integrity
FY	Fiscal Year
GHC	Green Homes Challenge
GIS	Geographic Information System
HSI	Hotspot Site Investigation
ICPRB	Interstate Commission on the Potomac River Basin
IDDE	Illicit Discharge Detection and Enforcement
IIT	Interagency Information Technologies
MAST	Maryland Assessment Scenario Tool
MCWA	Monocacy & Catoctin Watershed Alliance
MDA	Maryland Department of Agriculture
MDE	Maryland Department of the Environment
MEP	Maximum Extent Practicable
µg/L	Micrograms Per Liter
MS4	Municipal Separate Storm Sewer System
MSDS	Material Safety Data Sheet
MUCFC	Maryland Urban & Community Forestry Committee
NAICS	North American Industry Classification System
NFWF	National Fish and Wildlife Foundation
NOI	Notice of Intent

NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
OSER	Office of Sustainability and Environmental Resources
PE	Professional Engineer
P&I	Permits and Inspections
PRWC	Potomac River Watershed Cleanup
ROW	Right-of-way
RSC	Regenerative Stormwater Conveyance
SARA	Superfund Amendments and Reauthorization Act
SCA	Stream Corridor Assessment
SCD	Soil Conservation District
SOP	Standard Operating Procedure
SWM	Stormwater Management
SWPPP	Stormwater Pollution Prevention Plans
SW-WLA	Stormwater Wasteload Allocation
TPH	Total Petrochemical Hydrocarbons
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Sediment
WIP	Watershed Implementation Plan
WLA	Wasteload Allocation
WPRP	Watershed Protection and Restoration Program
WRAS	Watershed Restoration Action Strategy
WRE	Water Resources Element

1 Introduction

The submission of this annual progress report to the Maryland Department of Environment (MDE) fulfills requirements specified under the Frederick County National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. 11-DP-3321, MD0068357. This will be the County's fifth report on meeting the requirements under the new third-generation Phase I NPDES MS4 permit, which went into effect December 30, 2014. This progress report covers programs in effect within the annual reporting period for the entire 2019 fiscal year (July 1, 2018 – June 30, 2019).

The County continues to excel in stormwater management; long-term watershed monitoring; watershed assessment, restoration and retrofit implementation; developing Geographic Information System (GIS) data; and conducting public outreach activities in accordance with the requirements of the permit. NPDES funding remains adequate to meet the conditions of the permit.

The sections in this Annual Report follow specific sections presented under Part IV, Standard Permit Conditions, of the County's NPDES Permit to document how required elements of the County's stormwater program are being implemented. An introduction to the document is presented in Section 1. Section 2, Permit Administration, provides names, functions, and contact information for all primary administrative and technical personnel, and liaisons responsible for permit compliance as well as an organizational chart (Figure 1 and Figure 2). Section 3, Legal Authority, documents the recertification from the County Attorney that the County possesses the authority to perform NPDES-related activities. Section 4, Source Identification, presents an update on the County's efforts in updating both their GIS data library and their database for tracking new and existing stormwater management facilities. In Section 5, Management Programs, the County presents progress summaries and updates of several permit management activities, such as erosion and sediment control, illicit discharge detection, spill response, litter and floatables, road maintenance, pesticide/herbicide use, and public outreach. Section 6, Watershed Assessment and Restoration, reports on progress of the County's watershed assessments, references the County's stormwater restoration plan, which addresses Total Maximum Daily Load (TMDL) requirements and impervious area reduction, presents restoration projects by type, and includes public participation comment review periods for County watershed assessments and plans completed in fiscal year (FY) 2019. Section 7, Assessment of Controls, discusses the County's monitoring activities, including the long-term physical, chemical, and biological monitoring program at Peter Pan Run, and monitoring at a land use-specific Best Management Practice (BMP) outfall. Results of this program, along with pollutant load estimates, biological and physical assessment data, and other related information are presented as an appendix to the report. Section 8 covers program funding in accordance with the County's Operating budget, Capital Improvement Program (CIP) budget, Financial Assurance Plan (FAP), and Watershed Protection and Restoration Program (WPRP) Annual Report. Section 9, Special Programmatic Conditions, reports on activities the County has employed in order to work towards meeting the Chesapeake Bay TMDL and offers a brief status summary of the Water Resources Element.

Similar to the last progress report submitted for the entire fiscal year, this will be a data-driven report with the majority of program information included in the accompanying database or as appendices to the main document.

Twenty (20) appendices have been included in this document. Contents of all appendices are also available on the data stick, either in Microsoft Word, Microsoft Excel, PDF, or database format.

All sections of the document have been reproduced electronically and can be found on the accompanying data stick.

2 Permit Administration

In FY19, the Office of Sustainability and Environmental Resources (OSER), within the Office of the County Executive, managed the County’s NPDES permit. Additional intercounty personnel are responsible for other various permit components that support compliance with the permit. Staff and their responsibilities related to NPDES permit administration are listed below.



The County Executive’s Office is located at 12 E. Church Street, Frederick, MD 21701. OSER offices are located at 30 North Market Street, Frederick, MD 21701.

Office of the County Executive

- Michael Marschner, Deputy Chief Administrative Director, 301.600.1133
Oversees Animal Control Division, Sustainability & Environmental Resources Office (OSER), Parks & Recreation (DPR), Public Works Division (DPW), Utilities & Solid Waste Management Division (DUSWM). Supports permit compliance programs.

Office of Sustainability and Environmental Resources, sustainablefrederickcounty.org/

- Shannon Moore, Manager, 301.600.1413
Manages Office and oversees permit compliance programs.
- Donald Dorsey, Project Manager IV, 301.600.2952
Supports and manages NPDES activities, Capital Improvement Project development and implementation.
- Jeremy Joiner, Project Manager III, 301.600.1350
Supports and manages NPDES activities, coordinates watershed restoration efforts.
- Angelia Miller, Project Manager I, 301.600.2325
Supports and manages NPDES activities, coordinates Industrial Discharge Permits for stormwater and pollution prevention programs.
- Linda Williamson, Project Manager I, 301.600.1741
Supports and manages NPDES activities and programs, coordinates BMP maintenance projects for stormwater.
- Suzanne Cliber, Program Specialist, 301.600.7414
Supports NPDES activities, coordinates watershed restoration efforts related to grants.
- Kim Campbell, Administrative Specialist V, 301.600.1416
Administrative support for the Office of Sustainability and Environmental Resources.

Division of Planning and Permitting (DPP), Environmental Compliance Section (ECS)

- Eric Dodson, Chief Environmental Inspector, 301.600.3507

Manages Sediment and Erosion Control Program, supervises collection of information for NPDES permit that includes grading permits and stormwater facility maintenance inspections. Jointly maintains database of stormwater management facilities with Vijay Kapoor.

- Dave Crable, Engineering Specialist III, (DPP), 301.600.1137
Maintains database of stormwater management facilities, and reviews stormwater management development plans related to the NPDES permit. Retired March 2019, position is currently vacant.

Division of Planning and Permitting (DPP), Department of Development Review

- Vijay Kapoor, Engineering Specialist I, 301.600.1560
Reviews stormwater management development plans related to the NPDES permit. Jointly maintains database of stormwater management facilities, with Eric Dodson

Division of Planning and Permitting (DPP), Department of Planning

- Tim Goodfellow, Principal Planner II, Comprehensive Planning, 301.600.2508
Coordinates planning activities related to the NPDES permit.

In addition, OSER staff also collaborates with the Division of Utilities and Solid Waste Management (DUSWM), the Division of Public Works (DPW), the Division of Parks and Recreation (DPR), The Division of Emergency Management (DEM), Environmental Health Services Department, and Interagency Information Technologies (IIT) Division.

Permit information is included in the related table PermitInfo of the MDE_NPDES_MS4 geodatabase.

Figure 1 - Frederick County Government Organizational Chart - OSER

Frederick County Office of Sustainability and Environmental Resources

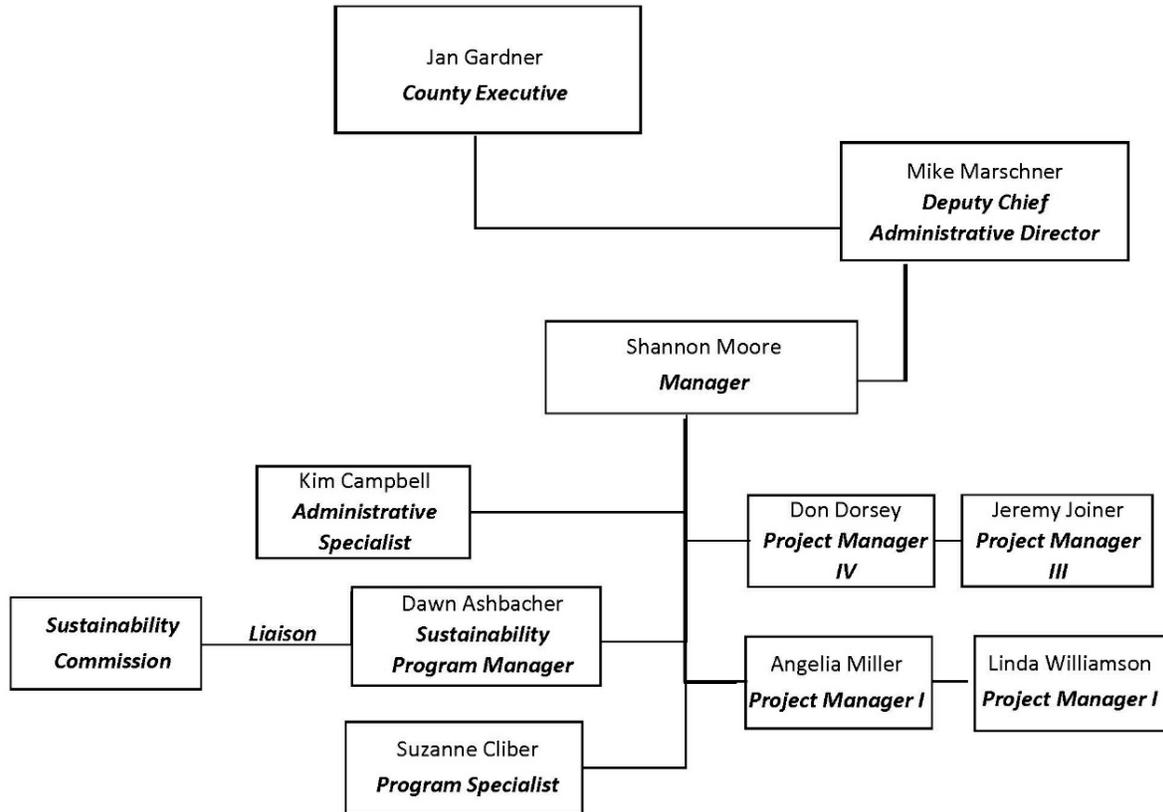
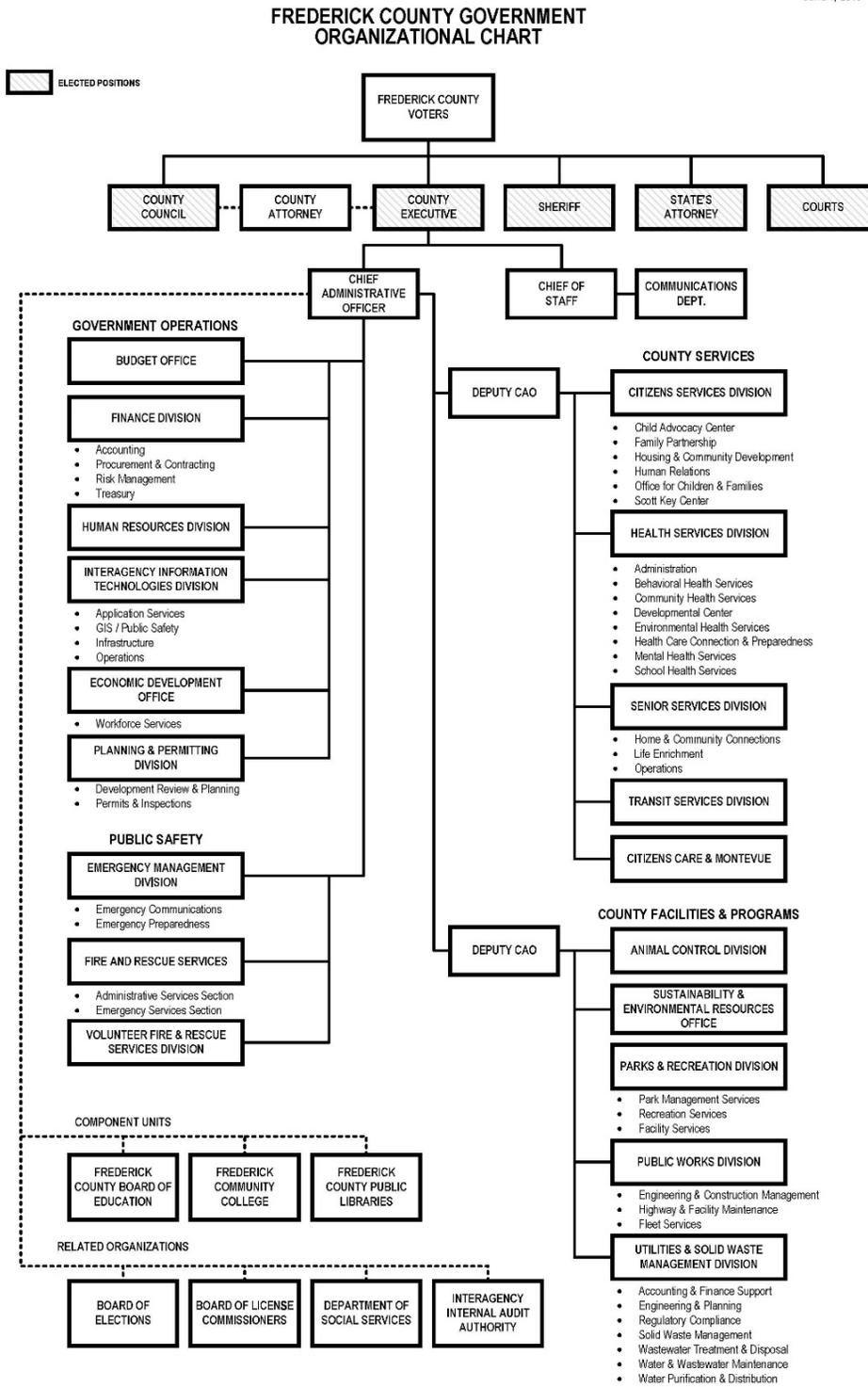


Figure 2 - Frederick County Government Organizational Chart

June 1, 2019



3 Legal Authority

Appendix A includes a letter from Assistant County Attorney, Kathy Mitchell, certifying that the County has the legal authority to meet the requirements of its permit.

4 Source Identification

This section documents permit-required efforts under Parts IV.C. 1 through 6. Frederick County has collected source identification data on all permit-required topics. The County has a centralized County GIS office within the IIT Division. This approach includes centralized functions such as the development and maintenance of core data layers, development of data standards, system administration, and general oversight of GIS activities countywide. Frederick County GIS distributes countywide base maps and Orthophotography. In addition, Frederick County GIS offers a free GIS data download service that includes GIS Base Data, Orthophotography, Contour-Planimetric Data, and Parcel Data. This service can be found on Frederick County's website, "Download GIS Data".

The Frederick County GIS office continually progresses in enhancing the County's GIS capabilities and in compiling source identification data. OSER, DPP and ECS collaborated with Frederick County IIT and staff to develop and implement digital submission standards for improvement and as-built plan submissions. For further details of the outreach program, see section 5.6.

4.1 Storm Drain System

The County currently maintains a Stormwater System database which includes data for stormwater inventory records for all infrastructure including culverts, storm drains, structures, ditches, outfalls, and ponds. Storm drain system data is contained within the Outfall feature class (1,470 records) and includes related drainage areas, and other related tables. Major attributes that are captured in these tables include IDs, structure characteristics, status, owner, and general comments. In addition to the required feature classes, Frederick County maintains a storm drain and structure inventory, which includes pipes (20,102 records) and structures (20,606 records).

4.2 Industrial and Commercial Sources

A list of the total number of industrial and commercial facilities that the County has determined may have the potential to contribute significant pollutants is included in Appendix B. Information provided in this appendix includes: facility name, company, address, city, state, zip code, respective North American Industry Classification System (NAICS) code, and facility description.

4.3 Urban Best Management Practices

At present, Urban Best Management Practices (BMPs) are included in the MDE_NPDES_MS4 geodatabase. Records for stormwater facilities will be included in BMPPPOI feature class and includes associated drainage areas and other related tables. Major attributes that are captured in these tables include structure ID, BMP type, BMP description, and acres treated. New facilities are entered into the database upon approval of the as-built survey.

Frederick County continues to document as-built certifications for all completed BMPs. The County had previously submitted its procedures to MDE on August 28, 2018 in the document entitled, *Frederick County proposed Standard Operating Procedures for use of Alternative Methods for documenting Best*

Management Practices (BMP) built date and determination of water quality treatment for MS4 Permitting Purposes. MDE found the memo to be acceptable in February of 2019. Frederick County continues to use the approach described in its memo. Construction built dates will be determined based on available data described in the following scenarios:

- BMP with no as-built, but with a plan, stormwater management (SWM) report and Construction Completion Forms
- BMP with no as-built, but with a plan and SWM report but no Construction Completion Forms
- BMP with no as-built, but with plan and no SWM report or Construction Completion Forms
- BMP with no as-built and no plan or SWM report or Construction Completion Forms
- ESD/Microscale practices not covered by the previous scenarios

4.4 Impervious Surfaces

The MS4 boundary and impervious surfaces have been compiled for Frederick County. Impervious data are included in the MDE_NPDES_MS4 geodatabase table, ImperviousSurface.

Frederick County Government updated its impervious cover analysis in FY18 using the jurisdictional boundary as requested by MDE’s 2017 Annual Report comments. This year (FY19), the County is submitting updates to its impervious baseline analysis with details provided in section 6.

