

T&E COMMITTEE #1
January 21, 2016

Update

MEMORANDUM

January 19, 2016

TO: Transportation, Infrastructure, Energy and Environment (T&E) Committee
FROM:  Keith Levchenko, Senior Legislative Analyst
SUBJECT: **Discussion:** Update – MS4 Permit

Attachments:

- Excerpt: Restoring Our Watersheds - Montgomery County's 2010-2015 MS4 Watershed Restoration Achievements (August 2015) (Executive Summary Only ©A-11)

Meeting Participants:

Montgomery County Department of Environmental Protection (DEP)

- Lisa Feldt, Director
- Patty Bubar, Deputy Director
- Steven Shofar, Chief of Watershed Management
- Jim Stiles, Manager, Watershed Construction and Contract Management
- Pam Parker, Manager, Watershed Planning and Monitoring
- Amy Stevens, Manager, Stormwater Facility Inspection and Maintenance

T&E Committee Chair Berliner asked DEP to provide an update on the County's National Pollution Discharge Elimination System Municipal Separate Storm Sewer System Discharge (NPDES-MS4) Permit.

DEP has been asked to discuss its accomplishments and lessons learned¹ over the past five years under the most recent permit (which expired in February 2015), some approaches it plans to pursue under the next permit, and the status of the next permit and DEP's negotiations with Maryland Department of the Environment (MDE). DEP's presentation slides were not available as of the time of this memorandum but will be provided to Committee members as soon as they are available.

¹DEP's most recent NPDES-MS4 Annual Report (covering FY14 and dated March 2015) is available on the DEP website at: <https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/water-reports/npdes/AnnualReport-FY14-3-13-15-Final.pdf>. DEP also prepared a supplement to the Annual Report (dated August 2015) focusing on its watershed restoration achievements to date. This report is available is available on the DEP website at: <https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/water-reports/npdes/MoCo-RestorationAchievements-080715REV2.pdf>

NPDES-MS4 Permit Status

DEP is the lead department coordinating a multi-department/agency effort to meet the requirements of the five-year MS4 permit² issued to the County by MDE on February 16, 2010. This permit expired in February 2015. However, expired permits are assumed to remain in effect pending issuance of a succeeding permit by MDE.

However, clouding this issue somewhat is the fact that this now expired permit has been under legal challenge. In April 2015, the Court of Special Appeals affirmed a Circuit Court decision to remand the permit back to the Maryland Department of the Environment (MDE).³ The Court of Special Appeals agreed with the Circuit Court that the permit did not “afford an appropriate opportunity for public notice and comment and because it lacks crucial details that would explain the County’s stormwater management obligations.” Pending the outcome of this court case, MDE is appealing the case to the Court of Appeals and has not moved forward with a next generation permit for Montgomery County, pending the outcome of this case.

Some background information on the now expired MS4 Permit and its funding is provided below.

NPDES-MS4 Permit Requirements

The County's Coordinated Implementation Strategy (CCIS)⁴ (dated January 2012) provides the planning basis for the County to meet the following goals, as required in the County's (now expired) NPDES-MS4 Permit:

1. Meet Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) approved by EPA.
2. Provide additional stormwater runoff management on impervious acres equal to 20 percent of the impervious area for which runoff is not currently managed, to the maximum extent practicable (MEP). ***This requirement continues to be the primary driver of DEP’s CIP expenditures, and progress in meeting this goal is discussed in more detail below.***
3. Meet commitments in the Trash Free Potomac Watershed Initiative 2006 Action Agreement, which include support for regional strategies and collaborations aimed at reducing trash, increasing recycling, and increasing education and awareness of trash issues throughout the Potomac Watershed.
4. Educate and involve residents, businesses, and stakeholder groups in achieving measurable water quality improvements.

² The County’s MS4 permit is available on the DEP website at:

https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/water-reports/npdes/MOCO_MS4_Permit.pdf

³ Maryland Department of the Environment, et al. v. Anacostia Riverkeeper, et al., 222 Md. App. 153 (2015).

⁴ The County’s Coordinated Implementation Strategy (January 2012) is available on the DEP website at:

<https://www.montgomerycountymd.gov/DEP/Resources/Files/ReportsandPublications/Water/Countywide%20Implementation%20Strategy/Countywide-coordinated-implemented-strategy-12.pdf>

5. Establish a reporting framework that will be used for annual reporting, as required in the County's NPDES-MS4 Permit.
6. Identify necessary organizational infrastructure changes needed to implement the Strategy.

While DEP has made substantial progress over the past five years, DEP has not achieved the 20 percent impervious area control goal (#2 above).

