BARRY GLASSMAN
HARFORD COUNTY EXECUTIVE

BILLY BONIFACE
DIRECTOR OF ADMINISTRATION

JOSEPH J. SIEMEK, P.E.
ACTING DIRECTOR OF PUBLIC WORKS

June 29, 2016

Mr. Raymond Bahr
Water Management Administration
Maryland Department of the Environment
1800 Washington Blvd.
Baltimore, Maryland 21230

Dear Mr. Bahr:

As required by the Annotated Code of Maryland ENV 4-202.1(j), Harford County is submitting the enclosed Financial Assurance Plan ("FAP") which demonstrates the County's projected strategy for addressing our Phase I MS4 permit.

Harford County recognizes the need to improve water quality in the Chesapeake Bay and in impaired local county streams. We also recognize through the NDPES MS4 permitting program, the role of local governments to participate in the restoration of our waters.

However, we continue to reiterate that the permit requirements exceed the County's maximum extent practicable ("MEP"). MEP is the legal compliance standard for MS4s established by the Clean Water Act. The FAP should be read in the context of the County's continuing concern that its current MS4 permit demands a level of effort beyond legal requirements.

Harford County appreciates MDE's willingness to continue to discuss our concerns and work cooperatively on shared environmental goals through innovative practices and partnerships that are fiscally responsible.

Should you have any questions, or wish to discuss this submittal, please feel free to contact Christine Buckley at (410) 638-3217 extension 1176, or myself at (410) 638-3285.

Sincerely yours,

Joseph J. Siemek, P.E.
Acting Director of Public Works

JJS/cmb
Enclosures

Cc: The Honorable Barry Glassman
B. Boniface
R. Sandless
M. Lambert
M. Hartka
S. Kearby
J. Stratmeyer
M. Rist
C. Buckley
B. Appell
C. Lyerly (MDE)

COUNTY COUNCIL

OF

HARFORD COUNTY, MARYLAND

Resolution No. 014-16

Legislative Session Day 16-016

May 10, 2016

Introduced by Council President Slutzky at
the request of the County Executive

A RESOLUTION providing for the approval of the Financial Assurance Plan, a copy of which is attached hereto, for the Harford County national pollutant discharge elimination system Phase I municipal separate storm sewer system permit and for submission of the Plan to the Maryland Department of the Environment for its review.

WHEREAS, Harford County has been issued a national pollutant discharge elimination system Phase I municipal separate storm sewer system permit ("Permit") for discharges from its storm drain outfalls; and

WHEREAS, the Annotated Code of Maryland, Environment Article, §4-202.1(j)(1) requires that on or before July 1, 2016, and every 2 years thereafter on the anniversary of the date of issuance of its Permit, a county must file a Financial Assurance Plan describing its projected program for meeting permit requirements, including sources of revenue for the program; and

WHEREAS, the Annotated Code of Maryland, Environment Article, §4-202.1(j)(3) provides that the Financial Assurance Plan may not be filed until the local governing body of the county has held a public hearing and approved the Financial Assurance Plan.

NOW, THEREFORE, BE IT RESOLVED by the County Council of Harford County, Maryland, that the Financial Assurance Plan is hereby approved and shall be submitted to the Maryland Department of the Environment for its review.

ATTEST:

Mylia A. Dixon
Council Administrator

Richard C. Slutzky
President of the Council

ADOPTED: June 21, 2016

RESOLUTION NO. 014-16

Harford County NPDES Phase 1 MS4
Financial Assurance Plan

May 10, 2016

As required by the Annotated Code of Maryland ENV §4-202.1(j), Harford County has prepared the following Financial Assurance Plan ("FAP") which demonstrates the County's projected strategy for addressing the County's NPDES Phase I MS4 permit. By its nature, the FAP is a planning document. The County expressly reserves the right to make future changes to the FAP based on new or additional information or based on available funding consistent with an adaptive management approach.

Background

The Clean Water Act, significantly revised in 1972, established the National Pollutant Discharge Elimination System program ("NPDES") for facilities that discharge pollutants into navigable waters. Before discharging pollutants from a point source (for example, a pipe or outfall), a facility must apply for and receive an NPDES permit.

The 1987 Clean Water Act amendments updated the law to require permits for discharges from certain Municipal Separate Storm Sewer Systems ("MS4s"). Per federal regulations, MS4s serving a populations over 100,000 were required to submit a two-phase application for an individual five-year NPDES MS4 permit. This group of MS4s is called Phase I MS4s.

Maryland has been delegated the authority to run the NPDES program by the U.S. Environmental Protection Agency ("EPA"). The Maryland Department of the Environment ("MDE") is the state agency that oversees this delegated authority. Harford County received its first MS4 permit on May 17, 1994 and received reissued permits on August 13, 1999, November 1, 2004 and December 30, 2014.