4.5 Monitoring Locations

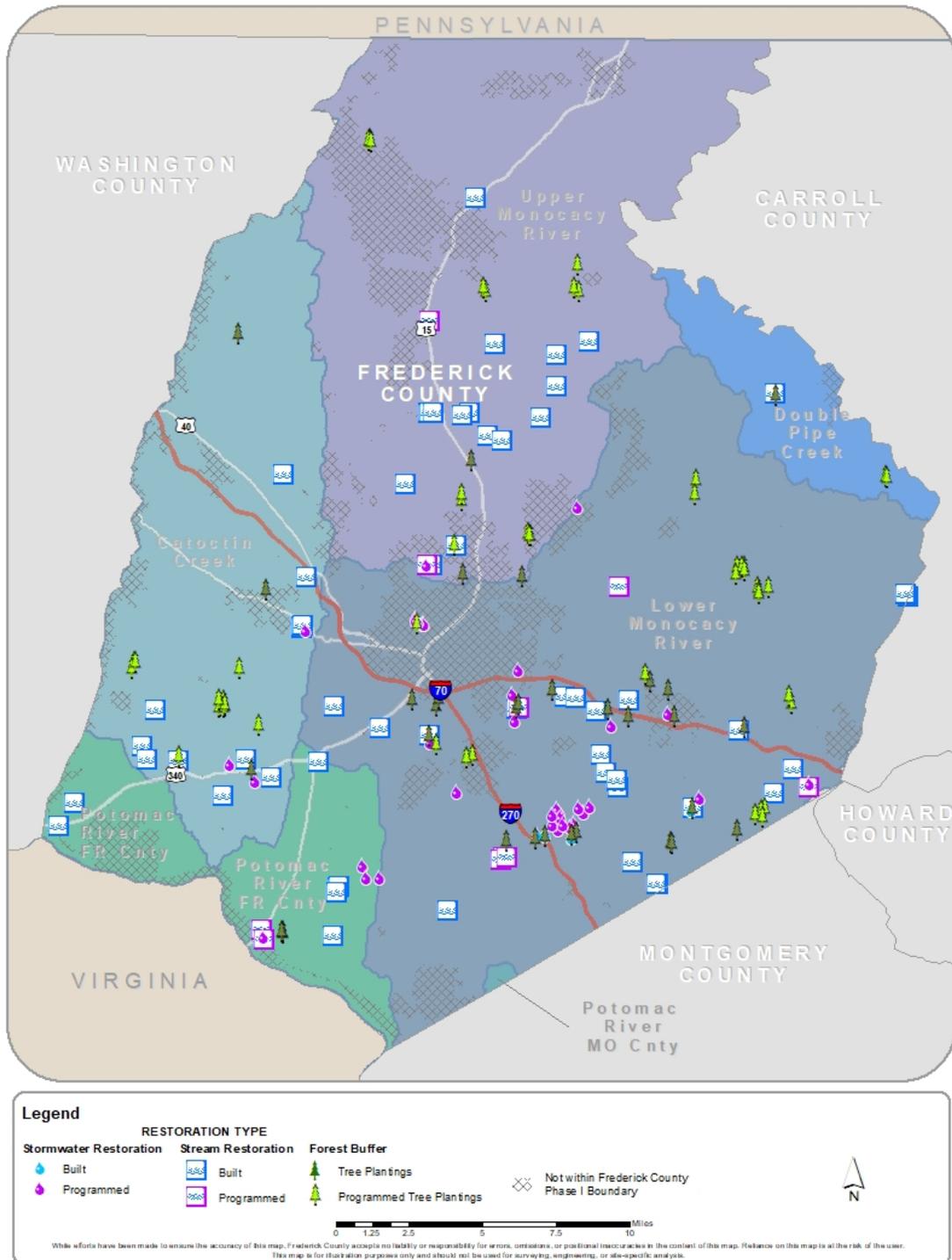
The County maintains and updates, as needed, an inventory of biological and chemical monitoring sites. The 2018 data are included in the following tables in the MDE_NPDES_MS4 geodatabase: BiologicalMonitoring, ChemicalMonitoring, MonitoringSite, and MonitoringDrainageArea. Major features that are captured in these tables include site ID, date and time, assessment results (e.g., BIBI/FIBI, habitat scores, water quality measurements), monitoring drainage area, and general comments. Historical data is also provided in the MDE_NPDES_MS4 geodatabase in the tables referenced above.

In previous annual report comments, MDE states that temperature data is “missing for stormflow outfall measurements”. Starting on 1/20/2017, Frederick County deployed a temperature logger at the outfall to obtain continuous temperature data. In August 2017, the County invested in significant improvements to the monitoring sites, including the purchase of new water quality monitoring equipment for continued assurance that the monitoring requirements are met. Section 7 has further detail.

4.6 Water Quality Improvement Projects

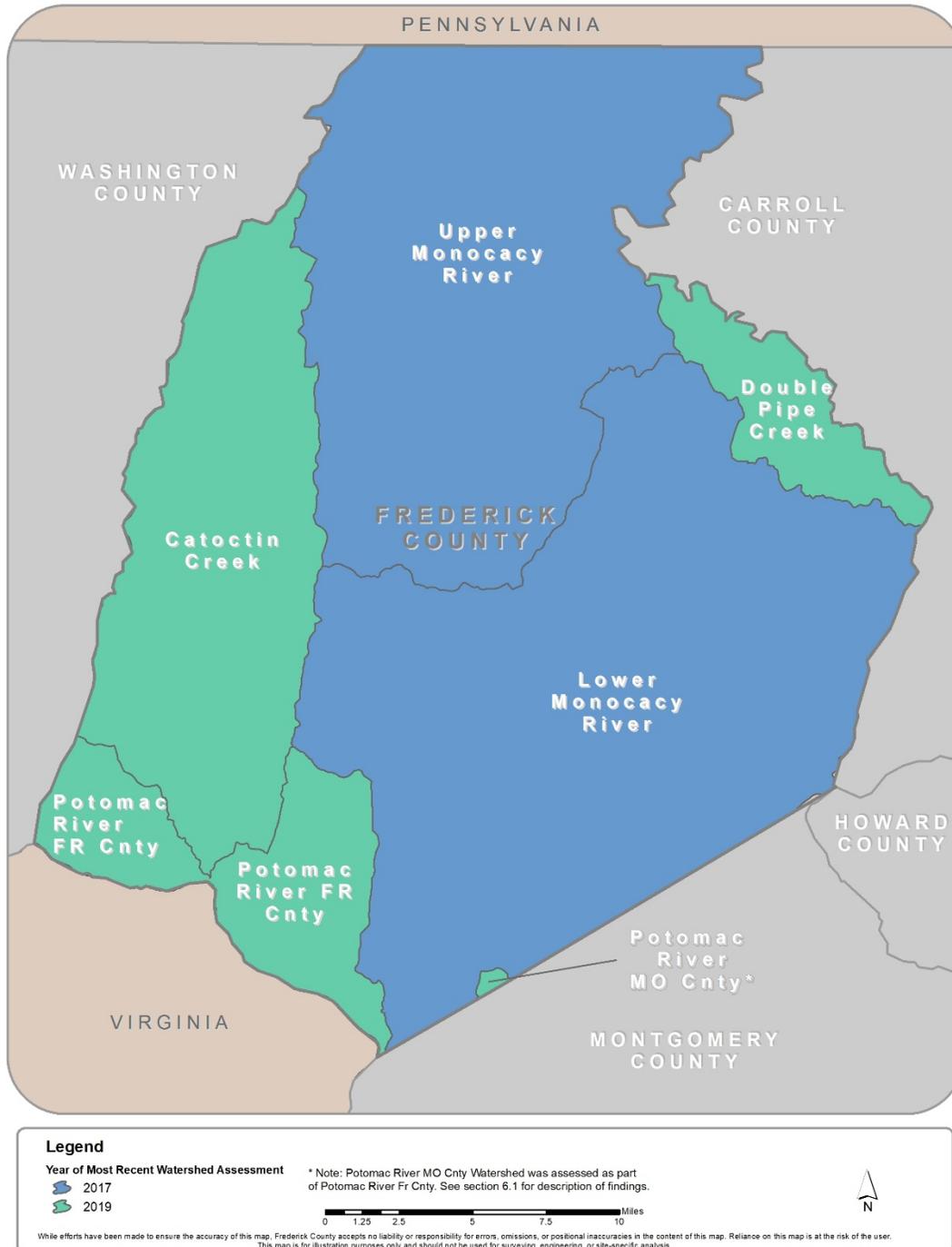
The County maintains a geodatabase where water quality improvement projects are identified and tracked. The built and programmed improvement projects are included in the MDE_NPDES_MS4 geodatabase and depicted in Figure 3. Additional information about these projects can be found in the County’s Stormwater Restoration Plan and/or Financial Assurance Plan.

Figure 3 - Watershed Restoration Projects



The County has also conducted watershed studies, identifying, ranking, and grouping potential opportunities within its watersheds. Upper Monocacy and Lower Monocacy watersheds studies were complete in 2017, and the remaining three watershed studies, Catoctin Creek, Double Pipe Creek and Potomac Direct watersheds, were complete in 2019, as shown in Figure 4.

Figure 4 - Watershed Assessment Completed by Year



5 Management Programs

This section documents permit-required efforts under Parts IV.D. 1 through 6. Frederick County continually evaluates its stormwater management programs in an effort to identify and bring about needed improvements as required under its NPDES permit. The County continues to evaluate its progress and effectiveness to control stormwater discharges to the maximum extent practicable (MEP). Current program components, improvements made during the timeframe covered in this report, and plans for future activities, particularly as the County continues to implement management programs under its new permit, are discussed below.

5.1 Stormwater Management Programs

Frederick County maintains its current Stormwater Management Program in compliance with Environmental Article, Title 4, Subtitle 2, Annotated Code of Maryland. The County will continue to do so through plan review and inspection of all developer projects, through implementation of the 2000 Maryland Stormwater Design Manual (Effective October 2000, Revised May 2009; MDE 2000), and through the Stormwater Act of 2007.

5.1.1 Maintenance Inspections of Stormwater Management Facilities

The Department of Permits and Inspections, Environmental Compliance Section (ECS) conducts a program of preventative maintenance inspections of constructed and functioning stormwater management facilities located within Frederick County, and most of its municipalities. Excluded from ECS jurisdiction are facilities located within Frederick City, and within the municipal boundaries of Mount Airy. As required under the County's MS4 permit, the County conducts these inspections on a sequential basis of once within a year after the as-built drawing approval, and then on a triennial basis thereon in perpetuity.

Responsible parties of noncompliant facilities receive notices that outline the failings observed by the inspector, what has to be completed to correct the failings, and a timeframe in which the corrections should be completed. Appropriate follow-up inspections and escalating enforcement techniques are completed, as necessary, until compliance is obtained. Frederick County is continuing to improve the process of enforcement to ensure that owners comply and resolve failing facilities within an acceptable timeframe. Staff within OSER have helped to improve tracking and response in relation to data management. Statistics below aid in showing that the County performs follow-up inspections and coordination to obtain compliance after a facility receives a failing status. In addition, ECS hired an additional inspector in April of 2019, bringing the total number of inspectors to four. As a result, ECS was able to assign one of the four inspectors the task of managing compliance for all stormwater management facilities within the jurisdiction of the County. The stormwater inspector is currently responsible for as-built and triennial inspections of BMPs, database management, documentation and providing support to the development community.

For FY19, Frederick County's Urban BMP database has 1,431 BMPPOI points and 1,688 related BMP records. Table 1 summarizes the triennial inspections that were completed from 7/1/18 through 6/30/19. Numbers are provided at the site level (BMPPOI) and the individual BMP level (one BMPPOI can have many BMPs). The percentage of triennials performed in relation to the number of facilities that exist within Frederick helps to show that Frederick County is maintaining its requirement to inspect facilities triennially. The County also does not have any lapsed inspections, all facilities have been inspected within the last three years.

Table 1 - Triennial Summary

Description	BMPPOI	BMP
Total number of database records:	1,431	1,688
Number of triennials performed in FY19:	428	539
Percentage of facilities receiving a triennial FY19:	30%	32%

In Frederick County, ECS inspects facilities at the site level (BMPPOI), if one of several BMPs at a site fails, the entire site is considered failing. As of November 2019, Frederick County had addressed all failing triennials from the FY19 fiscal year and closed all failing facilities from the previous fiscal year. Table 2 provides a summary of the failing and remediated BMPInspections records that can be queried from the database.

Table 2 - Failing Inspection Counts

Description	Count
Number of BMPInspections records failing their initial triennial inspection within FY19:	96
Number of BMPInspections records failing their initial triennial inspection within FY19 and remediated by the time of reporting:	96
Number of MDE BMPInspections records failing their initial triennial in the current fiscal year and still failing:	0
Number of MDE BMPInspections records failing their initial triennial in previous fiscal years and still failing:	0

All inspections are recorded within a proprietary Permitting and Development Review application, Hansen Information Technologies v7.7. The appropriate data is exported from the database using select and parameter queries from an outside data management software. The subsequent data is then imported into the geodatabase, with a GEN_COMMENT to assist in identifying relevant FY19 inspections. Inspection data stored in the BMPInspections table represents all triennial inspections for the stormwater management program, including those outside the reporting term.

5.1.2 Implementation and Updates of 2000 Maryland Stormwater Design Manual

Frederick County implemented the stormwater management design policies, principles, methods, and practices of the 2000 Maryland Stormwater Design Manual. Subsequent changes were made to the Code of Maryland Regulations through the County's Stormwater Management Ordinance and its Design Manual, on June 5, 2001. It became effective July 1, 2001. The Ordinance amended the stormwater management regulations to adopt the 2000 Maryland Stormwater Design Manual Volumes I and II. The Board of County Commissioners adopted the County's Storm Drainage and Stormwater Management Design Manual effective January 2, 2003. This document helps address safe conveyance of runoff in channels, pipes, swales, culverts, etc. to stormwater management facilities and/or receiving channels.

The most significant improvements to the County's implementation of the MD 2000 design guidelines continues to be related to the participation with MDE in establishing the necessary changes in law and

design guidelines to meet the Stormwater Act of 2007. Frederick County adopted the Stormwater Act of 2007 on May 4, 2010. Frederick County is committed to working with the development community and the State to improve the implementation of these regulations, and to achieve the best product for moving forward with the environmental site design implementation in an efficient manner.

Frederick County participates in workgroups, public meetings, design evaluations, and other steps involved in administering the stormwater management regulations and design guidelines. These discussions have also been used to assist staff in their evaluation of design approaches that are submitted for review in accordance with the MD 2000 design guidelines. Specifically in FY17, The County launched an expansion of the current approval process to include digital submissions. To implement this process, The County held several public meetings with the engineering community to expand final approved submissions to include digital submissions for approved improvement plans and as-built submissions. The new format, available at <https://frederickcountymd.gov/3199/Applications-Checklists>, enables the County's GIS department to receive a digital copy of all the required stormwater management for permit reporting. The county continues its efforts to streamline the process of digital submissions, working with the engineering community to accomplish this goal. For further details of the outreach program, see section 6.3.

Evaluation: The County continues to maintain its stormwater management program in accordance with State stormwater management laws, including implementation of appropriate County ordinances. The County remains committed to implementing the latest stormwater management technologies while addressing the concerns of the development community. In FY19, the County's Environmental Compliance Section (ECS) completed all scheduled triennial inspections to adhere to maintenance requirements on all of its Stormwater Management Facilities and performed the necessary follow-up actions for failing facilities. The County has proven its commitment in obtaining compliance through its follow-up and escalation procedures, especially evident in FY19 by coordinating the remediation of all outstanding failing triennials. The County continues to work with the development community and MDE to better understand the goals of the 2000 Maryland Stormwater Design Manual and the objectives of the changes associated with the Stormwater Act of 2007. Additionally, the County will continue to educate both the development community and the general public about how to determine the proper type of design for site-specific areas, as well as about facility installation timetables and maintenance issues. Staff will continue to work to address SWM earlier in the process to achieve the best product at the end of the process, as required by the changes associated with the Stormwater Act of 2007.

County BMP inspection information is included in the MDE_NPDES_MS4 geodatabase table: BMPInspections. These inspections include information on status, inspection date, and re-inspection status, if relevant.

5.2 Erosion and Sediment Control

Frederick County's Erosion and Sediment Control Program is administered by the Department of Permits and Inspections, Environmental Compliance Section (ECS). ECS utilizes inspectors that are specifically knowledgeable in Environmental Compliance inspection and enforcement to maintain an acceptable Erosion and Sediment Control Program in accordance with Environment Article, Title 4, Subtitle 1, Annotated Code of Maryland. The County's program was evaluated by MDE on October 20, 2017. After follow-up inspections, delegation was approved through June 30, 2020.

ECS continues to receive budgetary support for equipment and automation, such as:

- Four-wheel-drive (4WD) vehicles,
- Full mobile connectivity through use of Dell laptop computers for field work,
- Hot-spots
- iPhone mobile cell phones with hard cases, and
- Hands-free devices are also provided for in-vehicle use.

Continued program enhancements include:

- Division of Planning and Permitting (DPP) engineering and inspection staff working closely with the local Soil Conservation Districts (SCDs) to conduct a joint approach to sediment control and stormwater management plan review. The mutual efforts to obtain Environmental Site Design to the Maximum Extent Practicable (ESD to the MEP) should prove successful in producing better designed plans.
- DPP, and the County in general, striving to improve relationships with builders, developers, and related professionals by providing an open and interactive process in which every opportunity is given to receive input on ways to improve or enhance programs.
- ECS taking part in quarterly Permitting Outreach Meetings to establish relationships with the development community, and to inform and discuss permit processes and ESD practices.
- DPP and ECS collaborating with Frederick County IIT and OSER staff in quarterly Development Review Outreach Meetings to implement digital submission standards for improvement and as-built plan submissions. For further details of the outreach program, see section 6.3.
- The Chief Environmental Inspector attending weekly meetings with the Permits and Inspections (P&I) Director, Permits Services Manager, and fellow Chief Inspectors of other disciplines. This interaction provides input and feedback from all parties and has proven to be extremely helpful and beneficial.
- Continuing to meet the needs of the state and the expectations of its citizenry to be environmentally sensitive and proactively protective of our natural resources, and
- Participating in professional development opportunities through seminars and workshops, hosted by MDE.

Erosion and sediment control data for FY19 are included in the MDE_NPDES_MS4 geodatabase. Related tables include ErosionSedimentControl and QuarterlyGradingPermits. Major features that are captured in these tables include ID, contact information, permits issued/active, number of inspections, number of fines, number of violations, and general comments.

5.2.1 Responsible Personnel Certification Classes

As originally reported in Frederick County's 2015 Annual Report, MDE confirmed that the RespPersonnelCertInfo table reporting requirement is eliminated.