Watershed Restoration Requirements

The most recent permit's 20% requirement for stormwater management noted above translates to an additional 3,777 acres of impervious area restoration to be completed by the County. As noted in the County's August 2015 Watershed Restoration Achievements report:

at the end of the third generation MS4 permit term (February 16, 2015), the County had, completed restoration treating 1,726 acres of impervious area or its equivalent, with restoration work treating another 197 acres under construction (acres or projects referred to as "inconstruction"). Restoration projects to treat an additional 2,431 acres were under contract for design (acres or projects referred to as "in-design").

While the County had not completed work on the entire 3,777 acre goal in the permit, it had 4,354 acres at some stage of work (in design, in construction, or completed). About 70 percent (3,085 acres) is being addressed through capital projects (such as stream restoration projects and stormwater management retrofits). The next biggest categories are: agency partnerships (642 acres), new development/redevelopment (305 acres), and management programs (such as street sweeping and catch basin cleaning (249 acres).

This effort represents a major ramp-up in work (and costs) over the past five years. While the work with MDE on the next generation permit is stalled (pending the outcome of the legal case noted above), DEP will be proceeding with this ongoing work.

What will be interesting to see in the coming years is whether (and by how much) water quality improvements occur in the project areas (and whether the associated TMDLs are met). These results, in turn, can inform future permit priorities to ensure the County's large investment in funding is allocated where it can have the biggest impact on water quality.

Cost Implications

As previously discussed by the Committee, the cost implications for implementation of the MS4 permit are substantial. Two years ago, DEP estimated the permit costs to be about \$305 million through 2015 and nearly \$1.9 billion through 2030.

Over the past decade, the DEP budget (not counting the Division of Solid Waste Services) has become dominated by water quality-related efforts. In FY16, the Water Quality Protection Fund budget is \$23.3 million compared to \$2.2 million in the General Fund, or 91 percent.

Water Quality Protection Fund and Charge

DEP's MS4 work (both operating and capital) is budgeted within the County's Water Quality Protection Fund. This self-supporting fund draws its revenue primarily from the Water Quality Protection Charge (WQPC) (an estimated \$32.6 million in FY16) as well as revenue from the County's bag tax (an estimated \$2.4 million in FY16).

The Fund and charge were created in 2001, when the Council approved Bill 28-00.

Three years ago, the Council enacted Bill 34-12 and approved Executive Regulations 17-12AM and 10-13. The bill and regulations included a number of changes to the charge, such as: broadening the charge to include all non-residential properties, establishing a 7 tier rate structure for residential properties, establishing credits for on-site stormwater management practices, and establishing a hardship exemption for residential properties and non-profit organizations. A three-year phase-in period for those properties that experienced an increase in assessments as a result of the legislation was also included.

This past November, at the County Executive's request, the Council enacted legislation (Bill 45-15, Stormwater Management - Water Quality Protection Charge - Curative Legislation) to designate the Water Quality Protection Charge as an excise tax (rather than a fee) to address concerns raised in a Circuit Court opinion (currently under appeal by the County).⁵

DEP is also considering additional substantive changes to the Water Quality Protection Charge itself. Legislation is expected to be transmitted to the Council within the next few months.

Attachment

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⁵ Paul N. Chod v. Board of Appeals for Montgomery County (Civil No.35398704-V, entered July 23, 2015).

August 2015

RESTORING OUR WATERSHEDS

Montgomery County's 2010-2015 MS4 Watershed Restoration Achievements

Supplement to the Montgomery County Annual Report
for FY14 NPDES Municipal Separate Storm Sewer System Permit



DEPARTMENT OF
**ENVIRONMENTAL
PROTECTION**

Working together for a cleaner, greener county.

Published by the Montgomery County
Department of Environmental Protection
for the Maryland Department of the Environment

Executive Summary

Stormwater discharges from Montgomery County's storm drain system are regulated under a National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit. The purpose of this document is to be a final summary of Montgomery County's (the County) progress towards meeting the MS4 permit's watershed restoration requirement through the end of the third generation permit term on February 15, 2015. This document is a supplement to the fiscal year 2014 MS4 annual report. Montgomery County Department of Environmental Protection (DEP) has primary responsibility for the majority of the permit requirements, including watershed assessment and restoration managed by DEP's Watershed Management Division (WMD).

In addition to completing implementation of restoration efforts to fulfill the second generation MS4 permit restoration requirement, under the third generation MS4 permit the County was also tasked with restoring an additional 20% of impervious surface area that was not treated to the maximum extent practicable (MEP).

This restoration requirement translated to an additional 3,777 acres of impervious area restoration to be completed by the County. Progress towards meeting this requirement was achieved by tracking impervious acres treated by restoration projects, and impervious acre equivalent credit for alternative urban BMPs, as allowed by Maryland Department of the Environment (MDE). Alternative urban BMPs include practices such as street sweeping, stream restoration, and catch basin cleaning.

Progress Towards the Restoration Requirement

At the end of the third generation MS4 permit term (February 16, 2015), the County had completed restoration treating 1,726 acres of impervious area or its equivalent, with restoration work treating another 197 acres under construction (acres or projects referred to as "in-construction"). Restoration projects to treat an additional 2,431 acres were under contract for design (acres or projects referred to as "in-design"). The County's progress in relationship to the restoration requirement is illustrated in Figure 1.

Progress Towards Restoration Requirement (Acres)

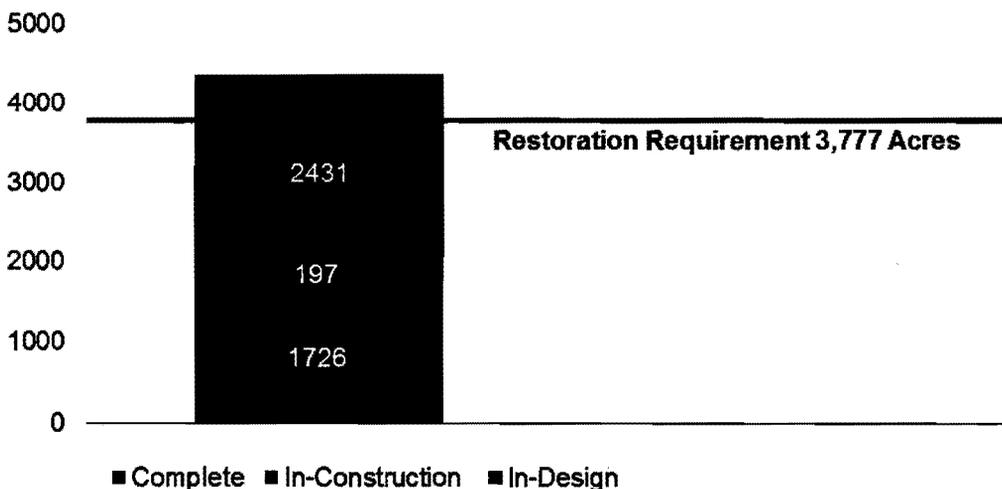


Figure 1 Montgomery County Progress towards the MS4 Permit Watershed Restoration Requirement

DEP's accomplishment of restoring 1,726 acres of impervious area or its equivalent represents completing 46% of the MS4 permit's restoration requirement. Once the in-construction projects are complete this percentage will increase to 51%. Of the projects in-design, 1,854 acres, representing 76% of the 2,431 acres in-design, will need to be realized in order to meet the 20% restoration requirement. The remaining projects will continue to be developed for the next generation MS4 Permit, or can serve as back up inventory for projects in design that may not be feasible to construct.

DEP's progress towards meeting the restoration requirement demonstrates the County's strong commitment to improving water quality and conservation of the environment. The restoration requirement of the third generation MS4 permit represented a significant increase over the second generation MS4 permit requirement. In response, DEP developed a proactive adaptive management approach to take on the intensive and diverse efforts needed for success. The following sections provide context and summarize the efforts undertaken by DEP to progress towards the restoration requirement.

MS4 Permit Background and Accelerating the Watershed Restoration Program

PERMIT BACKGROUND

The County has been subject to an MS4 permit since 1996. The first generation MS4 permit requirements (1996-2001) focused on assessing local watersheds, on identifying locations and extent of stormwater management and receiving stream problems, compiling an inventory of projects to address those problems, and stream physical and biological monitoring. The second generation permit (2001-2006, continued in effect until 2010 due to permit negotiations and legal challenges) included an impervious area restoration requirement to restore 10% of impervious areas not already treated to the MEP. The second generation permit also saw the addition of five municipalities and one special tax district as co-permittees. The third generation MS4 permit (2010-2015)¹ increased the restoration requirement to restore an additional 20% of the impervious areas not already treated to the MEP and added Montgomery County Public Schools (MCPS) as a co-permittee.

In order to comply with the MS4 permit requirements, DEP collaborates with numerous County agencies. These include the Division of Solid Waste Services (DSWS), Department of Permitting Services (DPS), Department of Transportation (DOT), Department of General Services (DGS), and MCPS. DEP also has an established Memorandum of Understanding (MOU) with DGS and is finalizing an MOU with MCPS to increase opportunities for watershed restoration.