5.2.2 Construction Site Data

Frederick County ECS provides quarterly reports of all grading activities disturbing more than one acre to MDE to cross reference against their NOI records. The data submitted includes site name, site owner and address, the amount of disturbed area, the local grading permit number, site location, and the type of development (e.g., residential, commercial, etc.).

Evaluation: Frederick County’s Erosion and Sediment Control program is well established and is constantly striving for improvement. The County’s goal is to establish itself as a model for which the State, other delegated jurisdictions, and its citizens may be proud. Frederick County continues to work closely and cooperatively with the local SCD and MDE. The cooperative nature of that relationship has resulted in several policy discussions designed to improve and enhance the sediment control program. Through its quarterly reports, the County met requirements for the electronic reporting of earth disturbances in the period of 7/1/18 to 6/30/19.

5.3 Illicit Discharge Detection and Enforcement Program

Frederick County continues to implement its Illicit Discharge Detection and Enforcement (IDDE) Program. The County’s IDDE Program identifies potential illicit discharges in several ways: (1) through a systematic screening approach of outfalls that are more likely to demonstrate an elevated risk of illicit discharge, based on land use characteristics (the majority of sites were identified by this proactive approach); 2) through on-call (episodic) dry weather screenings of outfalls completed as a result of outfalls identified during as-built inspections, triennial maintenance inspections, or other County field work; (3) visual surveys of parcels with industrial and commercial land uses (hotspot surveys); and (4) through citizen and agency reporting mechanisms such as non-County agencies reporting spills to the National Response Center (NRC).

A complete report of Frederick County’s Illicit Discharge Detection and Elimination Program from 7/1/18 to 6/30/19, including screening methods and results, is included as Appendix C. Discharge documentation for investigation follow ups and remediation can also be found in Appendix C.

5.3.1 Systematic Outfall Field Screening

Using the new protocol submitted on December 29, 2017, the County contracted with KCI Technologies, Inc. to conduct IDDE screenings (i.e., physical inspections and water quality testing) during the reporting period. In accordance with the revised protocols, field inspectors noted evidence of dry weather flows, if present, at all outfalls selected as target sites, as defined below.

If flowing water was present in the network, under otherwise dry conditions, inspectors documented conditions relevant to the discharge, and sampled the effluent for a defined set of chemical constituents, including ammonia, conductivity, detergents, phenols, pH, copper, and chlorine. Detergents, phenols, copper, and chloride are tested using a Hach Storm Drain Test Kit; ammonia is tested using a separate Hach test kit for Ammonia-nitrogen; conductivity and pH are measured using a multiparameter probe. If analytical results or field inspections indicated potential illicit connections, the conveyance network contributing to the outfall, and surrounding areas were investigated to identify possible sources of pollution. A follow-up sampling event was conducted within 24 hours to retest the parameters that had exceeded screening criteria in the initial test. If the second assessment also indicated test results out of the accepted ranges, KCI staff alerted County personnel via a written report of the findings. County staff then contacted the landowner or responsible party regarding the violation and the corrective actions.

In the 2019 reporting period, the following areas within the County were targeted for systematic screenings: Urbana Pike (Maryland Route 355), Buckeystown Pike (Maryland Route 85), and a larger extent of the county ranging from Liberty Road, Frederick, MD to Sabillasville, MD, and Jefferson, MD to Knoxville, MD. These screenings prioritized selected hotspot locations for the visual surveys that were identified as new locations for surveying or were reported in FY18 as having hotspot violations. A total of

101 outfalls were screened within these areas with approximately one-third occurring in each identified location.

Data pertaining to Frederick County's IDDE program are included in the IDDE table in the MDE_NPDES_MS4 geodatabase.

5.3.1.1 Results of *Systematic Outfall Field Screening*

Summaries of KCI's screenings are included in the Illicit Discharge Detection and Elimination Program report in Appendix C.

In its review of the 2018 Annual Report, MDE requested an update of the OF238 outfall located on the property of A & S Sales, 9834 Liberty Road, Frederick, MD. During the FY19 screening efforts, OF238 did not exceed any illicit discharge criteria thresholds to initiate further investigation protocols. The outfall will be revisited in FY20 and retested for illicit discharge criteria if dry-weather flow is found.

5.3.2 Episodic Outfall Field Screening

If dry weather flow is noted at an outfall during any other County activity, such as Stormwater Management Structure "As-Built" inspections, triennial maintenance inspections, or watershed assessments, the County's Office of Sustainability and Environmental Resources (OSER) is notified within 24 hours. OSER then conducts an IDDE screening in the same manner as that detailed above in section 5.3.1, and in *Frederick County's Illicit Discharge Detection and Elimination: Response, Inspection, and Reporting Protocols* (KCI Technologies, Inc., 2017).

During 2018-2019, there were no reports of identified flowing outfalls through the County's episodic inspection program.

Data pertaining to Frederick County's IDDE program are included in the IDDE table in the MDE_NPDES_MS4 geodatabase.

5.3.3 Visual Surveys

As part of the IDDE program, there is a requirement to conduct annual visual surveys of commercial and industrial areas for discovering, documenting, and eliminating pollutant sources. In FY19, surveys were chosen based on the criteria listed in *Frederick County's Illicit Discharge Detection and Elimination: Response, Inspection, and Reporting Protocols* (KCI Technologies, Inc., 2017)

Sites surveyed during FY19 are identified in Appendix C. The County has updated its field collection methods by using Survey 123 in the field. The mobile field collection form resembles the Hotspot Site Investigation Jr. Form, provided in Appendix D.

5.3.3.1 Results

Visual surveys were conducted during the month of June at 26 of the 119 total sites to be visited throughout the 5-year permit. Table 3 identifies facilities that demonstrated several specific infractions or active polluting conditions and were classified as hotspots with violations.

The surveys identified five facilities as not in service, seventeen facilities as hotspots but without violations, and four facilities as hotspots with violations. Notices were issued to the facilities with

violations outlining the survey results, and indicating the facilities' status. The notices included recommendations to correct the deficiencies and informed the owner that a re-inspection was to be conducted to ensure all recommendations had been taken into account.

Follow-up inspections revealed all identified businesses improved their practices allowing all of the businesses to be reclassified as in compliance and without violations.

Table 3 – Business Visited in FY19 found to be Hotspot Violations

Business Name	Address	Inspected	Notes
Dynamic Automotive	10601 Old National Pike	26-June	Cloudy water discharge coming from the garage
Jefferson Auto Service	4013 Jefferson Pike	6-June	Evidence of oil spill near their waste oil bin
Laurienzo Brick Oven Café	1896 Urbana Pike	26-June	Evidence of leaking from dumpster, debris around storage area
Olive Garden	5609 Spectrum Dr	26-June	Ponding water with filmy surface. Forwarded to Health Department for further inspection and enforcement.

5.3.4 Citizen and/or Agency Reporting

Information about how citizens can report illicit discharges is available online on Frederick County Government's Citizen Request Tracker web page under "Water Pollution Issues":

<http://www.frederickcountymd.gov/requesttracker.aspx>

A reporting link is also available at:

<https://www.frederickcountymd.gov/reportwaterpollution>

During the 2018–2019 reporting period, eleven potential illicit discharges were reported to the County through external reporting mechanisms. Potential illicit discharges were investigated and resolved using Frederick County staff, MDE, and other state agencies. Summaries of the reports can be found in the IDDE Annual Program Report included in Appendix C.

5.3.5 Spill Response

In FY19, Frederick County continued to respond to all citizen complaints of illegal dumping and spills, as part of the County's overall Illicit Discharge Detection and Elimination program. OSER has developed a standard set of procedures that maintain consistency in reporting and referrals for minimal internal transfers, as part of the County's IDDE protocol. If a spill occurs within the MS4 boundary, and is not a hazardous material, sanitary sewer overflow, or septic system discharge, OSER will respond to the event and direct the property owner or responsible party on proper reporting and remediation measures. Follow-up inspections are conducted with varying timeframes based on the severity of the spill, documented internally, and reported to MDE, as necessary. Any spills reported to OSER are described above in section 5.3.5.

Hazardous spill calls are forwarded to 911, where first responders are trained and equipped to handle such situations. For hazardous spills requiring evacuation, the Department of Emergency Preparedness has updated its Emergency Operation Plan, which includes annexes for emergency evacuation; triggers, escalations and evacuation plans; and HazMat response. The County also has a reverse 911 system to

perform targeted calling based on georeferenced locations for localized problems like hazardous spills. The Fire Department coordinates the Local Emergency Planning Committee, required under the Superfund Amendments and Reauthorization Act (SARA) Title III.

Spills are also reported to the National Response Center (NRC). OSER will only report spills to the NRC with the understanding that the responsible entity has not already done so or plans to do so. Records for Frederick County in FY19 are included in the table below (Table 3; USCG, 2019).

Table 4 - Reported Spills in Frederick County FY19

Date	Reported By	Address	Material Spilled	Suspected Party	Notes/Comments from NRC
7/20/2018	National Response Center	11602 Green Valley Rd, Union Bridge, MD 21791	Motor Oil	Operator Error	<p>Caller is reporting a discharge of approximately 5 gallons of motor oil onto the ground from a tractor trailer that lost control after taking a corner too fast. The trailer went off the side of a bridge and into beaver dam creek. The tractor stayed on the road turned upside down. The saddle tanks were not compromised and the fuel was pumped off into three 55 gallon drums. No waterway impact was observed for the motor oil.</p> <p>The trailer was carrying concrete and no waterway impact of the concrete was observed.</p>
7/26/2018	National Response Center	Route 15; SB at Hansonville Rd., Frederick, MD 21702	Clearifloc	Unknown	A tanker tractor trailer truck carrying clearifloc (polymer based) n1876 rolled over on route 15 SB at Hansonville rd. No product was discharged from the tanker trailer, but there was residue discharged from the hoses, as well as 100 gallons of diesel fuel discharged from the fuel tank. The diesel fuel impacted a ditch.
8/27/2018	National Response Center	Ira Sears Rd at Park Mills Rd, Adamstown, MD, 21710	Asphalt	Transport Accident	Caller reports a discharge of 30-50 gallons of liquid asphalt onto a roadway and into a stream caused when a vehicle ran off the road.

Date	Reported By	Address	Material Spilled	Suspected Party	Notes/Comments from NRC
9/17/2018	National Response Center	Interstate 70 East Bound	Diesel Fuel	Operator Error	Caller states that 200 gallons of diesel fuel was discharged from both saddle tanks on a tractor trailer truck which got onto the dirt due to an accident.
11/10/2018	National Response Center	7932 Wormans Mill Rd, Frederick, MD 21701	Hydraulic Oil	Unknown	A large amount of hydraulic fluid discharged from a railroad piece of machinery on the tracks due to an unknown cause at this time. Caller states the oil has impacted the surrounding areas, including a residential yard. Caller also states the responsible party left the scene without taking any measures to clean up the spill.
11/25/2018	National Response Center	9615 Myersville Rd, Myersville, MD, 21773	Diesel Fuel	Unknown	Caller reported that a vehicle ruptured fuel tank and spilled 8-10 gallons of diesel on the parking lot.
12/8/2018	National Response Center	11791 Singer Board Rd, Monrovia, MD. 21770	Diesel Fuel	Operator Error	Diesel fuel discharged from a fuel pump due to operator error (an individual left the pump unattended while in use). Caller states the store attendants were notified about the spill but they didn't do anything.
12/31/2018	National Response Center	Route 15, Frederick, MD, 21701	Diesel Fuel	Other	Caller is reporting the spill of diesel from the saddle tank of a tractor trailer truck that struck a guard rail on highway 15 southbound at Hayward Road in Fredrick, MD.
2/11/2019	National Response Center	New Market, MD, 21774	Diesel Fuel	Transport Accident	Caller is reporting a discharge of approximately 30 gallons of diesel fuel onto the ground at the incident location. Discharge was from the saddle tank on a tractor truck that was involved in a multi-vehicle accident. No injuries were reported.

Date	Reported By	Address	Material Spilled	Suspected Party	Notes/Comments from NRC
4/9/2019	National Response Center	25 East Potomac St., Brunswick, MD, 21716	Hydraulic Fluid	Unknown	Caller reported a ruptured hose that caused a spill of hydraulic fluid due to unknown reasons. The reporting party had limited information as they arrived to the scene after the incident.
4/17/2019	National Response Center	106 Prospect Rd., Mt Airy, MD 21771	Unknown	Other	Caller reported a person releasing materials into the air due to negligence.
5/24/2019	National Response Center	12651 Molasses Rd., Liberty Town, MD, 12651	Milk	Other	Caller is reporting that a tanker truck went off the road and rolled over resulting in a spill of milk onto the ground and into a creek.
6/6/2019	National Response Center	259 East 7Th St., Frederick, MD	Milk	Operator Error	Caller is reporting that a silo was overfilled resulting in the release of milk onto the ground and into a storm drain.
6/11/2019	National Response Center	5236 Intercoastal Dr., Monrovia, MD, 21770	Diesel Fuel	Unknown	Caller reported 50 gallons of diesel was released from a saddle tank of a tractor trailer onto the concrete and into a storm drain due to unknown causes.

Source: (USCG, 2018, 2019 (Current))

5.3.6 Program Evaluation

Frederick County's Illicit Discharge Detection and Elimination program continues to put forth effort in identifying, eliminating, and documenting potential illicit discharges. The Office of Sustainability and Environmental Resources fulfilled its permit requirements for FY19: 101 dry weather screening inspections were conducted meeting the 100 outfall requirement. In addition to systematic screenings, ECS continues to check for dry weather flow at their triennial stormwater inspections. Overall, 26 businesses were screened through the visual surveys of parcels with industrial and commercial land uses; 11 citizen reports of violation were investigated and eliminated; and 2 outfalls received further investigation and any necessary corrective actions as result of illicit activities identified during the systematic screening effort .

Data for 2018 pertaining to Frederick County's IDDE program are included in the IDDE table in the MDE_NPDES_MS4 geodatabase.

5.4 Litter and Floatables Annual Report

Frederick County recognizes that increases in litter discharges to receiving watersheds have become a growing concern within Maryland. The County has evaluated current litter control programs, potential sources, and methods for elimination and opportunities for improvement. The County also has enhanced its public outreach program to address Litter and Floatables issues.

5.4.1 Potential Sources

An Assessment of Potential Sources was completed for the 2015 half-year Annual Report. An assessment of data from several sources, to include Stream Corridor Assessments (SCA); restoration monitoring; and the Frederick County Stream Survey, determined that trash problems are not present along the entire lengths of stream networks in Frederick County, but instead may be attributed to trash “hotspots,” or dumping sites since the problems are present in isolated locations. The dumping sites that received a severe trash rating in the SCA were located within agricultural, resource conservation, low density residential, and village center land use types.

5.4.2 Methods for Elimination

Based on the 2015 Assessment of Potential Sources, OSER staff uses the following strategies as methods to eliminate litter and floatables throughout Frederick County’s MS4:

- Public Outreach Program; and
- Litter Control Programs

5.4.3 Public Outreach Program

In order to address litter control problems, and to develop a litter and floatables public education and outreach program in Frederick County, OSER is following the goals and objectives from The Strategic Plan to Improve Water Quality through Public Outreach in Frederick County, Maryland, published in November 2003. As part of litter prevention outreach, OSER staff is working with and supporting organizations that provide outreach and coordinate large and small-scale cleanups in Frederick County.

Developed in 2015, Frederick County’s litter and floatables public education and outreach program includes the dissemination of outreach materials to the public that communicate the level of trash in Frederick County’s streams, discourage littering behavior, and encourage individuals or groups to participate in trash cleanups. OSER staff developed materials specific to Frederick County and has incorporated additional litter prevention outreach materials into current outreach efforts required under the public education section of the permit (PART IV.D.6). Additional education and outreach are being implemented through print and digital media, advertisements, press releases, newsletter articles, and a resource webpage with the promotion of local trash cleanup events to encourage public participation. OSER staff has developed an online webpage at <https://www.frederickcountymd.gov/7564/Litter-and-Floatables> to be used as a resource for promoting participation in existing trash cleanup events and coordination of new cleanups, and for educating the public on litter prevention in Frederick County. The webpage includes links to the websites of other organizations who host cleanup events, such as the Alice Ferguson Foundation.

The Alice Ferguson Foundation (AFF) has developed a Regional Litter Prevention Campaign toolkit as part of their Trash Free Potomac Watershed Initiative. The Regional Litter Prevention Campaign toolkit contains resources available for Frederick County to use for the County’s public education and outreach program. The toolkit materials include advertisements and visuals, communication pieces, and

community outreach pieces. OSER staff uses materials from the AFF toolkit that are appropriate for Frederick County’s outreach efforts to reduce littering.

The Green Leader Challenge, one of 3 sub-challenges that make up the overall Green Homes Challenge, helps County residents adopt environmentally friendly practices. In the Green Leader Challenge, there are eleven (11) actions that educate and motivate Challenge participants to eliminate waste and litter, recycle, and compost. To date, nearly 2,230 individuals have registered with the overall Green Homes Challenge and 295 are self-certified as Green Leaders.

The Frederick County Department of Solid Waste Management (DUSWM) coordinates a recycling education and outreach program that promotes recycling through community engagement, print and digital media, school presentations, and special events. The County has an overall recycling and waste diversion rate of 47.2% (MDE’s County Recycling Rates by Commodity in Tons for Calendar Year 2017 from <https://mde.maryland.gov/programs/LAND/RecyclingandOperationsprogram/Documents/Table%2017.pdf> and has established a goal of achieving a 60% waste diversion rate by 2025. Fluctuations in the international recycling market can affect this rate. Four times per year, DSWM sends out useful information on the County’s recycling program, including important updates, interesting facts, and tips for creating less waste. The Department of Solid Waste Management has information available on its website <http://www.frederickcountymd.gov/5634/Waste-Management-Trash-and-Recycling> for County residents on various landfill programs, such as disposal of household hazardous wastes, recycling, source reduction, and backyard composting. The continuation of current efforts in this program will be sufficient in meeting the permit requirements for recycling education and outreach, and achieving the County’s recycling goals.