STRATEGY DOCUMENTS

DEP had a well-established watershed restoration program in place prior to the third permit cycle; however, the third generation MS4 permit required expansion and acceleration of that existing program. To address the new requirements, the County developed the Implementation Plan Guidance Document that detailed the recommended methods and techniques for preparing individual watershed implementation plans and documented the best available science underlying the technical assumptions used in developing the plans to allow the County

¹ Although it officially expired on February 15, 2015, the permit is administratively continued pending final action, if any, by MDE in response to a decision by the Maryland Court of Special Appeals in Maryland Department of the Environment, et al. v. Anacostia Riverkeeper, et al. to remand the permit to MDE for further proceedings.

to make cost-effective implementation decisions and achieve MDE regulatory approval. The Implementation Plan Guidance Document also prompted the refinement of a BMP coding process, the MS4 permit area, and impervious cover subject to the MS4 permit.

Following the Guidance, watershed implementation plans were developed for most of the County's watersheds where a full range of restoration opportunities were identified and quantified in terms of planning level implementation cost and anticipated pollutant load reduction potential.

DEP then developed the Montgomery County Coordinated Implementation Strategy (the Strategy) in June 2009 that considered implementation across all of the watersheds in an integrated and phased manner. The Strategy laid out a framework for meeting the watershed restoration requirements, Chesapeake Bay Total Maximum Daily Load (TMDL) restoration goals, and setting cost-effective approaches which reflected direct stakeholder input. Finally, the Strategy facilitated project identification and implementation planning by setting priorities among potential projects.

BUDGET, CAPACITY, AND FUNDING

Implementation of the plan laid out in the Strategy required an increased Capital Improvement Program (CIP) budget for funding watershed restoration projects. From 2009 to the latest CIP budget passed for FY15-20, the amount of funding for the watershed restoration program has increased by a factor of ten (Figure 2).

The budget increases translated to a direct increase in number of Water Resources Engineering (WRE) vendors and tasks orders issued for design of restoration projects. In addition, DEP also augmented its project management capacity via a consultant contract coupled with doubling internal staff capacity.

The main funding mechanism for the CIP is the Water Quality Protection Charge (WQPC), which went into effect in 2002 and is included as part of the Montgomery County property tax bill. In 2011, the County issued bonds secured by the WQPC to finance the construction and related expenses of watershed restoration projects as approved in the CIP. The issuance of the bonds allowed the capital costs of complying with the increased restoration requirement to be spread over the lifetime of the bonds (and the useful life of the facilities).

Data Management and the Restoration Requirement

DATA MANAGEMENT

The increased restoration requirement of the third generation MS4 permit and increased level of effort to implement watershed restoration projects created a critical need for enhanced data management. In response, DEP has undertaken numerous data management initiatives to specifically support meeting the additional 20% watershed restoration requirement. These efforts include starting a SharePoint site, using Microsoft Project Server (MPS), developing a Business Intelligence System and Dashboard, maintaining and updating the Restoration Sites

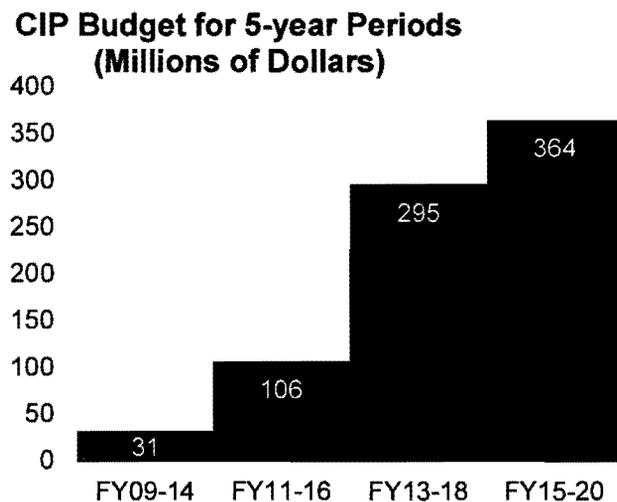


Figure 2 Capital Improvement Program Budgets

Database and developing a new structured query language (SQL database), improving and updating the storm drain layer, and streamlining the drainage areas delineation process.

The County MS4 permit SharePoint site facilitates file hosting and sharing between DEP, project management contractors, WRE contractors, and construction contractors. The SharePoint currently stores content such as task orders, schedules, plans, budgets, designs and reports creating a single repository for restoration project documents. In 2012, DEP began implementing an MPS to monitor CIP project schedule performance. The MPS provides projections of when projects will be ready for construction and completion. Information from the MPS is linked with the Business Intelligence (BI) system and Dashboard. The BI system is designed to analyze data from multiple tables and databases relating to the County's MS4 program to measure and report on specific programmatic performance metrics. The BI system reports six metrics specific to the restoration program including: schedule performance, impervious area restoration progress, program costs, and construction cost estimation accuracy. The metric reports generated by the BI system are easily accessed through an internet-based dashboard interface (the Dashboard).

The Dashboard provides DEP staff and project managers with up-to-date insight into the restoration program's progress towards meeting the 20% restoration requirement (Figure 3). The BI system and the Dashboard have played an important role in continuing adaptive management of the program. The Dashboard can be used to quickly find inefficiencies and identify problems early, serving as a platform for open communication and resource management. Enhanced capabilities are also currently under development by DEP to allow for resource modeling and restoration scenario evaluation using the Dashboard.

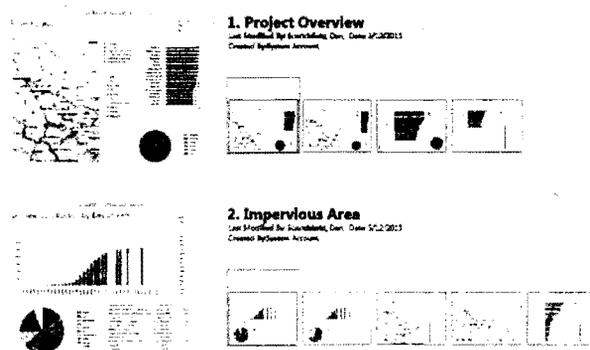


Figure 3 Planning and Compliance Dashboard Screen

DEP also maintains an ESRI ArcGIS Restoration Sites Database that tracks all potential restoration opportunities. In addition to the Restoration Sites Database, the County initiated efforts to create a new SQL database in response to increasing reporting needs and anticipated future permit needs. The purpose of developing the new SQL database is to increase capacity, function, stability and quality of the existing data and improve data organization. The new SQL database represents a significant effort in improving data functionality intended to contribute to the success of the restoration program.

Data management has also involved processing data for storm drain mapping and drainage area delineations. Mapping storm drains is a challenge due to data inconsistency; however, in 2014, DOT began coordinating a large effort to make extensive improvements to the County's storm drain data and to aggregate all the disparate datasets in one central location. DEP maintains open lines of communication with DOT on this effort. On-going construction of new storm drain systems and BMPs requires drainage area delineations to be constantly updated. During the third generation MS4 permit, DEP increased its efforts to delineate drainage areas for newly inventoried BMPs and to perform data quality assurance and control for existing drainage delineations. The number of existing BMP recorded and drainage areas delineated more than doubled from 2011 to 2015.

RESTORATION REQUIREMENT

Determination of the third generation MS4 permit restoration requirement (to restore an additional 20% of uncontrolled impervious areas as of 2009) required the calculation of the impervious cover controlled to the MEP at the end of 2009. As improved information on the area of impervious cover controlled to the MEP became available through new data and more advanced analysis, DEP worked to define the acres represented by the restoration requirement to reflect the most accurate information.

Efforts by DEP to improve the accuracy of the restoration requirement include updating BMP drainage area delineations, verifying existing facilities, incorporating existing roadside swales, and crediting large lot disconnections. Table 1 below illustrates the restoration requirement calculation highlighting how the accuracy of determining the County MS4 impervious area controlled to MEP in 2009 was improved since the Strategy. The restoration requirement of 3,777 acres is 20% of 18,884 acres, which is the County MS4 impervious area under or uncontrolled as of 2009.

Table 1 Restoration Requirement Calculation

	Description	Area (acres)
A.	Impervious Area Subject to Third Generation MS4 Permit	25,119
B.	County MS4 Impervious Area Controlled to MEP in 2009	
	Per The Strategy (2009)	3,661.0
	Updated BMP Tracking and Drainage Area Delineations	691.2
	MEP Verification of Existing Facilities	1,597.3
	Incorporating Existing Roadside Swales	278.3
	Crediting Disconnected Large Lots	7.4
	TOTAL	6,235.2
C.	County MS4 Impervious Area Under/Uncontrolled (2015 Revision) (A-B)	18,884
	Restoration Requirement (2015 Revision) (20% of C)	3,777*

**See Section C.ii. for comparison of final restoration requirement and original estimate in the Strategy*

Restoration Projects and Accounting for Credit

The County pursued watershed restoration through six unique delivery methods to make progress towards meeting the third generation restoration requirement of 3,777 acres. These methods included CIP projects, RainScapes and Water Quality Protection Charge (WQPC) Credits, complementary restoration projects, management programs, new development and redevelopment, and agency partnerships. The relative contribution of each delivery method is illustrated in Figure 4. The CIP projects form the foundation of the County's restoration program, contributing 70% of the 4,354 acres of impervious credit either completed, in-construction or in-design.