Recycling Outreach (conducted by the Recycling Outreach Program Coordinator under DSWM) is ongoing and includes:

- Community Engagement: meet with community groups and provide speaking/presentations; present displays at public events
- Digital Media: Facebook; e-newsletter; mobile app (Recycle Coach)
- Print Media: direct mail; newspaper and other advertising media (bus, billboard, etc.); press releases; articles for publications
- Schools: work directly with Frederick County Public Schools (FCPS) to increase awareness among staff and students of waste and recycling issues; include private and home schools in any contests or promotions
- Special Events: conduct contests, drop-off events, award programs and other campaigns to bring attention to and increase support of County programs and goals

The first phase of the Solid Waste Management Options Study was initiated to develop a long-term solid waste management strategy that is informed by and inclusive of county residents. Frederick County’s Solid Waste Steering Committee held a series of workshops between November 2015 and February 2016 collectively called the “What’s Next? Solid Waste Public Forums”. The framework for evaluating the options generated by the public was built around criteria in the Maryland Recycling Act and Zero Waste Plan. Options recommended for analysis in phase 2 of the study include:

- Waste reduction program at county schools – Collecting food waste for composting, increasing recycling efforts, etc.
- Three-bin system for collection – waste collection would separate trash, recycling, and food waste.

- Food waste collection from restaurants – Commercial food waste would be collected for composting.
- Community-scale, decentralized composting program – Food waste and other organic material would be collected for composting at small facilities. This could serve as a pilot for a large-scale operation.
- Development of a large-scale, centralized composting facility – A central countywide facility would process separated organic materials: primarily food waste, yard waste, and non-recyclable paper.

During Phase 2 of the study, a detailed analysis was completed of the viability of each recommended option from Phase 1, both individually and in combination with other appropriate options. The Phase 2 Report was completed (issued) June 30, 2017. Prior to completion, the Phase 2 Report was presented at a County Executive Town Hall meeting on June 2, 2017 and to County Council on June 27, 2017. Findings from the Phase 2 report will serve as a roadmap for the county to achieve recycling and waste diversion goals over the next ten years. The County's Solid Waste Management Plan 2018-2037 is available from <https://www.frederickcountymd.gov/DocumentCenter/View/295281/-Reformatted-DRAFT-SWMP-2018-2037?bidId=>

5.4.4 Litter Control Programs

The following litter control programs throughout Frederick County are presented below.

- Alliance for the Chesapeake Bay “Project Clean Stream” - April 6, 2019
- The event is an annual watershed-wide effort to clean up trash. Frederick County “Adopt-a-Road” Program – **Ongoing**
 - The Office of Highway Operations coordinates an “Adopt-a-Road” Program to help control litter along County roads. Approximately 83.85 miles of road are maintained by 40 groups across the County. From July 2018 through June 2019, a total of 0.46 tons of trash removed through this program.
- Road Maintenance Activities - **Ongoing**
 - The Office of Highway Operations removed a total of 30.21 tons of trash and 566 tires from July 2018 through June 2019 The Office of Highway Operations also conducts street sweeping and inlet cleaning.
- Frederick County Health Department Nuisance Waste Ordinance – **Ongoing**
 - According to the nuisance waste ordinance, Frederick County’s Health Department enforces illegal dumping that is reported by OSER’s IDDE program protocol. OSER tracked the removal of two illegal dumping complaints this reporting period as included in IDDE Report #5 and #14 (Section 5.3.4).

5.5 Property Management and Maintenance

5.5.1 Municipal Facilities

There are eleven (11) Frederick County-owned and operated facilities that are currently covered by the 12-SW General Permit for Discharges from Stormwater Associated with Industrial Activities (Table 5). All eleven facilities currently have Stormwater Pollution Prevention Plans (SWPPPs) that are continuously updated by SWPPP team members through redline edits. The identified SWPPP team members also perform quarterly inspections, and visually monitor the outfalls associated with the BMPs on their property. Annual trainings occur in October and November. Spills are reported and documented internally

and MDE is notified as required. Coordination of the 12-SW permit and its requirements are directed by OSER staff as of 7/1/2018.

On December 7, 2018, MDE issued a final determination for a modification to the General Permit for Discharges from Stormwater Associated with Industrial Activity. It is now identified as General Permit 12-SW-A with an expiration date of December 31, 2018, and has thereby been administratively extended until a renewal permit can be drafted and issued.

Table 5 - Notice of Intent (NOIs) with Permit Coverage through December 31, 2018

Facility Name	Permit Number	NOI Submitted	SWPPP Developed	SWPPP Complete	SWPPP Inspections Complete
Jefferson Copperfield Wastewater Treatment Plant	12SW2283	Yes	Yes	Yes	Yes
Ballenger McKinney Wastewater Treatment Plant	12SW1878	Yes	Yes	Yes	Yes
Reich's Ford Landfill	12SW2366	Yes	Yes	Yes	Yes
331 Montevue Lane (Frederick) Highway Operations Yard	12SW1890	Yes	Yes	Yes	Yes
Thurmont Highway Operations Yard	12SW1892	Yes	Yes	Yes	Yes
Johnsville Highway Operations Yard	12SW1891	Yes	Yes	Yes	Yes
Myersville Highway Operations Yard	12SW2285	Yes	Yes	Yes	Yes
Jefferson Highway Operations Yard	12SW2291	Yes	Yes	Yes	Yes
Urbana Highway Operations Yard	12SW1893	Yes	Yes	Yes	Yes
Law Enforcement Center	12SW1942	Yes	Yes	Yes	Yes
Transit	12SW1888	Yes	Yes	Yes	Yes

This past fiscal year, the County incorporated an online training course for general training. This Annual Report SWPPP appendix contains the training information from FY19, as well as annual and quarterly inspections, annual training sign-ins from in-person training as well as logs from online training, spill response forms, and other relevant data (Appendix E).

Data in relation to industrial facilities managed for stormwater can be found in the MunicipalFacilities feature class in the MDE_NPDES_MS4 geodatabase.

5.5.2 Road Maintenance Activities

During FY19, Frederick County continued to implement recommendations from its 2002 Assessment of Road Maintenance Activities (Versar, 2002). The objective of this study was to assess the effects of road maintenance activities on stormwater runoff and resulting impacts on surface water quality. The assessment evaluated current practices, analyzed alternative practices, and presented a plan to incorporate alternative practices into the County's road maintenance programs. Members of the County's Office of Highway Operations provided data and information on current practices and plans of the Department. Activities included in the evaluation were chemical usage in snow and ice removal, herbicide spraying for vegetation control, street sweeping, litter control, road surface maintenance, and maintenance of unpaved surfaces. The assessment report was submitted to MDE on June 11, 2002 and was found to meet NPDES permit requirements for developing a plan to reduce pollutants associated with road maintenance activities.

The County continues to move ahead with several of the recommendations developed in the June 2002 evaluation report. The activities that the County Office of Highway Operations undertook during the reporting timeframe of 7/1/18 through 6/30/19 to reduce runoff pollution were:

1. **Street Sweeping:** Street sweeping was conducted July 2018 through June of 2019. A total of 529.12 lane miles of road were swept totaling 366.93 tons of debris removed from roads in Frederick County during FY19. All curbed roads are swept at least once a year with some roads up to four times a year. All sweeping is conducted using a vacuum-assisted truck. Frederick County prioritizes closed-section main roads to be swept first followed by roads in developments. Once all sections are swept, the sweeping starts over with closed section main roads, etc. Complaints also drive prioritizations. In addition to complaint-driven sweeping, Highway Operations proactively sweeps bridge decks and other areas after deicing activities. When the Office of Highway Operations receives a complaint, the complaint is logged into a work order system and assigned to a foreman, and work is performed. Citizens either directly input complaints into the system through a link on the County's Highway Operations Department website; or, the Office of Highway Operations secretary receives calls and enters information into the work order request system. Street sweeping data is recorded by the districts. Lane Miles, Cubic Yards, Landfill Fee, and Landfill Weight by watershed are captured in reports from Highway Operations. Specific weight information by watershed is available from October 2015-present while quarterly weight totals can be derived since January of 2015. For more information, a written SOP is in Appendix F. Crediting of the street sweeping method for MS4 compliance by Frederick County is done utilizing the Frederick County Street Sweeping Program: Reporting Methodology prepared by Versar in 2012 and approved by MDE via email on February 1, 2019.
2. **Deicing:** Caliber M1000, which is a 30% Magnesium Chloride solution with an agricultural by-product, is used in 48 of the County's trucks when the temperature is ≤ 25 °F. The trucks are equipped with tanks that range from 90-120 gallons that apply the solution onto the salt mixture as it is spread onto the road. Overall, the County has 51 full-sized, ten-ton dump trucks and 14 smaller, one-ton dump trucks for deicing. The Caliber M1000 makes the salt mix more effective and reduces corrosion. The County does not use M1000 for de-icing at temperatures above 25 °F. The M1000 is also sprayed onto the salt to pre-treat the roads, if the timing and conditions warrant.

According to product literature for Caliber M1000 (http://www.innovativecompany.com/products/winter_liquid-enhanced-liquid/caliber-m1000):

"As a pre-wetting agent for salt and sand, Caliber M1000 reduces bounce and scatter, increases the speed at which the salt begins working, increases the melting capacity of the salt, and permits the use of salt at lower temperatures. Additionally, Caliber M1000 also reduces corrosion, inhibits crystal formation and product fallout at lower temperatures, and improves roadway traction when compared to other liquid products."

Additional information on Caliber M1000 is also available at: http://www.innovativecompany.com/userfiles/file/sell_sheets/Caliber_M1000_Brochure.pdf.

The use of deicers in FY19, by MDE watershed, is presented in Table 6 for Highway Operations. A total of 9,763 gallons of liquid deicer (Caliber M1000), 30,354 American standard tons of road salt

(consisting of over 98.5% sodium chloride by weight), 155 tons of salt for brine treatment, and 415 American standard tons of anti-skid were used within the watersheds. Prior to 2009, Highway Operations used cinders instead of anti-skid. The switch to anti-skid was the result of the suspension of distribution of bottom ash for winter road treatment in order to conform to the Maryland Coal Combustion Byproducts (CCB) regulations. These regulations prohibit placement of CCBs in areas other than approved disposal facilities. As a result, Highway Operations began using an anti-skid material purchased from local quarries. It is a small, uniform size stone that contains very little dust/fine material. Thus far, the material has been working well. Starting in December 2008, one of the objectives of Highway Operations was to use more liquid deicer in an attempt to use less salt. They are also pre-treating the roads, whenever appropriate, to apply material under the snow/ sleet / ice layer so that frozen precipitation cannot bond to the road, which should result in a significant reduction in materials used. In addition, Highway Operations developed and implemented a Salt Management Plan to provide a framework to deliver safe, efficient roadway systems during winter storm events in a cost effective and environmentally sensitive manner.

In its review of the 2016 Annual Report, MDE, “requests that the County provide an assessment of how de-icing procedures are reducing the application of salt during winter weather.” Frederick County responded in 2016 to a similar request and had examined whether the use of deicer (Caliber M1000) reduced the amount of road salt used during snow events. There did not seem to be a clear pattern in the use of these two techniques over time, in relation to the total amount of snowfall recorded in the County for the year. Additionally, Caliber was quite expensive. The County found that pretreatment with the brine allowed the County to use significantly less granular salt. The County invested significantly in this equipment after the end of FY17 and continues to implement brine technology during storm events.

3. Inlet Cleaning: All Highway Operations foremen began reporting inlet-cleaning statistics in 2004. A total of 524 inlets were cleaned in Fiscal Year 2019, of which 98 of the inlets were vactored. Inlet-cleaning statistics are reported in the quarterly reports under Drainage. Prioritization of inlet/pipes cleaned by the County are complaint-driven, using the same mechanism to report issues as street sweeping noted above. For more information, a written SOP is provided in Appendix G. In addition to inlet cleaning, storm ceptor cleanings are performed on a regular basis. Approximately 1/3 are cleaned each year by contractors for the County.
4. Data Collection: Reports were collected quarterly from district foremen and submitted to the department head. At the end of 2009, data collection improvements were made to better track application of snow removal materials as discussed above under “Deicing”.
5. Reducing the Use of Pesticides, Herbicides, Fertilizers and Other Pollutants: The 2002 road maintenance assessment report presented data on two herbicides, Razor and Pendulum, which were used by the County’s Office of Highway Operations in 2001. Pendulum, with 37.4% pendamethalin as the active ingredient, was noted to be an environmentally-unfriendly chemical with potential impacts to aquatic life. The report recommended that the County review its use and consider alternative treatments. As reported in the 2003 Pesticide/ Herbicide report (Versar, 2003) and subsequent NPDES Annual Reports (see Section 5.5.2), the use of Pendulum has been discontinued. In FY19, the Office of Highway Operations sprayed 10,700 gallons (diluted quantity, Ranger Pro) of herbicide along approximately 94.55 miles of road guardrails in the County.

Evaluation: The County’s Office of Highways and Transportation continues to implement the recommendations of the Road Maintenance Report and to experiment with new technology to reduce its activities’ impacts on water quality.

Data in relation to chemical application from Highway Operations can be found in the ChemicalApplication table in the MDE_NPDES_MS4 geodatabase.

Table 6 - Office of Highway Operations Use of Deicers by Watershed FY19

Watershed	Gallons of Brine	Tons of Salt for Brine	Gallons of Liquid Caliber (M1000)	Tons of Road Salt	Tons of Anti-skid
Catoctin Creek	37,451	40	2,280	6,263	198
Double Pipe Creek	8,290	9	528	1,418	8
Lower Monocacy	44,135	47	3,965	12,189	42
Potomac	13,450	14	1,330	1,238	0
Upper Monocacy	41,002	44	1,660	9,242	168
Countywide (No recorded location)	0	0	0	4	0
Total	144,328	155	9,763	30,354	415

5.5.3 Herbicides, Pesticides, Fertilizers

Because of concern for environmental health, MDE, through the requirements of NPDES MS4 Permits, requires local jurisdictions to evaluate their current uses of pesticides, herbicides, and fertilizers and to seek opportunities to reduce use of these materials. To address this requirement, during 2002-2003, Frederick County sponsored a study to characterize uses of pesticides, herbicides, and fertilizers by County agencies and to identify potential reduction strategies - *Recommendations for Alternatives to Pesticide/Herbicide/Fertilizer Use for Frederick County, December 17, 2003* (Versar, 2003).

Frederick County initiated this study in fall 2002 by surveying County divisions about pesticide, herbicide, and fertilizer use at all County-owned facilities and by all Frederick County Government agencies or departments. At the time, four County units were found to apply herbicides, pesticides, and/or fertilizers: (1) the Maryland Department of Agriculture’s (MDA) Vector Control Program, which works in conjunction with the Frederick County Mosquito Control Program, (2) the Division of Parks and Recreation, (3) Frederick County’s Office of Highway Operations, and (4) the Frederick County Weed Control Program.

Study results indicated that pesticide/herbicide/fertilizer use by Frederick County did not require any drastic reduction in application practices because County agencies had, in general, already minimized use of these chemicals, or were already using more environmentally acceptable substitutes. In most cases, the overall recommendation was to continue current chemical control practices, while considering possible biological and mechanical controls that could be used in place of, or in combination with, current practices.

A number of practices are already employed by County personnel to control the application of chemicals and, where possible, to use minimal amounts. Frederick County departments apply pesticides on an “as needed” basis. Any pesticide usage is documented in Appendix H. Fertilizer is applied one to three times per year at specific locations. Most of the departments surveyed indicated specifically that application rates were based on label instructions, and were made at the lowest rate required for effectiveness.

Herbicide Use

Frederick County Weed Control Program, Frederick County’s Division of Parks and Recreation, and Frederick County’s Office of Highway Operations continue to monitor weather conditions around the time of application; applications are not performed if heavy rain is expected within 2 hours of application. The Weed Control Program continues to verify that application personnel are registered with the Maryland Department of Agriculture (MDA) Pesticide Regulation Section and are either licensed applicators or work directly under the supervision of one.

As noted in the Road Maintenance Activities section (Section 5.5.1), Frederick County Highway Operations has discontinued the use of the herbicide Pendulum, which is toxic to aquatic life, and has replaced its use of Razor with more environmentally-friendly herbicides, which included Ranger Pro (a generic version of Roundup), DMA 4 IVM, and CWC-90 (a non-ionic surfactant) in 2015.

Location of Herbicide, Pesticide, and Fertilizer Application

In the case of Highway Operations’ guardrail herbicide application, the County tracks application by highway district. GIS analysis was used to estimate gallons by watershed within each district. The map in Figure 5 shows the boundaries of highway districts and watersheds within the County. Table 7 is the result of a GIS analysis estimating the number of gallons applied per watershed based on County right-of-way (ROW) within each highway district and watershed.

Figure 5 - Highway District/ROW in Relation to Watershed Boundaries

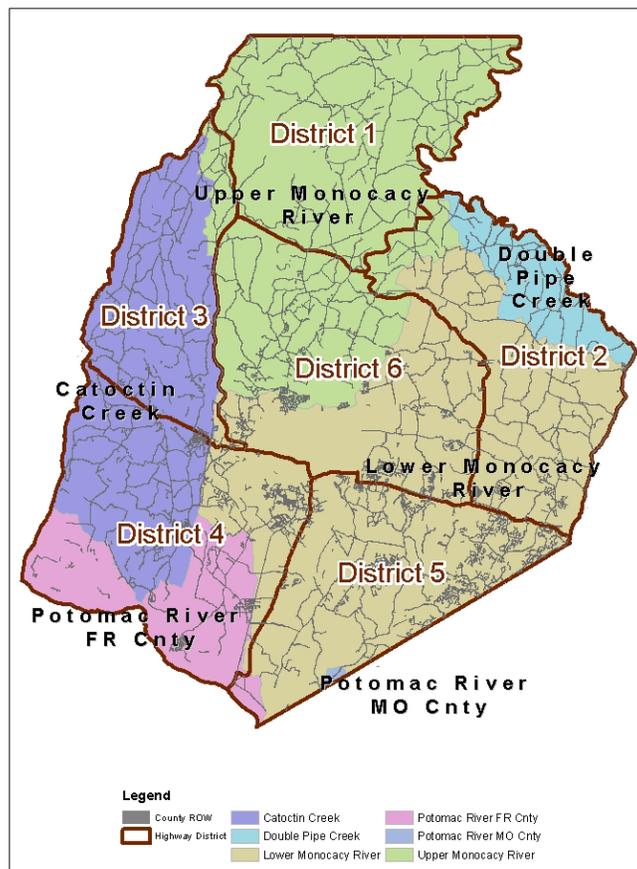


Table 7 - Highway Operations Estimated Ranger Pro Application within Each Watershed FY19

Watershed	Estimated Gallons per Watershed
Catoctin Creek	1,295
Double Pipe Creek	748
Lower Monocacy River	4,985
Potomac River FR Cnty	564
Potomac River MO Cnty	12
Upper Monocacy River	3,097
Total	10,700

In regards to other County departments, herbicide application and location information is provided in individual spraying reports. Frederick County Facilities maintenance contracted Gladhill Pest Control for spraying of County owned properties where needed. Gladhill applied 1,522.5 ounces of Alpine, 910 ounces of Fast Cap, 448 ounces of Gentrol, 54 ounces of Green Bull and 210 ounces of Phantom. Frederick County Weed Control used 116 ounces of Avatar and 1,726.2 ounces of Transline products. Parks and Recreation, Landfill, and Reforestation program used 33 ounces of Aquament, 1,953 ounces of Round Up, 418.3 ounces of Round Up Pro, 248 ounces of Farmworks, 671 ounces of Round Up Power Max, 256 ounces of Speed Zone, and 1,373 ounces of Ranger Pro to create diluted solutions for weed control. Totals are provided in Table 8. Total herbicide usage within each watershed and the percentage of total herbicide for each watershed are presented in Table 9. As seen in the table, and as would be expected, Lower Monocacy River Watershed is the largest watershed in the County, and contained the largest application of herbicides. The figure in Appendix H shows where herbicide spraying occurred within the County's watersheds, when application point location information was able to be recorded.