DEP has taken a watershed-based approach to applying green infrastructure at many scales across the County. The U.S. EPA describes green infrastructure as using *"vegetation, soils, and natural processes to manage water and create healthier urban environments. At the scale of a city or county, green infrastructure refers to the patchwork of natural areas that provides habitat, flood protection, cleaner air, and cleaner water. At the scale of a neighborhood or site, green infrastructure refers to stormwater management systems that mimic nature by soaking up and storing water."* (U.S. EPA, 2015)

Most County restoration projects fall within the realm of green infrastructure, as described by EPA. Stream restoration, reforestation and impervious cover removal contribute to the County's network of green corridors and patches that provide habitat, filter pollutants and absorb stormwater runoff. Even stormwater pond retrofits help to improve water quality and enhance habitat.

In addition to its more traditional, larger-scale restoration and retrofit projects, the County has worked to progressively increase its implementation of green infrastructure at the neighborhood and site scale. Environmental Site Design (ESD) practices have been and will continue to be implemented on public and private properties countywide through a variety of delivery methods.

Within the CIP, Green Streets and Government Facilities and Schools focus on implementation of ESD practices along roads and on publicly owned lands. These ESD practices account for 148 acres of the total CIP impervious area credits. RainScapes and WQPC Credits both incentivize installation of ESD practices on residential, institutional, and commercial properties. These programs have contributed 38.8 acres of impervious area credits. Finally, ESD practices that contribute 68.7 acres of impervious area credits have been or are being implemented through Agency Partnerships. The 256 acres treated by ESD practices may comprise only 6% of the 4,354 acres of impervious area credits the County achieved during this permit cycle, but they represent a commitment by DEP to increase ESD implementation in the future.

Impervious area equivalent credits were calculated in accordance with the MDE 2011 Draft Guidance Document, the MDE 2014 Final Guidance Document, and the Maryland Stormwater Design Manual as applicable for each delivery method and project type. Impervious area

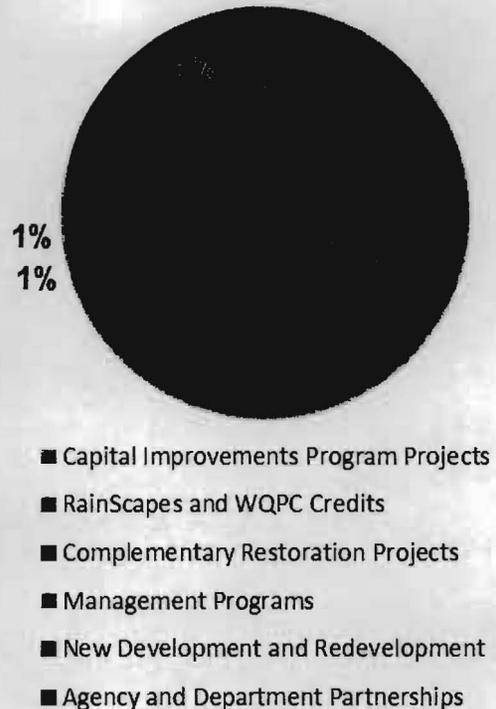


Figure 4 Relative Contribution of Total Impervious Area Credits by Delivery Method

Executive Summary

equivalent credit for individual trees and conservation landscaping is based on a technical memo developed by the Center for Watershed Protection.

Table 2 provides a summary of impervious acre credits by delivery method and applicable subcategory and also shows a breakdown of complete, in-construction, and in-design acres. The following sections briefly describe the delivery methods.

Table 2 Summary of Impervious Acre Credits by Delivery Method and Status

	Complete	In-Construction	In-Design	Total
 Capital Improvement Projects	663.6	152.2	2268.8	3084.6
Stream Restoration	88.7	57.5	510.2	656.4
Green Streets	19.1	0.6	91	110.7
Government Facilities	3.2		34.1	37.3
Stormwater Retrofits	552.6	94.1	1633.5	2280.2
RainScapes and WQPC Credits	38.8			38.8
RainScapes	15.8			15.8
WQPC	23.0			23.0
Complementary	6.1	19.7	8.5	34.3
Reforestation	6.0	19.7	8.5	34.2
Impervious Surface Removal	0.1	0.03		0.1
Management Programs	248.6			248.6
Street Sweeping	162.6			162.6
Catch Basin Cleaning	86.0			86.0
New Development and Redevelopment	305.2			305.2
MCPS	12.8			12.8
M-NCPPC	3.3			3.3
Private	53.4			53.4
New BMPs Treating Existing Impervious	235.7			235.7
Agency Partnerships	463.5	25.5	153.3	642.3
ICC	252.7	16.9	58.8	328.4
WSSC	23.2	8.6	94.5	126.3
DGS	0.9			0.9
MCPS	0.7			0.7
DOT	50.0			50.0
USACE	136.0			136.0
Total	1725.8	197.4	2430.6	4353.8

CAPITAL IMPROVEMENT PROGRAM PROJECTS

There are four types of projects undertaken by DEP through the CIP including stream restoration, green streets, projects at government facilities and County schools, and stormwater retrofits. CIP projects require the largest investment of financial and other resources in comparison to other delivery methods.