Table 8 - Chemical Application Totals for Facilities Maintenance, Parks, Landfill, Reforestation

Chemical Name	Total	Units	Department/Program
Aquament (#228-365)	33.0	oz	Reforestation (Creek ReLeaf)
Round Up (#525-475)	1,953.0	oz	Reforestation (Creek ReLeaf)
Round Up Pro (#524-529)	418.3	oz	Reforestation (Creek ReLeaf)
Ranger Pro (#524-517)	1,373.0	oz	Landfill
Farmworks (#084840)	248.0	oz	Parks and Recreation
Round Up Power Max (#524-579)	671.0	oz	Parks and Recreation
Speed Zone (#2217-833)	256.0	oz	Parks and Recreation
Avatar (#89168-11-89391)	116.0	oz	Frederick County Weed Control
Transline (#62719-259)	1,726.2	oz	Frederick County Weed Control
Alpine	1,522.5	oz	Facilities Maintenance
Fast Cap	910	oz	Facilities Maintenance
Gentrol	448	oz	Facilities Maintenance
Green Bull	54	oz	Facilities Maintenance
Phantom	210	oz	Facilities Maintenance

Table 9 - Percentage of total herbicide used within each watershed

Watershed	Watershed Area (ac)	Total Herbicide Used (oz)	% of Herbicide Total
Catoctin Creek	77,062.30	765.70	11.60%
Double Pipe Creek	123,395.61	147.00	2.23%
Lower Monocacy River	194,682.91	4,752.83	71.99%
Potomac River FR Cnty	43,100.50	140.30	2.12%
Upper Monocacy River	156,498.06	796.65	12.07%
Grand Total	594,739.37	6,602.48	100.00%

All herbicide, pesticide, and fertilizer use by County departments from 7/1/18 through 6/30/19, is presented in Appendix H; and data in relation to chemical application, along with historical application, can be found in the Chemical Application table in the MDE_NPDES_MS4 geodatabase.

5.6 Public Outreach and Education Program

In FY19, OSER staff continued to make impacts through the County's public outreach and education program. Frederick County addressed permit-suggested outreach topics and met its own goals and objectives from *The Strategic Plan to Improve Water Quality through Public Outreach in Frederick County, Maryland*, published in November 2003. Outreach activities are used to educate citizens, to direct the course of watershed plans, and to identify landowners for potential restoration activities. OSER enhanced its outreach materials as well as its efforts to provide its citizens with needed educational touchpoints.

In addition to the permit requirements for outreach, other key County initiatives are also mentioned below that can be seen in the following sections, and in the summary of public outreach and education activities in Table 10:

- Outreach related to the Monocacy & Catoctin Watershed Alliance (MCWA) and Green Leader Brigade;
- Outreach related to the Green Homes Challenge (GHC);
- Outreach related to Residential Septic Pump-outs;
- Outreach related to Pet Waste;
- Outreach related to Stormwater Management;
- Outreach related to Watershed Assessments and;
- Other County Outreach Initiatives.

Table 10 - Summary of Public Outreach and Education Activities FY19

Type	Date(s)	Description
Increasing Water Conservation		
Monocacy and Catoctin Watershed Alliance Web Page	Ongoing	The Monocacy and Catoctin Watershed Alliance webpage (http://watershed-alliance.frederickcountymd.gov) links to the County webpage and features information for citizens on stormwater outreach topics. The Watershed Alliance meets quarterly.

Type	Date(s)	Description
Rain Barrel Promotion	Ongoing	The Scott Key Center, a division of the Frederick County Health Department, offered water-saving Rainwater Collection Systems. Developmentally disabled clients at the Scott Key Center convert recycled olive barrels into rain barrels and make them available for purchase to Frederick County residents. Rain Barrels are available for some county residents through the grant-funded Expanded Neighborhood Green Program.
Commercial Property Assessed Clean Energy (C-PACE) Loan program	Ongoing	The Frederick County Council passed bill number 16-17 on November 15, 2016 to enable Frederick County to create a PACE program. The bill lists “Water conservation devices not required by law” as an eligible practice. Two businesses have taken advantage of this program to date.
Residential and Community Stormwater Management Facility Implementation and Maintenance		
Point of Rocks Neighborhood Stream Restoration and Pond Retrofit	Ongoing	A stream restoration and pond retrofit was initiated as a result of the Point of Rocks Comprehensive Stormwater Master Plan. This project is currently in construction.
Green Leader Tip Sheets	Ongoing	OSER publishes tip sheets on stormwater and clean water –related topics that include “Composting-Do the Rot Thing”, “Gardening with Native Plants”, “Natural Household Cleaners”, “Maintaining your Lawn While Protecting Water Quality”, “Harvesting Rainwater Using Rain Barrels”, “Design and Construction of a Rain Garden”, available https://www.frederickcountymd.gov/7595/Publications-and-Resources
Stormwater Maintenance Fact Sheets	Ongoing	With design templates from Charles County, OSER published fact sheets on property maintenance of stormwater best management practices, to include: “Guidance for Maintaining Dry Wells”, “Guidance for Maintaining Rain Garden, Bioswale, and Micro-Bioretenion Facilities”, “Guidance for Maintaining Porous Pavement”, and “Guidance for Maintaining Stormwater Management Ponds”, available at https://www.frederickcountymd.gov/7595/Publications-and-Resources
Creek ReLeaf Program	Ongoing	The Creek ReLeaf program is a multi-year reforestation program designed to increase the total amount of forested area within Frederick County, including privately owned lands and public properties. Forested lands provide stormwater control, reduce temperature impacts on County streams, and increase wildlife habitat.
Watershed Study Public Comment Period for various Watershed Restoration Assessments	June 1, 2019 through June 30, 2019	OSER provided 30 day public comment period for the following assessments: Catoctin Creek Watershed Assessment, Double Pipe Creek Watershed Assessment, and Potomac River Watershed Assessment.
Residential Car Care and Washing		
Car Free Day	9/22/18	County TransIT Services Division promoted Car Free day and outreach about alternative transportation.

Type	Date(s)	Description
Proper Erosion and Sediment Control Practices		
Backyard Buffers Program	March-April 2019	Maryland Forest Service, an Alliance partner, worked with the County to conduct outreach that provides free trees to homeowners with frontage on unbuffered streams. The program distributed 89 tree bundles (containing 25 seedlings each) to Frederick County households.
Woody Vegetation Control Methods Handout	Ongoing	County SWM inspection staff routinely hand out a one-page fact sheet, "Woody Vegetation Control Methods: Guidelines for Stormwater Facilities", to homeowner associations, property management groups, developers, and others responsible for maintaining stormwater management facilities.
Inspection Program	Ongoing	Stormwater Management Facility inspections are conducted triennially with explicit direction for maintenance/correction when problems are discovered.
Improving Lawn Care and Landscape Management		
Seton Center Workshop	9/19/18	Staff gave a presentation on the Green Homes Challenge for 10 participants at a workshop at the Seton Center in Emmitsburg, MD.
Frederick Women's Civic Association	11/19/18	Staff gave a presentation on the Green Homes Challenge and the Septic Pump Out Rebate Program.
Pet Waste		
Pet Waste Survey	Ongoing	The OSER pet waste survey educates the public on why we should "scoop the poop" with dog waste having harmful bacteria that will end up in our waterways if not picked up. Results are included in the Media files of Public Outreach Appendix.
Frederick County Planning and Permits Office and Humane Society	Ongoing	OSER staff has pet waste management tip sheets information within the planning and permits office and the Frederick County Humane society.
Heritage Park – Fast & the Furriest 5k	4/14/19	This was the second year OSER staff tabled to promote better pet waste management behaviors by completing pet waste management surveys and handing out pet waste tip sheets and pet waste bag dispensers. OSER staff spoke with over 50 booth visitors.
Ballenger Creek Park - Bark in the Park	5/11/19	At this all dog event, OSER staff tabled to promote better pet waste management behaviors by completing pet waste management surveys, having dogs test abilities with the dog treat dispenser game and handing out pet waste tip sheets and pet waste bag dispensers. OSER staff spoke with over 75 booth visitors.
Septic System Outreach		
Septic System Pump-Out Rebate Program	Ongoing	Frederick County Government Septic System Pump-Out Rebate Program https://frederickcountymd.gov/DocumentCenter/View/318594/PROMOSeppticSystemFINALFY19REV4-2019 Septic Rebate program approved and open to the public on April 5, 2018 and has proven to be very successful. The program's success is possible through County outreach efforts and the support of the permitted septic haulers as well as the farm bureau, all working together to promote the program.
The Catocin Banner	9/26/18	OSER staff promoted the Septic Pump-Out Rebate Program in an article in The Catocin Banner newspaper.
Emmitsburg New Journal	10/2018	OSER staff promoted the Septic Pump-Out Rebate Program in an article in the Emmitsburg New Journal newspaper.

Type	Date(s)	Description
Woodsboro Walkersville Times	10/2018	OSER staff promoted the Septic Pump-Out Rebate Program in an article in the Woodsboro Walkersville Times.
Frederick County Relators Association continuing education class	11/14/2018	Along with the Frederick County Health Department - Wells, Septic and Percolation System Testing class given to relators
Septic Rebate Postcard mailing	2/2019-3/2019	6000+/- informational post cards about the septic rebate program to homes over 5 acres for septic
The Brunswick Citizen	9/20/18	OSER staff promoted the Septic Pump-Out Rebate Program in an article in the Brunswick Citizen newspaper.
Homeowner's Guide to Septic Systems	Ongoing	OSER staff published Environmental Protection Agency (EPA's) Homeowner's Guide to Septic Systems along with a Septic System checklist at https://www.frederickcountymd.gov/DocumentCenter/View/300313
Frederick County Permits Office	Ongoing	Septic rebate applications within the permits office lobby area.
Frederick County Health Department	Ongoing	OSER staff works with Frederick County Health department in providing septic rebate packets for their office and events.
Increasing Proper Disposal of Household Hazardous Waste		
Household Hazardous Waste Day	Bi-annually	The County sponsors two household hazardous waste (HHW) days each year and promotes them widely in the media. Pharmaceuticals (in their original containers) are now acceptable items for drop-off at HHW events.
Household Hazardous Waste Website	Ongoing	A website directs citizens to solutions for household hazardous waste at https://www.frederickcountymd.gov/3958/Household-Hazardous-Wastes
Prescription Drug Disposal	Ongoing	There are six sites throughout the county where citizens can safely dispose of their expired and/or unwanted household medicines and prescription drugs. This is a collaborative effort between the community and the Frederick County Health Department and local law enforcement agencies. The locations are: <ul style="list-style-type: none"> ◦Brunswick Police Department- 20 E. A St., Brunswick, MD 21716 ◦Emmitsburg Community Center- 2nd Floor, 300 South Seton Avenue, Emmitsburg, MD 21727. ◦Frederick Police Department- 100 West Patrick Street, Frederick, MD 21701 ◦Maryland State Police Barracks- 110 Airport Drive E., Frederick, MD 21701 ◦Middletown Municipal Center - 31 W. Main St., Middletown, MD 21769 ◦Thurmont Police Department- 800 Main St., Thurmont, MD 21788
Department of Utilities & Solid Waste Management (DUSWM) Web Page	Ongoing	The Department of Utilities & Solid Waste Management has information available on its website (https://frederickcountymd.gov/529/Landfill-Information) for County residents on various landfill programs, such as disposal of household hazardous wastes, recycling, source reduction, and backyard composting.
Used Motor Oil and Antifreeze Drop-off Sites	Ongoing	The county maintains a list of used motor oil recycling drop-off locations on its website (https://frederickcountymd.gov/529/Landfill-Information).
Provide Information to the Regulated Community		
Fall 2018 Western Maryland WIP Workshop	9/5/18	Staff attended the WIP Workshop to discuss a variety of topics related to the Phase III WIP.

Type	Date(s)	Description
Spring 2019 Western Maryland WIP Workshop	4/29/19	Staff attended the WIP Workshop to discuss a variety of topics related to the Phase III WIP. Discussions arose with collaborating and coordination between the Agricultural and Urban sectors.
Assistance to Municipalities on MS4 compliance	Ongoing	Staff routinely works with municipalities to help with elements of MS4 permit compliance including public outreach, illicit detection and elimination, source identification, and other topics. Some topics such as erosion and sediment control, plan review, and triennial inspections are covered by agreement with municipalities.
Maryland Municipal Stormwater Association	Ongoing	OSER staff served on the Executive Board of the Maryland Municipal Stormwater Association and worked to inform member jurisdictions on policy issues related to stormwater compliance.
Metropolitan Washington Council of Governments	Ongoing	OSER staff served on the Chesapeake Bay Policy Committee at MWCOG and shared information with member jurisdictions on stormwater and Chesapeake Bay policy issues.
Water Quality Technical Advisory Committee	Ongoing	OSER Staff served on the WQTAC, researched water quality trading program best practices, and developed policy positions on behalf of MACo.
Outreach Events for All County Initiatives		
Master Gardeners Tour of Stream Restoration and Stormwater Management Projects	7/19/18	OSER staff provided a tour to the Master Gardeners to educate and teach them the variety of stormwater and stream restoration projects that are occurring throughout Frederick County as part of the restoration efforts as required by the MS4 Permit. There were 22 master gardeners who attended the tour.
In the Street	9/8/18	OSER staff attended this annual outreach event promoting the Green Homes Challenge, Neighborhood Green, and best management practices for residential storm water, lawn care, pet waste management, and septic Pump-out information. Surveys conducted on pet waste management and Tip Sheets for all environmental areas were made available to 125 booth attendees.
Frederick County Home Show	3/16/19 thru 3/17/19	OSER hosted a booth at this 2-day event with the objective of informing County residents about the Neighborhood Green and Green Homes Challenge programs. Table hosts informed 247 visitors about these programs and provided lawn care and landscape best management practices information through our Green Leader Tip Sheets.
8 th Annual Green Homes Challenge Recognition Event	3/28/19	Green Homes Challenge Certified Households were recognized at an annual celebration. https://www.frederickcountymd.gov/7600/8th-Annual-Green-Homes-Challenge-Recogni
Thurmont Green Fest	4/13/19	OSER staff and volunteers hosted a booth and informed 25 booth visitors about the Green Homes Challenge, Neighborhood Green, and best management practices for residential storm water, lawn care, Pet waste management and Septic Pump-out information. Surveys conducted on pet owner waste management and Tip Sheets for all environmental areas were made available to booth attendees.
AstraZenica Earth Day Fair	4/23/19	OSER staff and volunteers hosted a booth and informed 30 booth visitors about the Green Homes Challenge, Neighborhood Green, and best management practices for residential storm water, lawn care, Pet waste management and Septic Pump-out information. Surveys conducted on pet owner waste management and Tip Sheets for all environmental areas were made available to booth attendees.

Type	Date(s)	Description
Middletown Green Expo	4/27/19	OSER staff and volunteers hosted a booth and informed 20 booth visitors about the Green Homes Challenge, Neighborhood Green, and best management practices for residential storm water, lawn care, Pet waste management and Septic Pump-out information. Surveys conducted on pet owner waste management and Tip Sheets for all environmental areas were made available to booth attendees.
Catoctin Nature Fest	5/4/19	OSER staff hosted a booth and informed 40 booth visitors about the Green Homes Challenge, Neighborhood Green, and best management practices for residential storm water, lawn care, Pet waste management and Septic Pump-out information. Surveys conducted on pet owner waste management and Tip Sheets for all environmental areas were made available to booth attendees.
Expert Panel Discussion - Current and Future Health of the Monocacy	4/30/19	OSER staff participated in an expert panel discussion on the current and future health of the Monocacy at Hood College. https://www.fredericknewspost.com/news/education/schools/higher_ed/hood/green-neighbor-festival-returns-may-with-fish-food-fun/article_69f6ff1d-9203-57b3-addd-8224c98e25ae.html
Green Neighbor Festival	5/4/19	This exciting event was held around Culler Lake in Frederick's Baker Park and introduced over 75 homeowners and business owners to practical steps they can take now to improve their local environment, reduce storm water run-off, make their backyards more hospitable to local fauna, improve pet waste management, maintain their septic system, and more. OSER sponsored a family-friendly environmental activity booth at this event.
Master Gardener Presentation on Stormwater Management	5/25/19	OSER staff presented and educated to over 60 Frederick County Master Gardeners on ways to reduce stormwater runoff on their own properties as well as how they can assist in educating the public on ways to improve water quality. The presentation focused on broad stormwater management practices as well as a field demonstration at the recently constructed BMPs constructed at the County's Extension Services Building.
Frederick County Extension Services Office Open House	June 5, 2019	State and Frederick County local officials held a tap-opening ceremony on June 5 to launch an innovative project to demonstrate stormwater management options for property owners. The project, located at 330 Montevue Lane is a collaboration of the Office of Sustainability and Environmental Resources, the University of Maryland Extension Services, and the Master Gardener Program. The demonstration gardens are considered the first stormwater management demo project in the mid-Atlantic region. The project will also provide educational opportunities for those who want to replicate similar projects. https://www.fredericknewspost.com/news/environment/county-to-launch-stormwater-management-project/article_8b02c06f-7a26-58b2-8da0-33734ec3a09c.html https://www.fredericknewspost.com/calendar/government_and_politics/ceremony-to-launch-stormwater-management-prototype-project/event_d19dba8c-86e1-11e9-8e14-537204a5e6fe.html
Mother Earth News Fair	6/1/19 thru 6/2/19	OSER staff participated in this two-day event to promote the Green Homes Challenge, the Green Leader Brigade, Pet Waste Management, and Septic Pump-Out, and more. Tip Sheets were made available to 186 attendees who visited our booth.