Stream restoration involves the rehabilitation of degraded stream channels and is considered green infrastructure. Restoration is intended to reduce streambank erosion and sedimentation, enhance riparian and in-stream habitat conditions, and improve water quality conditions.



Green Streets projects consist of designing and constructing ESD stormwater treatment facilities within existing street rights-of-way and is another green infrastructure method. These projects capture stormwater runoff in neighborhoods with minimal existing stormwater controls and install a combination of rain gardens, swales, permeable pavement, curb extensions with bioretention areas, and tree boxes.



Government Facility and County School projects improve stormwater management and treatment on properties owned by the County government and Montgomery County Public Schools (MCPS) by retrofitting sites with new ESD facilities.



Stormwater retrofits involve upgrading outdated stormwater infrastructure to meet accepted current standards. Third generation MS4 permit retrofit projects focused on stormwater ponds since they are the oldest type of stormwater infrastructure and have the greatest potential for water quality improvements and impervious area treatment.

One important factor contributing to the significant number of acres still in-design is that CIP projects were programmed in the approved FY13-18 budget assuming design and permitting occurring within a 15-month period and construction occurring immediately after final design. As implementation progressed, it became evident that the 15-month design and permitting phase was a challenge with the project design and permitting taking from 18 months for small, simple projects to up to three years or more for larger and more complicated projects. In response, DEP decided on a strategy to issue task orders to design all work necessary to meet the permit requirements before the end of the permit term. This strategy demonstrates DEP's commitment to adaptive management and meeting the restoration requirement.

RAINSCAPES AND WQPC CREDITS

The “RainScapes and WQPC Credits” delivery method is an important component of the watershed restoration program because individual residents, property owners, and community groups become engaged in helping support the County stormwater efforts.

DEP’s RainScapes program promotes environmentally friendly landscaping and small scale stormwater control and infiltration projects on residential, institutional, and commercial properties by offering technical and financial assistance to property owners (Figure 5). Through RainScapes Rewards, RainScapes Neighborhoods, and RainScapes for Schools, the program has supported implementation of rain gardens, tree plantings, permeable pavement retrofits, dry wells, water harvesting with rain barrels and cisterns, and conservation landscaping.



Figure 5 RainScapes Project

Impervious area restoration from WQPC credits represent impervious areas treated by stormwater management practices located on private property, not already credited through RainScapes. DEP is made aware of, and is able to track credit for, these stormwater management practices through the property owners’ application to receive a WQPC credit reducing the WQPC amount the property owner is required to pay.

COMPLEMENTARY RESTORATION PROGRAMS

Complementary restoration projects include reforestation and impervious surface removal usually completed in combination with larger retrofit or restoration projects in their vicinity. These projects demonstrate the County’s commitment to treat additional impervious areas even at small scales as the opportunities present themselves.

Reforestation projects establish the next generation of native trees and understory (smaller trees and shrubs), helping improve the environment and improving stormwater management. Impervious surface removal projects address underutilized impervious surfaces replacing them with pervious surfaces or incorporating them into a new ESD practice.

MANAGEMENT PROGRAMS

Street sweeping and catch basin cleaning are two road maintenance management programs overseen by DOT and DEP that contribute to watershed restoration. Street sweeping removes debris and abrasives from road surfaces, helping to keep drainage systems clean and preventing pollutants from entering the waterways (Figure 6). Catch basins, located along the curb line to allow stormwater to enter the storm drain system, need to be cleaned to remove sediment, debris, and trash. Through these programs 623 tons of debris was collected during FY14.



Figure 6 Street Sweeping

NEW DEVELOPMENT AND REDEVELOPMENT

Throughout the course of the third generation MS4 permit, many areas of impervious cover that were not controlled to the MEP at the end of 2009 have become controlled to the MEP as a result of new development and redevelopment activities. The new development and redevelopment delivery method accounts for these newly controlled areas. DEP carried out four desktop analyses to determine the impervious area that received treatment as a result of new development and redevelopment in four categories including MCPS redevelopment, M-NCPPC property acquisition, private redevelopment, and newly added BMPs.

AGENCY PARTNERSHIPS

DEP actively seeks opportunities to partner with other agencies and departments responsible for completing construction projects throughout the County to optimize watershed restoration. During the third generation MS4 permit, DEP established six specific partnerships that have resulted in significant contributions towards meeting the restoration requirement.

These partnerships include the Maryland State Highway Authority Intercounty Connector, through which 40 restoration projects including stream restorations, green streets and stormwater retrofits were funded and constructed. Partnering with the Washington Suburban Sanitary Commission (WSSC), DEP tracks credits from stream restoration projects throughout the county undertaken by WSSC to improve the sewer infrastructure. DEP works with DGS on County-managed properties undergoing development or redevelopment by DGS to fund some aspects of the construction effort to provide water quality treatment for impervious area in addition to what is required by the new construction on the site. In addition to the MCPS CIP projects, DEP partners with MCPS on MCPS construction projects to contribute funds to pay for the stormwater facilities outside of the project area. In addition to the CIP-funded green streets, DEP collaborated with and supported funding for DOT-led green streets projects and worked with DOT to prioritize outfall stabilizations throughout the County. DEP also partnered with the U.S. Army Corps of Engineers (USACE) in the management/restoration of the Anacostia River watershed, tracking credits from stream restoration projects.

PUBLIC OUTREACH

As the number of watershed restoration projects increased, so did the need for public outreach. Whether they are small scale rain gardens or large scale stream restoration projects, DEP proactively communicates its restoration project intentions to stakeholders and nearby residents throughout the process. On average, throughout a project's design, construction, and completion, six public meetings are held which may include an open forum style meeting with a presentation, a site walk, or attending and presenting at a Homeowners Association Board meeting. DEP developed a watershed restoration outreach standard operating procedure (SOP) to provide staff guidance and consistency on how to effectively reach out to the public. DEP has also developed a public outreach database that tracks outreach efforts for the watershed restoration program as well as outreach supporting other third generation MS4 permit requirements.

The number of public outreach meetings saw a five-fold increase from FY2011 to FY2014 with the total number of people reached through attending meetings increasing four-fold from 200 to over 800. In the future, as restoration projects shift increasingly towards small-scale ESD practices, public outreach efforts will continue to increase as smaller scale practices are more integrated into neighborhoods, have more potential impact on nearby residents, and therefore require increased coordination with the public to produce a project that is accepted by the communities.

Lessons Learned and Next Steps

The additional 20% restoration requirement of the third generation MS4 permit resulted in remarkable growth of DEP's watershed restoration program. The lasting impact of this growth will continue to improve water quality and benefit the environment into the future as lessons learned allow DEP to more efficiently and effectively restore the County's watersheds.

During the third generation MS4 permit term, several of DEP's restoration projects received awards and several grants (Figure 7).

Completing more restoration at a faster rate required increased funding. DEP received the necessary financial support from an increased CIP budget made possible by the County's forward-thinking approach to financing through issuing WQPC bonds. Capacity building was also necessary; so, in addition to increasing internal staff, DEP retained consultants to support the restoration program and to facilitate project progress.

DEP also created improved efficiency within the restoration program by expanding its data management efforts. DEP recognizes the value of investing in on-going data management. Improved knowledge of project performance and programmatic progress leads to better decision making and better restoration outcomes. DEP continues to prioritize improved data management as a critical component of the restoration program and DEP's adaptive management strategy.

DEP learned that each restoration delivery method is valuable and poses unique challenges requiring creative solutions. Permitting and public outreach remain the primary drivers of the duration of the design and permitting phase of CIP projects. Smaller-scale implementation will continue to expand as the direct contact with County residents and property owners is extremely valuable in building support for DEP's work. Leveraging partnerships will also continue to be a focus as these efforts proved mutually beneficial in meeting partners' objectives, reducing DEP's costs, and speeding project delivery. Reflecting back, DEP found that project delivery timeframes, on the order of years, were challenged by the restoration requirement timeframe of the five-year permit cycle. This was particularly true for the third generation MS4 permit term where early-phase permit activity required planning and strategic program development prior to project design, permitting, and construction.

The importance of communication with stakeholders and public outreach was magnified during the implementation of restoration projects. DEP greatly values stakeholder input and recognizes that effective communication results in overall improved project outcomes.

Through adaptive management across all project types, DEP is committed to continued improvement of its watershed restoration program to generate efficiencies, develop stakeholder support, and speed project delivery.

Select Program Honors

Awards

- *Stoney Creek Stormwater Management Pond at National Institute of Health*
National Recreation Award April 2014
American Council of Engineering Companies (ACEC) Engineering Excellence Awards Competition
Engineering Excellence Honor Award in Design 2013-2014
ACEC of Metropolitan Washington
- *Arcola Avenue Green Street Project*
Achievement Award Winner 2012
National Association of Counties

Grants

- Department of Natural Resources Chesapeake and Atlantic Coastal Bays Trust Fund
- National Fish and Wildlife Foundation Grant
Smart integrated stormwater management system demonstration partnership with Washington Council of Governments

Figure 7 DEP Restoration Project Awards and Grants