Type	Date(s)	Description
Green Leader Challenge interactive web page	Ongoing	The Green Leader Challenge, one of 3 sub-challenges that make up the overall Green Homes Challenge, helps County residents adopt environmentally friendly practices. In the Green Leader Challenge, there are 11 outdoor water conservation actions and 17 other outdoors and yard actions that educate and motivate Challenge participants to adopt lawn care and landscape management best practices. To date, more than 2,230 individuals have registered with the overall Green Homes Challenge and 295 are self-certified as Green Leaders.

Appendix I consolidates Frederick County media files of public outreach activities.

5.6.1 Outreach Related to Monocacy & Catoctin Watershed Alliance (MCWA)

As described in previous Annual Reports, the Upper and Lower Monocacy Watershed Restoration Action Strategy (WRAS) Steering Committees developed the Monocacy & Catoctin Watershed Alliance (MCWA or the Alliance) in order to continue outreach begun during the Upper and Lower Monocacy WRAS efforts and to begin implementation of the Upper and Lower Monocacy WRAS plans.

County staff continued to coordinate with MCWA in FY19. Quarterly meetings enable attendees to discuss educational outreach opportunities as well as develop restoration and protection projects to support water quality and habitat initiatives. Partners involved in MCWA include but are not limited to:

- Local Organizations
 - Audubon Society of Central Maryland
 - Catoctin and Frederick Soil Conservation Districts
 - Catoctin Forest Alliance
 - Frederick County Forest Conservancy District Board
 - Catoctin Land Trust
 - Frederick County Conservation Club
 - Frederick County Master Gardeners
 - Local Citizens
 - Bar-T Mountainside Challenge & Retreat Center
- Regional Organizations
 - Potomac Conservancy
 - Potomac Watershed Partnership
 - Interstate Commission on the Potomac River Basin (ICPRB)
 - Center for Watershed Protection (CWP)
 - Potomac Valley Fly Fishers, Inc.
 - Chesapeake Conservation Corps
 - Trout Unlimited
- Funding Agencies
 - Chesapeake Bay Trust
 - Alice Ferguson Foundation
 - Maryland Dept. of the Environment/U.S. EPA Clean Water Act Section 319 (h) Program
 - Maryland Urban & Community Forestry Committee (MUCFC)
 - National Fish and Wildlife Foundation (NFWF)
 - Chesapeake & Atlantic Coastal Bays Trust Fund
- Educational Institutions

- Hood College
- Mount Saint Mary's University
- University of Maryland Extension Office
- Frederick County Public Schools (FCPS)
- Government Organizations
 - Frederick County Council
 - Frederick County Executive
 - Frederick County Division of Planning and Permitting
 - Office of Sustainability and Environmental Resources
 - Comprehensive Planning
 - Development Review
 - Permits and Inspections
 - Division of Public Works
 - Division of Utilities and Solid Waste Management
 - Health Department, Environmental Health Section
 - Division of Parks and Recreation
 - Sustainability Commission
 - Municipalities in Frederick County
 - Maryland Department of Natural Resources
 - Forest Service
 - Fisheries
 - Watersheds Program
 - Wildlife & Heritage Service
 - Maryland Department of the Environment
 - Cunningham Falls State Park
 - National Park Service
 - Catoctin Mountain Park
 - Monocacy National Battlefield Park
 - Rivers, Trails and Conservation Assistance
 - U.S. Environmental Protection Agency
 - Environmental Information and Analysis
 - U.S. Fish and Wildlife Service

Public outreach efforts implemented by the Alliance during FY19 included Alliance website updates, the quarterly E-newsletters, and the Green Leader Brigade program.

The Alliance website (watershed-alliance.frederickcountymd.gov) includes a list of upcoming of events, past articles, links to quarterly meeting presentations, resources and publications. Information on MCWA is also available in the OSER quarterly e-newsletter, expanding the Alliance's reach to more than 2,200 County households and/or Alliance partners.

The MCWA Watershed Steward Program was developed to recognize the efforts of community members to protect and restore the natural resources of the Monocacy & Catoctin watersheds in Frederick County by implementing conservation and best management practices on their property. Watershed Steward signs or certificates are available to community members who meet the criteria for one of eight different categories:

- 1) Improving Watershed Health Through Community Partnerships
- 2) Rain Garden

- 3) Forest Conservation Practice
- 4) Agricultural Conservation Practice
- 5) Forest Land Protection
- 6) Farm Land Protection
- 7) Tree Planting
- 8) Wildlife Habitat Improvement

Alliance members developed a set of criteria and a nomination form to be completed by the sponsor. The original printing of the signs was funded through a grant from the Chesapeake Bay Trust with a match provided by the Frederick County OSER. In past years, over 180 signs have been distributed and installed around the County.

5.6.2 Outreach Related to the Green Homes Challenge (GHC)

In addition to MCWA, OSER coordinates the Green Homes Challenge (GHC) program. The GHC combines proven outreach strategies and concrete actions in a unified, comprehensive approach that helps Frederick County residents adopt environmentally friendly practices, reduce energy use and utility bills, and use renewable energy.

The framework for the Challenge is a three-level Green Homes Challenge Certification Program; however, the educational, incentive, loan, and cooperative purchasing components are available to all whether or not residents choose to complete certification. The program incorporates incentives and behavior change strategies and is designed to meet the needs of people who like to do things themselves, prefer one-on-one mentoring, or are motivated by group participation.

The three Challenges and corresponding certification levels are:



1. **Be a Power Saver** -- Save Our Energy, Bank Your Money!

Focuses on engaging and educating Frederick County households about the benefits of saving energy; emphasizes home energy audits, energy saving action plans, and retrofit projects.



2. **Be a Green Leader** -- Green Your Lifestyle, Protect Our Resources!

Focuses on changes households can make related to their transportation, food choices, homes, yards, and offices that are environmentally friendly and reduce greenhouse gases. There are specific sections of this Challenge devoted to waste management, indoor and outdoor water conservation, and outdoor and yard maintenance practices to protect and improve water quality. This Challenge officially launched summer 2012.



3. **Be a Renewable Star** -- Renew Your Energy, Clear Our Air!

Focuses on promoting renewable energy options through purchasing green power and renewable energy credits, and installing renewable energy systems with assistance from grants and cooperative purchasing (Launched 2013).

The outreach associated with the Green Leader Challenge focuses on improving water quality and addresses permit-suggested outreach topics. As of June 30, 2019, more than 2298 households had registered with the Green Homes Challenge and 310 households had completed Green Leader Certification. The Green Homes Challenge Recognition Event was held on March 28, 2019.

Evaluation: Frederick County continues to excel in public outreach. Not only has Frederick County addressed all of the suggested topics for outreach in the NPDES permit, it has also extended its public outreach strategy to meet restoration goals. Frederick County has greatly expanded its network through partnerships with local and regional organizations, particularly through the Monocacy & Catoctin Watershed Alliance. Agencies within Frederick County continue to educate the public about water quality through diverse programs.

6 Watershed Assessment and Restoration

6.1 Watershed Assessment

There are five 8-digit watersheds within Frederick County:

- Upper Monocacy River
- Lower Monocacy River
- Double Pipe Creek
- Catoctin Creek
- Potomac River – Frederick County

Frederick County has completed all Watershed Studies for the five 8-digit watershed required by the MS4 Permit. Watershed assessments for Upper Monocacy River and Lower Monocacy River were completed in FY17 as well as a more focused assessment for Little Hunting Creek, located in the Upper Monocacy Watershed. In FY19, the Watershed Studies for Double Pipe Creek, Catoctin Creek, and Potomac River – Frederick County were completed. These watershed studies have assisted the County in identifying additional cost-effective projects to assist in improving water quality in Frederick County and beyond.

Frederick County created watershed restoration action strategies (WRAS) and watershed assessments for several watersheds:

- Upper Monocacy River WRAS, completed May 2005 (Frederick County, 2005)
- Lower Monocacy River WRAS, completed May 2004 (Frederick County, 2004)
- An Assessment of Stream Restoration and Stormwater Management Retrofit Opportunities in Lower Bush Creek Watershed, completed in August 2003 (Perot, Morris et al., 2003)
- An Assessment of Stormwater Management Retrofit and Stream Restoration Opportunities in Ballenger Creek Watershed, completed August 2005 (Perot, Morris et al., 2005)
- An Assessment of Stormwater Management Retrofit and Stream Restoration Opportunities in Linganore Creek Watershed, completed June 2006 (Perot, Morris et al., 2006)
- An Assessment of Stormwater Management Retrofit and Stream Restoration Opportunities in Bennett Creek Watershed, completed April 2009 (Stribling et al., 2009).
- Final Report Watershed Assessment of Ballenger Creek, completed January 2001 (Roth et al., 2001a)
- Watershed Assessment of Lower Bush Creek, completed March 2001 (Roth et al., 2001b)
- Watershed Assessment of Lower Linganore Creek, completed in June 2002 (Perot, Morris et al., 2002)

- Bennett Creek Watershed Assessment, completed March 2008 (Stribling et al., 2008)

6.1.1 Lower Monocacy River Water Assessment

The Lower Monocacy River watershed is 169,117 acres in size and is located within Frederick County, Carroll County, and Montgomery County. A watershed assessment was conducted to provide a roadmap for meeting NPDES Phase I and Chesapeake Bay TMDL requirements. The watershed assessment analyzed existing conditions, identified priority areas for restoration, prioritized restoration projects to address target pollutants, developed cost estimates for implementation, proposed a schedule for implementation, discussed education and outreach opportunities, and established a process for monitoring and measuring project success. There were four assessment components:

1. Evaluate Existing Stormwater Management Best Management Practices.
2. Re-evaluate proposed projects from previously completed watershed assessments
3. Conduct a visual survey of untreated impervious areas
4. Conduct spot stream assessments at a sampling of road crossings.

The assessment identified privately- and publicly-owned properties for retrofit options, then ranked them and proposed the top 45 sites for potential implementation by the County. The assessment was advertised in the Frederick News-Post and was available for a 30-day public comment period per permit requirements, which ended on November 26, 2017. No comments were received.

6.1.2 Upper Monocacy Watershed Assessment

The Upper Monocacy watershed covers approximately 204 square miles and has about 424 miles of streams. A watershed assessment was conducted to provide a roadmap for meeting NPDES Phase I and Chesapeake Bay TMDL requirements. The watershed assessment analyzed existing conditions, identified priority areas for restoration, prioritized restoration projects to address target pollutants, developed cost estimates for implementation, proposed a schedule for implementation, discussed education and outreach opportunities, and established a process for monitoring and measuring project success. The assessment identified privately- and publicly-owned properties for retrofit options, then ranked them and proposed the top 45 sites for potential implementation by the County.

Assessments of effectively treated Green Infrastructure within the Upper Monocacy Watershed are also underway. These include studies of open section roads. Rooftop and Non-rooftop disconnect studies have been completed.

The assessment was advertised in the Frederick News-Post and was available for a 30-day public comment period per permit requirements, which ended on November 26, 2017. No comments were received.

6.1.3 Little Hunting Creek Watershed Assessment and Restoration Concept Report

The Little Hunting Creek watershed lies within the Upper Monocacy Watershed and covers approximately 10-12 square miles. A watershed assessment was conducted to determine the most beneficial stream and watershed restoration actions. Results of the assessment were used to prioritize sites and areas that would benefit most from restoration activities and achieve water quality improvements and pollutant and sediment load reductions. A desktop assessment was conducted to identify potential sites for stream improvements. Detailed site assessments were conducted and potential projects were identified based on identified impairments of concern for the watershed, feasibility of implementation, and the potential

for ecological and biological uplift of the watershed. Five potential restoration projects were identified. An assessment of each project was conducted to determine pollutant load reductions, impervious surface treatment area, and a cost estimate in order to determine a cost benefit analysis. - Based on this, two priority projects were identified that would provide a greater benefit with a lower cost (EA, 2016). Due to stakeholder input and site constraints, only one stream restoration project in the Little Hunting Creek watershed will be under construction in Spring 2020.

The assessment was advertised in the Frederick News-Post and was available for a 30-day public comment period per permit requirements, which ended on November 26, 2017. No comments were received.

6.1.4 Double Pipe Creek Watershed Assessment

The Double Pipe Creek watershed is approximately 123,264 acres and lies within Frederick and Carroll Counties. Frederick County's portion of the Double Pipe Creek Watershed is mostly low density housing or agricultural lands with limited amount of concentrated impervious surfaces to install cost-effective stormwater management opportunities. Due to this unique situation, the Watershed Assessment focused predominately on stream restoration and storm water management, where applicable. The Watershed Assessment identified 30 stream restoration and 5 stormwater management opportunities within the watershed of which 30 stream restoration concepts were developed. The assessment was advertised in the Frederick News-Post and was available for a 30-day public comment period per permit requirements, which ended on June 30, 2019. No comments were received.

6.1.5 Catoctin Creek Watershed Assessment

The Catoctin Creek watershed encompasses the southwestern portion of Frederick County and is approximately 76,994 acres nestled between South Mountain to the west and Catoctin Mountain to the east. There are two Phase II permittees within the watershed which include Middletown and Myersville. The Catoctin Creek Watershed Assessment identified 34 best management opportunities and 20 stream restoration sites of which conceptual designs were developed for 13 best management practices and 5 stream restoration sites. The assessment was advertised in the Frederick News-Post and was available for a 30-day public comment period per permit requirements, which ended on June 30, 2019. No comments were received.

6.1.6 Potomac River – Frederick County Watershed Assessment

The Potomac River (Frederick County) watershed is one of the smallest watersheds in Frederick County as 448 acres are encompassed within Frederick County. The Potomac River Watershed in Frederick County includes drainage from split of Interstates Route 15 and Route 340 south through portions of Adamstown and Point of Rocks. Another distinct portion of Potomac River is to the west of Brunswick and includes Knoxville. The Watershed Study identified 31 best management practices and 10 stream restoration opportunities within the watershed of which 26 best management practices and 5 stream restoration projects concepts were developed. The assessment was advertised in the Frederick News-Post and was available for a 30-day public comment period per permit requirements, which ended on June 30, 2019. No comments were received.

Potomac River (Montgomery County) watershed slightly intersects the Frederick County boundary (445 acres of this watershed are within Frederick County). Due to its small size and upstream location in the watershed, Frederick County is excluded from reduction goals within the TMDLs for this watershed. For this reason, Frederick County did not perform a comprehensive watershed assessment. To be thorough,

a desktop analysis was performed while evaluating opportunity in the Potomac River Frederick County Watershed Assessment.

6.2 Restoration Plans

As a requirement of sections PART IV.E.2.a and b of the NPDES MS4 Discharge Permit issued by MDE to Frederick County, the County developed and submitted the *Frederick County Stormwater Restoration Plan* to MDE in June 2016 (a court-issued postponement of six months at the behest of Frederick County Government) which addresses twelve TMDLs for local waterways, two TMDLs for the Chesapeake Bay, and impervious area restoration. The 2016 Restoration Plan was posted to the website on May 30, 2016. Public notice was published in the Frederick News Post on May 31 and June 1. The thirty day review period went from May 31 to June 30. All yearly updates to the Restoration Plan are made available to the public on the County's website.

On June 30, 2016, Frederick County submitted fourteen TMDL Restoration Plans including twelve local and two Chesapeake Bay TMDL Restoration Plans to satisfy this requirement as part of its Frederick County Stormwater Restoration Plan (Frederick County, 2016b). Updates to *Frederick County Stormwater Restoration Plan* are being submitted to MDE in December 2019 and FY19 updates are included in Appendix J.

The BMPs outlined in this plan are continually updated in the MDE geodatabase submission as projects are updated. MDE_NPDES_MS4 geodatabase tables with these updates include: AltBMPPoly, AltBMPLine, AltBMPPoint, and RestBMP.

Frederick County's Stormwater Restoration Plan demonstrates that Frederick County Government is on track to meet the restoration efforts required under its current permit and has a long term plan to address its portion of stormwater wasteload allocations (SW-WLAs) for all TMDLs in Frederick County. This Plan presents the projects and programs that will provide treatment towards its impervious area restoration and TMDL requirements.

6.2.1 Impervious Area Assessment

Frederick County submitted its Fiscal Year 2018 Annual Report in December 2018 as its fourth annual report submission for this permit term. At the MDE's request Frederick County included in this report submission a revised impervious surface cover assessment. MDE provided comments on this annual report submission on July 12, 2019.

In its comments, MDE states that it cannot approve the County's revised impervious cover assessment because the County's baseline update did not have adequate documentation to definitively identify the impervious acreages treated by various BMPs in the County's rooftop and non-rooftop disconnect analyses.

Frederick County notes that the revisions to the rooftop and non-rooftop analyses included in the County's impervious cover resubmission, and reported in the 2018 Annual Report Appendix O: Impervious Accounting Memo and geodatabase, were conducted in the expanded MS4 Boundary. However, the update to the Boundary area was not provided for in Appendices P and Q, Rooftop Disconnect Protocol and Non-Rooftop Disconnect Protocol. Essentially, the revised impervious cover assessment was conducted correctly, but the protocol document language detailing the new extent was not updated when submitted with the 2018 Annual Report.

MDE noted in its August 23, 2019 memo, which tentatively approved the County's Financial Assurance Plan, that approval of the impervious area analysis was still pending. The County updated the impervious cover restoration plan as well as two technical memos for rooftop and non-rooftop disconnect studies, and submitted them to MDE on September 30, 2019. Frederick County staff met with MDE on October 24th where it was decided by MDE that the impervious cover analysis was pending approval of the non-rooftop disconnect study. A field visit was planned to review the study findings with MDE; however, McCormick Taylor in reviewing for the field meeting discovered a significant error in its work for the rooftop and non-rooftop studies. They had used the wrong projection file that caused the county's restoration obligation to be underestimated by 711 acres. Again, the impervious cover assessment was conducted using the correct boundary and by the correct protocol but with an error in the projection which caused the discrepancy. The County has been working to review the work with the consultants as well as any impacts this error may have created with other studies, and to redouble efforts to look for baseline reduction credits in MDE-approved protocols.

Apart from the rooftop and non-rooftop disconnection issue, MDE does not appear to take issue with the County's methodology for the revised submission or its results, which is the same MDE-approved methodology MDE used with substantially similar results. In some instances, Frederick County had access to better source data, which resulted in slightly different numbers than what MDE calculated from its analysis; the small differences are outlined in the methodologies section. Frederick County respectfully submits additional clarity in how it developed its impervious baseline by adhering to the methods outlined by Maryland Department of the Environment (MDE).

Based on the analysis provided in this memo and in the Appendices, Frederick County used MDE's guidance and comments to determine there are 13,396 total impervious acres within its boundary, of which 678 acres are treated with BMPs, 403 impervious acres are treated through rooftop disconnect, 2,259 impervious acres are treated through non-rooftop disconnect, 38 acres are treated through sheetflow to conservation areas, 51 acres are treated through existing grass swales and 64 acres are treated by draining to Maryland State Highway Administration BMPs from the Frederick County MS4 area. This leaves the County with 9,903 untreated impervious acres. Based on the 20% restoration requirement, Frederick County will need to treat 1,981 impervious acres to meet its MS4 Permit Restoration requirement. A summary table detailing the impervious area assessment and credit is found at the end of this report.

The County has once again rerun its impervious area assessment to correct for the problems created by McCormick Taylor's error. The results of that analysis are summarized in Table 11, and the memo containing the detailed analysis is included in Appendix K.

Table 11 - Impervious Accounting

Frederick County Impervious Accounting	
Total Impervious (acres) within MS4 Permit Area	13,396
– Treated Impervious (acres)	(-678)
– Rooftop Disconnect (acres)	(-403)
– Non Rooftop Disconnect (acres)	(-2,259)
– Sheetflow to Conservation Area (acres)	(-38)
– Existing Grass Swales (acres)	(-51)
– Treated Impervious draining to MD SHA’s BMPs from Frederick County MS4 area	(-64)
Remaining Untreated Impervious (acres) as Baseline	9,903
– Multiply by 20% to determine Frederick County Impervious Restoration Goal (acres)	x (0.20)
Total Impervious (acres) within MS4 Permit Area to be restored ¹	1,981

¹ Frederick County anticipates existing BMP treatment to increase in its final impervious baseline analysis which will reduce the County’s overall goal. Documentation will be finalized in the County’s last report for this permit.

Frederick County employed the following disconnection protocols within their MS4, also attached as Appendix L, M, and N respectively:

Name: Rooftop Disconnection Protocol (Appendix L)

Approval Status: Officially approved by MDE in meeting October 24, 2019

Consultant Performing Work: KCI Technologies and McCormick Taylor

Description: The rooftop disconnect analysis identifies buildings with surrounding vegetative areas that are effectively treating the runoff from the building.

Effect on Impervious Accounting: Subtraction from County Baseline

Name: Non - Rooftop Disconnection Protocol (Appendix M)

Approval Status: Informally (verbally) Approved by MDE, will require field verification per Dela Dewa.

Consultant Performing Work: KCI Technologies and McCormick Taylor

Description: Non-rooftop disconnect analysis focuses on the identification of roads and driveways with surrounding vegetative areas that are effectively treating the runoff.

Effect on Impervious Accounting: Subtraction from County Baseline

Name: Sheetflow to Conservation Protocol (Appendix N)

Approval Status: Pending approval by MDE

Consultant Performing Work: KCI Technologies and McCormick Taylor

Description: Stormwater runoff disconnect analysis focuses on the identification of roads, rooftops, and driveways with surrounding vegetative areas identified as conservation areas that are effectively treating the runoff.

Effect on Impervious Accounting: Subtraction from County Baseline

Frederick County employed the following protocol for identifying existing grass swales within their MS4:

Name: Existing Water Quality Grass Swale Identification Protocol

Approval Status: Officially Approved by MDE, May 18, 2016

Consultant Performing Work: Dewberry

Description: The water quality grass swale analysis identifies existing grass swales providing baseline impervious treatment.

Effect on Impervious Accounting: Removal from County Baseline

Further information can be found in the Impervious Analysis Report and attachments within Appendix K.

Restoration Plan

The individual plans in the County’s Restoration Plan are organized by Restoration Tier. The tiers include Baseline, Completed, Programmed, Identified, and Potential scenarios. Baselines are the TMDL loads without restoration BMPs. Completed projects were finished between March 11, 2007, the expiration date of the previous permit, and by June 30, 2019, the end of the previous fiscal year. Programmed projects are either funded by the County’s Capital Improvement Program or other programs during the permit term, which is set to expire December 30, 2019. Identified projects can be found in the County’s Watershed Assessments, Watershed Management Plans, Restoration and Retrofit Assessments, Stormwater Master Plans, and other documents completed by Frederick County Government and its partners and consultants to identify watershed restoration opportunities. Potential Projects are hypothetical projects based on the most cost-effective BMP types and acres of available land.

The Restoration Plan should be viewed as a planning document that is subject to the County’s review and revision in future years consistent with adaptive management, which is a cornerstone of any good stormwater program. The plans include estimated dates and costs for completion of various projects that may change over time. The County plans to substitute projects based on lessons learned in earlier years. The County’s ability to implement milestone actions depends on approval and funding from the local governing body in future years. The Restoration Plan is subject to future refinement by the County based on new or additional information. The County conducted the initial effort in-house and updated its Restoration Plans with the consultant KCI Technologies, Inc. for 2017, 2018, and 2019. At MDE’s request, Frederick County ensured the updated plan included individual TMDL updates and targeted deadlines to reach the targeted reductions. The County is dedicated to committing resources to TMDL compliance and presents timeframes that are realistically achievable. The Plan was modified to include updates to the Impervious Cover Analysis and are included in 2019.

Table 12 shows the forecast progress as of the end of the permit term to be over 80 percent of the required total through restoration approved in MDE’s stormwater accounting guidance (MDE SW 2014). Per MDE, a portion of the requirement may be met through credit exchanges in its nutrient trading program. The County proposes to address the remaining impervious surface restoration obligation through such trades, described in the Water Quality Trading section in the Introduction. The County is on track to meet its impervious cover restoration requirement. A detailed list of completed restoration activities is provided in Appendix O. More detailed information about the County’s restoration efforts are found in the restoration plan in Appendix J and the intent to nutrient trade with the County’s Ballenger-McKinney Waste Water Treatment Plant is found in Appendix P.

Table 12 - Complete and Programmed Impervious Restoration Credit by Type

BMP Type	Completed as of June 30, 2019	Programmed (Completed by Dec 29, 2019)	Total
Stormwater			
Micro-Bioretenion	2.96		2.96
Rainwater Harvesting	0.05		0.05
Bioretention	1.70		1.70
Wet Pond	72.46	194.35	266.81
Wet Extended Detention	10.31	45.24	55.55
Sand Filter		3.13	3.13
Stream Restoration	288.01	377.63	665.64
Outfall Stabilization	7.33	3.34	10.67
Tree Planting	28.82		28.82
Septic Denitrification	61.88		61.88
Septic Connections to WWTP	2.73		2.73
Septic Pumping	187.14	16.86	204.00
Vacuum Street Sweeping ¹	85.78	8.25	94.03
Redevelopment Restoration		8.59	8.59
Nutrient Trading ²		574.44	574.44
Total	749.17	1,237.83	1,981.00

1 Annual practice averages credit over 5 years

2 Based on FY19 anticipated Restoration Credit projects to be completed by December 29, 2019

6.3 Public Participation

As required by Part IV.E.3 of the MDE NPDES MS4 Discharge Permit, public participation is required for Frederick County's watershed assessments and restoration plans. The specific requirements include:

1. Notice in a local newspaper indicating a 30-day public comment period for each watershed assessment and restoration plan.
2. Notice in a local newspaper announcing that public information procedures are provided on the County's website for each watershed assessment and restoration plan, and
3. A summary in the Annual Report on public participation activities for each of the watershed assessments and restoration plans.

Frederick County has completed its Restoration Plan and several assessments of which final versions are posted to our website. All drafts of the Restoration Plan and watershed assessments were advertised through the local newspaper, Frederick News Post, posted to the website for a 30-day public comment period. Copies of all the advertised notices are found in Appendix Q.

The draft 2016 Restoration Plan was posted to the website on May 30, 2016. Public notice was published in the Frederick News Post on May 31 and June 1. The 30-day review period went from May 31 to June 30. The Final 2016 Restoration Plan was submitted to MDE on June 30, 2016. All yearly updates to the Restoration Plan are made available to the public on the County's website.

The following drafts of the following assessments were advertised through the Frederick News Post and posted to the website for a 30-day public comment period on October 7, 2017 with no comments received, which ended on November 26, 2017:

- Upper Monocacy Watershed Assessment
- Lower Monocacy Watershed Assessment
- Ballenger Creek Stormwater Master Plan
- Little Hunting Creek Watershed Assessment and Restoration Concept Report
- County-owned Stormwater Management Best Practices Retrofit Assessment, and
- Point of Rocks Storm Drain Analysis

The following draft watershed assessments were available for public review from June 1 through June 30, 2019 and received no public comments:

- Catocin Creek Watershed Assessment
- Double Pipe Creek Watershed Assessment
- Potomac Direct Watershed Assessment

6.4 TMDL Compliance

The updated *Frederick County Stormwater Restoration Plan* is included as Appendix J. The Restoration Plan includes the County's approach to addressing its local TMDL requirements including three bacteria, four phosphorus, and five sediment local TMDLs as well as nitrogen and phosphorus Chesapeake Bay TMDLs, and impervious area reduction requirements. Additionally, the geodatabase is consistently updated with updates from the restoration program.

Baseline, target, permit and current loads for nutrient, sediment, and bacteria local TMDLs are presented in the MDE_NPDES_MS4 geodatabase table LocalStormwaterWatershedAssessment. Countywide baseline, target, permit and current loads are presented in the MDE_NPDES_MS4 geodatabase table CountywideStormwaterWatershedAssessment.

Baseline and target loads including modeling approach and projects included in each of the models are described, in detail, in the Restoration Plan. All County completed structural and nonstructural water quality improvement projects, enhanced stormwater management programs, and alternative stormwater control initiatives through 12/30/2014 were modeled using the procedures outlined below to calculate 2014 permit loads, while all treatment through 6/30/2018 was modeled to calculate 2018 current loads.

It is important to note that permit and current loads are only presented in the Annual Report and may not match what is presented in the County's Stormwater Restoration Plan. Permit and current loads are modeled on top of growth. Background land use loads increase as new development occurs throughout the years, which is why loads appear to increase between baseline, permit, and current conditions even with additional treatment from stormwater BMPs and other practices. Per guidance from MDE, permittees do not account for growth in local TMDL progress models and this is reflected in the County's Restoration Plan and the December 2019 updated Plan as it focuses on achieving the percent reductions without taking growth into account.

The following sections present the methodology and resultant values for baseline, target, permit, and current loads presented in the following tables in the MDE_NPDES_MS4 geodatabase: LocalStormwaterWatershedAssessment and CountywideStormwaterWatershedAssessment.

6.4.1 Local TMDL Requirements

There are currently 12 final approved TMDLs within Frederick County with SW-WLAs. It's necessary for permittees to determine whether their treatment plans can meet TMDL compliance targets, which is usually accomplished through modeling. However, models and calculations used to develop TMDLs are rarely the same ones used for implementation. TMDL modeling is focused on determining the maximum watershed load that will allow the waterbody to meet water quality standards. Implementation modeling does not involve the receiving water, but only the watershed load. The purpose is to determine the level of improvements or treatment that needs to be implemented to reduce existing loads to the TMDL amount.

Because the models are different, absolute values of loads will not be the same. In order to derive the County MS4-specific SW-WLA load reduction targets, MDE's published baseline values for each TMDL need to be recalculated in an implementation model. The implementation model provides a new baseline based on conditions when the TMDL was developed. The load reduction is calculated from the percent reduction published in the TMDL. The process of matching loads from the TMDL model to the implementation model is called *calibration*.

6.4.2 Calibration Procedure

Frederick County's TMDLs were developed by MDE at different periods in time using a variety of models. In order to use a currently available model for analysis, the reduction targets and loads need to be translated or "calibrated" from the model used to develop the TMDL to the current model.

6.4.3 Baseline Area

Baseline loads for each TMDL watershed are based on GIS overlays of the TMDL boundary, the County's MS4 jurisdiction, impervious cover derived from planimetric mapping, and urban land use delineated in MDP's land use/land cover files, and loading rates from two sources, depending on the TMDL:

- TMDL boundaries were downloaded from the MDE TMDL Data Center
- Frederick County's MS4 jurisdiction boundary was delineated as described in Section 6.2.1.
- The County mapped impervious cover using aerial orthoimagery in 2005, with a subsequent update in 2014.
- MDP mapped land cover statewide in 2002 and 2010. Urban land use includes all codes beginning with 1. Baseline loads do not include land coded 2x (agriculture), 4x (forest), 50 (water), 60 (wetlands), 73 (barren), or 241-242 (agriculture). This approach which models loads from urban pervious and impervious developed land use is consistent with CAST and the CBWM and allowed the County to use CBWM loading rates.

Each TMDL has a baseline year, and the GIS overlays were used in the closest approximation, shown in Table 13.

Table 13 - GIS Data Used for Baseline Modeling

TMDL	Baseline Year	MDP Land Cover	Frederick Impervious Cover
Sediment	2000	2005	2005
	2005	2005	2005
Phosphorus	2009	2014	2014
Chesapeake Bay Nitrogen, Phosphorus, and Sediment	2010	2014	2014
<i>E. Coli</i>	2004	2005	2005

The baseline model includes County BMPs installed prior to the TMDL baseline year on top of baseline land use background loads.

1. County BMPs installed prior to the TMDL baseline year were added to the model.
2. The reduction percentage published in the TMDL document was then applied to the modeled baseline loads to calculate a calibrated reduction in EOS-lbs/yr for local TMDLs and DEL lbs/yr for the Bay TMDL.
3. A calibrated SW-WLA was calculated by subtracting the calibrated reduction from the modeled baseline load.

Calibrated load reductions calculated based on TMDL percent reductions and baseline loads modeled using Frederick County baseline urban pervious and impervious land use and baseline treatment will be the target reductions used for TMDL compliance for the Bay TMDL and nutrient and sediment local TMDLs.

6.4.4 Nutrient and Sediment Modeling

Nutrient and sediment loading rates were derived from MAST output for the no-BMP scenario. Loads for regulated pervious and impervious developed land were divided by the land area, resulting in EOS or DEL loads in lbs/ac.

Reductions for nutrients and sediments were modeled using a custom geodatabase script that uses the most accurate up-to-date information on BMPs with physical locations. These include all ESD BMPs, all Structural BMPs, and Alternative BMPs with the exception of street sweeping, catch basin cleaning, storm drain vacuuming, and septic system improvements. The script calculates loads to each BMP using verified and reported drainage area and impervious area. Load reductions for each type of BMP are based on MDE 2014 Accounting Guidance.

6.4.5 Bacteria Modeling

Implementation modeling and calibration were performed using a revised version of the Watershed Treatment Model (Caraco, 2013) that allowed for modeling of all scenario tiers in one Excel workbook and only modeled bacteria. Inputs for loads were organized by Primary Sources, which are calculations of runoff loads by land use type and area within the watershed, and Secondary Sources, which calculate sewage-related loads.

Primary Sources

The model uses a variation of the Simple Method (Schueler, 1987) to calculate loads from urban areas. The Simple Method requires area and percent impervious for each land use to calculate annual runoff, and an Event Mean Concentration (EMC) to calculate loads. Loads were calculated using EMCs reported

in the National Stormwater Quality Database (NSQD) (Pitt et al., 2004). EMCs used in the model are shown in Table 14, which also cross-references land use categories from MDP and the NSQD.

Table 14 - EMCs Used for Modeling

MDP Land Use	MDP LU Codes	NSQD Land Use	EMC (MPN/100 mL)
Residential	11,12,13,191,192	Residential	8,345
Open Urban	18	Open Space	7,200
Commercial / Institutional	14,16	Commercial	4,300
Roadway	80	Freeways	1,700

Secondary Sources

Secondary sources are pollutant sources that cannot be calculated based on land use information alone. The sources used in the model included potential urban bacteria sources, such as septic systems, CSOs and SSOs, and illicit discharge. County GIS data on miles of sanitary sewer, sewer and unsewered areas, and residential parcels were used to develop input data.

Calibrated SW-WLAs and Reduction Targets

In order to help pinpoint sources, Bacteria Source Tracking (BST) was included in each of the TMDLs to identify relative contributions from various sources of bacteria to in-stream water samples. BST uses DNA, RNA, or patterns of antibiotic resistance to categorize the fraction of bacteria coming from the four general sources described above: humans, domestic pets, wildlife, or livestock for the watershed as a whole. Consistent with MDE guidance (MDE, 2014), the two sources which addressed in this plan are human and domestic. Livestock sources are treated by agricultural BMPs, which are not included in treatment for the MS4. Similarly, wildlife sources (other than urban wildlife) are not treated by BMPs or management measures associated with the MS4.

In all three of the bacteria TMDLs, two reduction percentages are shown: the Maximum Practicable Reduction (MPR) and the target reduction for the SW-WLA. MPR is based on reductions for each of the four source categories. Human sources potentially have the highest risk of causing disease, so the maximum reduction was set at 95%. The domestic pet reduction was based on an estimated success of education and outreach programs, set at 75%. The livestock target, also 75%, was based on the level of sediment reductions from agricultural BMPs. Wildlife reductions were assumed to be 0%. Table 16 shows the results of the calibration analysis.

Calibrated load reductions calculated based on TMDL percent reductions and baseline loads modeled as described above will be the target reductions used for TMDL compliance local TMDLs. These values are presented in bold in the Calibrated Reduction column of Table 15 and Table 16.

Pollutant results listed in columns Calibrated WLA and Calibrated Baseline Load are presented in the fields TARGET_LOAD and BASELINE_LOAD, respectively, in the MDE_NPDES_MS4 geodatabase table LocalStormwaterWatershedAssessment.

Table 15 - Calibrated Nutrient and Sediment Local TMDL SW-WLAs and Target Load Reductions

Watershed Name	Watershed Number	Baseline Year	Pollutant	MDE Published Reduction Percent ¹	Baseline Impervious Area ²	Baseline Pervious Area ²	Calibrated Baseline Load ³	Calibrated Reduction ⁴
Catoclin Creek	2140305	2009	Phosphorus	11.0%	1,032	8,357	8,656	952
		2000	Sediment	49.1%	880	7,666	2,875,114	1,411,681
Double Pipe Creek	2140304	2009	Phosphorus	73.0%	103	887	804	587
		2000	Sediment	46.8%	65	629	192,286	89,990
Lower Monocacy River ⁵	2140302	2009	Phosphorus	28.0%	5,407	24,212	29,311	8,207
		2000	Sediment	60.8%	4,677	23,355	5,505,954	3,347,620
Potomac River Montgomery County	2140202	2005	Sediment	36.2%	0	0	0	0
Upper Monocacy River	2140303	2009	Phosphorus	4.0%	1,262	8,340	8,740	350
		2000	Sediment	49.0%	1,105	8,006	1,928,453	944,942

Target reduction loads used for TMDL compliance shown in bold text.

- 1) Published Reduction Percent from the MDE TMDL Data Center SW WLAs for County Storm Sewer Systems in Frederick County
- 2) County MS4 urban impervious and pervious acres for the TMDL baseline year.
- 3) Baseline loads modeled using County BMPs installed prior to the TMDL baseline year on top of baseline land use background loads.
- 4) Calibrated reductions calculated by applying the MDE published percent reduction to the calibrated baseline loads.
- 5) The Lake Linganore watershed is listed under a separate phosphorus and sediment TMDL and is not included in this analysis.

Table 16 - Calibrated E. coli Local TMDL Target Load Reductions

Watershed Name	Baseline Year	MDE Published Reduction	MDE Published MPR	MDE Published Human and Domestic BST	Target BST WLA Reduction	Target BST MPR Reduction	Calibrated Baseline Load	Calibrated BST WLA Reduction	Calibrated BST MPR Reduction
		Percent ¹	Percent ²	Percent ²	Percent ⁴	Percent ⁴	bn MPN/yr ³	bn MPN/yr ⁴	bn MPN/yr ⁴
Double Pipe Creek	2004	98.80%	80.80%	57.00%	56.32%	46.06%	57,383	32,316	26,428
Lower Monocacy River	2004	92.50%	76.06%	49.00%	45.33%	37.27%	4,423,422	2,004,916	1,648,583
Upper Monocacy River	2004	97.00%	85.30%	50.00%	48.50%	42.65%	1,136,894	551,394	484,885

Target reduction loads used for TMDL compliance shown in bold text.

1) Published Reduction % from the MDE TMDL Data Center SW WLAs for County Storm Sewer Systems in Frederick County

2) Published MPR % and BST% from TMDLs for each watershed.

3) Baseline loads modeled in WTM using County BMPs installed prior to the TMDL baseline year on top of baseline runoff loads from MDP urban land use and secondary sources.

4) Calibrated reductions calculated by applying the product of the BST Human/Domestic percent and the MDE published percent reduction to the WTM calibrated baseline loads.

6.4.6 Bay TMDL

The Chesapeake Bay TMDL, established by the EPA (EPA, 2010), sets pollution limits for nitrogen, phosphorus, and sediment in the Chesapeake Bay Watershed. This TMDL, required under the Clean Water Act, was in response to the slow progress by states within the watershed to limit their pollutants to levels which meet water quality standards in the Bay and its tidal tributaries. Total limits set in the Bay TMDL for the states of Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia, and the District of Columbia are “185.9 million pounds of nitrogen, 12.5 million pounds of phosphorus and 6.45 billion pounds of sediment per year—a 25 percent reduction in nitrogen, 24 percent reduction in phosphorus and 20 percent reduction in sediment” (EPA, 2010). The TMDL also sets “rigorous accountability measures” for state compliance.

Compliance with the Chesapeake Bay TMDL is regulated in the permit through the use of the 20% impervious surface treatment strategy as described in greater detail in the following section. While not a requirement in the County’s MS4 permit, restoration strategies to meet local TMDL reduction targets and impervious restoration treatment were also modeled against the Bay TMDL goals in order to calculate progress.

Results for 2014 permit and 2019 current loads can be found in the MDE_NPDES_MS4 geodatabase table CountywideStormwaterWatershedAssessment and are shown for information purposes only.

6.4.7 Pollutant Loadings

The results below present 2014 permit and 2019 current loads for all TMDLs.

All completed structural and nonstructural water quality improvement projects, enhanced stormwater management programs, and alternative stormwater control initiatives through 12/30/2014 were modeled to calculate 2014 permit loads, while all treatment through 6/30/2018 was modeled to calculate 2018 current loads. Permit and current loads for nutrient and sediment local TMDLs are presented in Table 17 and in the MDE_NPDES_MS4 geodatabase table LocalStormwaterWatershedAssessment. Countywide permit and currently loads are presented in Table 18 and are also provided in the MDE_NPDES_MS4 geodatabase table, CountywideStormwaterWatershedAssessment.

Table 17 - Permit and Current Loads for Local TMDLs

Watershed Name	Watershed Number	Pollutant	Permit Load ¹	Current Load ²
Catoctin Creek	02140305	Phosphorus	8,641	8,629
		Sediment	2,864,620	2,856,295
Double Pipe Creek	02140304	Phosphorus	804	704
		Sediment	192,286	126,362
		<i>E. coli</i>	57,385	55,568
Lower Monocacy River	02140302	Phosphorus	29,124	28,878
		Sediment	5,374,473	5,250,257
		<i>E. coli</i>	4,422,343	4,331,207
Potomac River Montgomery County	02140202	Sediment	0	0
Upper Monocacy River	02140303	Phosphorus	8,632	8,508
		Sediment	1,856,617	1,774,717
		<i>E. coli</i>	1,136,827	1,124,721

1) Including treatment from County BMPs through 12/30/2014

2) Including treatment from County BMPs through 06/30/2019

Table 18 - Countywide Permit and Current Loads

Countywide Loads	TN-DEL lbs/yr	TP-DEL lbs/yr
Permit Load	579,552	23,401
Current Load	577,755	22,994

7 Assessment of Controls

7.1 Watershed Restoration Assessment

During the past year, Frederick County has worked on a number of initiatives to monitor, assess, protect, and restore watersheds. Appendix R provides monitoring and assessment results, and summarizes progress on the County's watershed protection and restoration efforts from July 2018 - June 2019 from the long term monitoring occurring within the Peter Pan Run watershed.

7.1.1 Stream Monitoring to Identify and Evaluate Water Quality Problems

In 1999, Frederick County initiated its original stream monitoring program, the goal of which was to identify and evaluate water quality problems in its priority watersheds and subwatersheds by conducting, on a rotating basis, stream monitoring using both biological and physical habitat methods. Monitoring was conducted every two to three years in the County's three highest priority watersheds: Lower Bush Creek, Ballenger Creek, and Lower Linganore Creek. This continued until 2006.

In 2007, the County conducted a pilot program that would serve as the basis for a new approach to stream monitoring that would begin to look at stream health throughout the County. Sampling at randomly selected locations was performed in the Bennett Creek and Catoctin Creek watersheds. Lessons learned in this pilot project were then used to refine the study design for a County-wide stream program.

In 2008, the County officially redesigned its monitoring program to include two separate monitoring efforts beyond the Watershed Restoration Assessment of the Peter Pan Run watershed: (1) targeted restoration monitoring and (2) County-wide, probability-based stream monitoring, with sites selected randomly and stratified by watershed. The targeted restoration monitoring effort for 2019 involved stream sampling in Bennett Creek and Fishing Creek Watersheds in support of on-going and potential future restoration and community outreach efforts (Appendix S). Monitoring efforts are selected on an individual project basis based on the projects' goals and any regulatory requirements directly related to those projects. The County initiated its third County-wide round of monitoring (2018-2021) with its first round in 2008-2011 and its second in 2013-2016. County-wide monitoring reports are available on OSER's website for public access. The Potomac Direct stream restoration project is now under construction and is anticipated to be complete in November 2019. The County will resume post-restoration monitoring for the Potomac Direct Watershed in calendar year 2020.

7.1.2 Watershed Assessment and Restoration Overview

The County's Watershed Restoration Assessment continued to focus on the Peter Pan Run watershed through targeted stream monitoring assessments including: physical, chemical, and biological data, collected during designated index periods (Southerland et al. 1999, Morgan and Roth 2005). Year 2019

sampling included collection of water quality data, benthic macroinvertebrate and fish sampling, and quantitative physical habitat assessment using MBSS habitat and geomorphic data collection methods. Biological and physical monitoring methods employed in this survey are the same as those listed in Table 1-2 of Appendix R, and described in detail in the Quality Assurance Project Plan for Biological and Physical Monitoring in Peter Pan Run and Other Selected Watersheds (Morgan and Roth, 2005). Key findings are summarized in Appendix R.

As stated in previous Annual Reports, the County recognizes MDE's September 20, 2018 Annual report comment regarding the missing outfall water temperatures. Since that comment was received the County successfully installed a temperature meter as well as new water quality monitoring equipment to continue its efforts in capturing the required monitoring parameters.

It was an exciting year for Frederick County during this monitoring period as the pond associated to the outfall monitoring underwent its final retrofit to convert it from a dry facility to extended detention wet pond. Frederick County reached out to MDE via email regarding a small gap in the monitoring data located at the pond outfall due to active retrofit construction activities. Safety of monitoring staff and the validity of the results were the primary concerns for not collecting samples during this period. MDE responded that a small gap was permissible and to prorate the months of active construction versus the amount of storm events required. Fortunately, weather patterns allowed Frederick County to meet its required eight storm events at the Peter Pan Run instream and Pond-R outfall stations during the sampling period, October 24, 2018 through July 23, 2019, as the site was only under active construction from August through mid-October. The final storm event was sampled in July 2019 to achieve the total number of eight storm events. Baseflow monitoring was carried out at a monthly rate between July 2018 and June 2019 at the Peter Pan Run instream station accounting for twelve samples. Due to the active retrofit construction occurring within the Peter Pan Run catchment, the collected data for FY19 may not reflect the anticipated cumulative post-retrofit condition.

Data for all monitoring activities is included in the in the MDE_NPDES_MS4 geodatabase in the following features and tables: MonitoringSite, MonitoringDrainageArea, ChemicalMonitoring, LocalConcern BiologicalMonitoring, NarrativeFiles.

7.2 Stormwater Management Assessment

A detailed report capturing all of the long-term monitoring occurring in the Peter Pan Run watershed was completed to meet the requirement of the County's NPDES permit. A complete report of the findings can be found in Appendix R.

8 Program Funding

Frederick County has consistently maintained adequate funding to support the requirements of the NPDES program through its Operating and CIP budgets. This section outlines expenditures from FY19, which are also presented in Appendix T.

The Operating Budget requires annual requests, with approval granted from year-to-year. Funds from the Operating Budget generally do not carry over from year-to-year. The CIP Budget noted here requires an annual submission, with approval granted from year-to-year.

The Operating budget for FY19 was \$3,252,363 including \$1,891,208 in the NPDES Pay-Go Operating budget, an estimated \$841,181 for Pay-Go Operating within other Departments and Divisions, \$262,974 in debt service payments, and \$257,000 in Operating Grants from other Divisions. The Capital budget was \$8,110,599. The total NPDES budget was estimated to be \$11,362,962.

The Operating budget for FY18 was \$2,525,967 including \$1,656,129 in the NPDES Pay-Go Operating budget and an estimated \$869,838 for Pay-Go Operating within other Departments and Divisions. The Capital budget was \$8,411,951. The total NPDES budget was estimated to be \$10,937,918

The Operating budget for FY17 was \$2,673,697 including \$1,377,386 in the NPDES Pay-Go Operating budget and an estimated \$1,296,311 for Pay-Go Operating within other Departments and Divisions. The Capital budget was \$4,116,148. The total NPDES budget was estimated to be \$6,789,845.

The Operating budget for FY16 was \$2,650,420 including \$1,354,109 in the NPDES Pay-Go Operating budget and an estimated \$1,296,311 for Pay-Go Operating within other Departments and Divisions. The Capital budget was \$3,527,575. The total NPDES budget was estimated to be \$6,177,995.

The Operating budget for FY15 was \$2,383,553 including \$1,087,242 in the NPDES Pay-Go Operating budget and an estimated \$1,296,311 for Pay-Go Operating within other Departments and Divisions. The Capital budget was \$2,595,847. The total NPDES budget was estimated to be \$4,979,400.

More detailed information on budget allocations and costs are reported in the table FiscalAnalyses in the MDE_NPDES_MS4 geodatabase. Fiscal reporting for costs is based on the encumbrance method. Note that MDE's geodatabase excludes several permit categories to include Permit Administration, Legal Authority, and Source Identification. Several large efforts like the geodatabase and Annual Report are not included; the County has noted these expenses in comments. Bay Restoration Fund grants for septic upgrades are included this year in Watershed Restoration. There is a timing lag between budgeting, encumbrances and expenditures, which largely explains why the encumbrance numbers do not match

budget numbers. The geodatabase reporting does not match the FAP/WPRP reporting because the requirements for these reports differ.

As required by the Annotated Code of Maryland ENV §4-202.1, Frederick County submitted a Financial Assurance Plan (FAP) and Watershed Protection and Restoration Program (WPRP) Annual Report to MDE with the 2018 Annual report submission. Both documents provided the five-year funding strategy for addressing the County's NPDES MS4 Permit. The FAP and WPRP Annual Report documents were prepared by County staff. The County Council, as the "local governing body" held a public hearing and voted on approval of the Financial Assurance Plan on October 16, 2018. The FAP and WPRP Annual Report included all activities that have been completed in compliance with the Permit, and five-year projections to Fiscal Year 2020 for the implementation of its stormwater program and best management practices (BMPs) necessary for meeting Permit requirements. MDE sent a letter to Frederick County on June 6, 2019 finding the FAP submission to have "insufficient data". MDE asked that the county resubmit an updated FAP by June 30, 2019. On June 28, 2019 the County resubmitted the FAP to MDE. On August 23, 2019, MDE sent Frederick County a letter stating that "the County has demonstrated sufficient funding as described in its FAP. This determination is contingent upon the approval of the County's impervious area analysis by the Department and the official approval of the FAP by the Frederick County Council. The Department requests that the County notify the Department when a public hearing has been scheduled to approve this updated FAP." MDE also noted that "the updated FAP listed the County's most current timelines for project implementation", that "the County proposed treating 65 acres of impervious area (approximately 5% of its ISRP requirement) by acquiring credits temporarily through the Maryland Water Quality Trading Program", and that "the County projects to complete approximately 1,270 acres of restoration (or 100% of the proposed 1,270 acre ISRP requirement) by the end of the permit term." Note that the projection error in McCormick Taylor's Rooftop and Non-rooftop disconnection studies will need to be corrected in the FAP, and that Frederick County is seeking guidance from MDE on how to address this.

An updated annual WPRP submission is provided concurrent to this Annual Report per legislative requirement.

The County has made a substantial commitment to comply with its Permit, has adequately funded the Permit, and is on track programmatically to comply with the Permit. This funding is reflected in the past and current budgets, and is in the programmed CIP. This represents 100% of the cost to implement the Permit; furthermore, the County has funded the Permit at 100%, exceeding the 75% minimum compliance benchmark. All proceeds from the stormwater remediation fee go to the Watershed Protection and Restoration Fund. In the previous fiscal year this amounted to \$523.79.

Evaluation: Frederick County continued to maintain adequate funding to support its NPDES MS4 permit program in Fiscal Year 2019. Adequate funding was requested and approved to meet NPDES requirements

in both the Operating and Capital Budgets. MDE preliminarily found Frederick County in compliance with its revised Financial Assurance Plan on August 23, 2019, with final acceptance pending approval by the Frederick County Council of the updated FAP and approval of the impervious area analysis by MDE. A yearly update to the WPRP is being submitted concurrent with the Annual Report. Adequate funding enabled the Watershed Management Section to complete its NPDES requirements in full compliance.

9 Special Programmatic Conditions

9.1 Bay TMDL

The Bay TMDL requirements related to restoration plans are addressed previously in section 6, specifically in section 6.4.6 Bay TMDL.

Maryland Issued the Phase III Watershed Implementation Plan for the Chesapeake Bay TMDL on August 23, 2019. Prior to this, Frederick County staff met with MDE to discuss goals for Frederick County Government’s MS4 and participated in various groups that worked with MDE on issues that would affect MS4s statewide.

Frederick County Staff participated in MDE’s Water Quality Technical Advisory Committee that helped to develop trading policies for the state’s nascent nutrient trading market and suggested ways to improve Phase III WIP implementation. Staff worked through the MACo, MWCOG, and MAMSA efforts to review Maryland’s draft Phase III WIP and provide feedback to MDE. Staff also participated in regular meetings coordinated by Karl Berger of MWCOG with MDE on TMDL technical issues. Staff also participated in workgroups on pooled monitoring efforts to align MS4 monitoring with Chesapeake Bay monitoring. Shannon Moore served on the Chesapeake Bay Policy Committee at MWCOG. Staff met with MDE and MDP at Frederick County on 9/5/2018 to review the county’s Financial Assurance plan and CIP in order to discuss what would go into the WIP Phase III. Staff participated in a WIP webinar on 4/25/2019 and commented that discount rates for loading for MS4 obligations do not match the discount rates for water quality crediting. MDE expressed a desire to resolve this issue. Staff attended the Western Maryland Phase III WIP meeting on 4/29/19 sponsored by the Harry Hughes Center for Agro-Ecology and presented by MDE. Frederick County continues to support the implementation of the Chesapeake Bay TMDL.

9.2 Water Resources Element

The Board of County Commissioners formally adopted the complete Water Resources Element (WRE) technical document on September 23, 2010 (Frederick County, 2010). The WRE provides a detailed presentation of the County’s water resources plus limitations and challenges to meeting future population needs. Wastewater treatment capacities and future projected treatment needs are also

analyzed. The WRE is divided into three components: Drinking Water Assessment, Wastewater Assessment, and Managing Stormwater and Non-Point Source Pollution.

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