Maryland House Bill 987, *"Stormwater Management – Watershed Protection and Restoration Program"*, was approved in 2012 and codified into State law. This bill required all counties and municipalities subject to a Phase I MS4 permit to establish a stormwater remediation fee to fund the implementation of each jurisdiction's MS4 permit. Maryland Senate Bill 863, *"Watershed Protection and Restoration Programs – Revisions"*, was approved in 2015 and codified into State law. This bill amended the Environment Code by (1) removing the requirement for each jurisdiction subject to a Phase I MS4 permit to establish a stormwater remediation fee and (2) adding the requirement for each jurisdiction to file a financial assurance plan.

Introduction

Harford County recognizes the need to improve water quality in the Chesapeake Bay and local Harford County streams. We also recognize through the NPDES MS4 permitting program, the responsibility of local governments to participate in the restoration of our waters.

Harford County, however, reiterated throughout the permit issuance process leading to the December 30, 2014 reissuance of our MS4 permit, that the permit requirements exceed Harford County's maximum extent practicable ("MEP"), considering both limited financial capabilities and short timeframes for implementation. MEP is the legal compliance standard for MS4s established by the Clean Water Act. This FAP should be read in the context of the County's continuing concern that its current MS4 permit demands a level of effort beyond legal requirements. The County expressly reserves its right to an MS4 permit that imposes no more than an MEP level of effort.

Program Capacity

Since the reissuance of Harford County's MS4 permit, the County has increased both staff and financial capacity for the implementation of the MS4 program.

The MS4 program is administered through the Department of Public Works, Office of Watershed Restoration and Protection, with support from other departments throughout the County government including capital project managers from highways engineering. Additionally, Harford County utilizes various partnerships with outside agencies such as Maryland Department of Natural Resources and U.S. Geological Survey to accomplish permit requirements.

In addition to increased staff capacity, Harford County continues to utilize and expand the use of open-end contracts for design and design / build in order to complete watershed restoration projects as quickly as is practicable. Focusing watershed restoration projects on County-owned properties will likewise assist in this regard.

In February 2015, the County Council passed Resolution 005-15 to dedicate a portion of the County's recordation tax in the amount of $1.10 per $1,000 of consideration beginning with fiscal year 2017 to be dedicated to the implementation of watershed protection and restoration projects. Most of the dedicated funds will be used to pay debt services for future bonds.

Prior to FY2016, the County had no dedicated funding source for the implementation of capital improvement projects for the MS4 program. With the establishment of a dedicated funding source and a commitment to issue bonds, a systematic strategy for addressing the requirements of the MS4 program and more specifically the watershed restoration component

of the MS4 permit has begun. This level of dedicated funding also allows for the design and construction of larger scale restoration projects that can benefit from economies of scale to maximize restoration benefits per cost.

A summary of the capital budgets for the implementation of the MS4 permit for approved FY2016 and the next two proposed fiscal years is listed below.

	Approved FY2016	Proposed FY2017	Proposed FY2018
Paygo[1]	$0.14 M	$0.15 M	$0.15 M
Future Bonds[2]	$5.8 M	$5.9 M	$5.95 M
Proposed Grants	$2.85 M	$4 M	$4 M
Total	$8.79 M	$10.05 M	$10.1 M

Footnotes:
[1] Source of funding is recordation tax
[2] Debt services on future bonds to be paid from recordation tax

Within the General Fund, thirteen (13) full time positions are proposed for FY2017 for the implementation of the MS4 program including the following:

<u>Staff Funded under the Watershed Protection and Restoration Program - $1.3 M</u>
MS4 Office - 4
Stormwater Plans Review and Inspections – 8
Erosion and Sediment Control Plans Review – 1

The budgets discussed above do not include the full costs to implement the MS4 permit. Many of the programs required under the MS4 permit exist within other county departments and divisions such as property management, pollution prevention, and litter and floatables, to mention a few. In addition, future grants have not been secured but are rather estimates of grant awards based projected availability.

Impervious Area Assessment

In December 2015, as required in Part IV E.2.a. of the MS4 permit, the County submitted an impervious surface area assessment consistent with the methods described in the MDE document *"Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated, Guidance for National Pollutant Discharge Elimination System Stormwater Permits" (MDE, June 2011)*.

Part 1.B of the MS4 permit correctly defines the MS4 permit area. Outside of the permit, MDE has expressed a more expansive interpretation of the regulated permit area. The County's assessment was conservatively based on MDE's interpretation. However, the County expressly reserves its rights to reduce the acreage associated with the impervious surface area assessment in Part IV.E.2.a. of the permit, which in turn impacts the County's restoration efforts during this permit term under Part IV.E.2.a, to the minimum acreage required by the permit. The County expressly reserves its rights to make refinements to its assessment as necessary in the future based upon new or additional information consistent with an adaptive management approach.

Furthermore, the County made no representation by submittal of the assessment that 20% of the acreage identified can be restored in the manner provided in Part IV.E.2.a considering financial capabilities and the short timeframes specified in Part IV.E.2.a. for the magnitude of work which the County maintains exceeds the legally-authorized maximum extent practicable (MEP) level of effort for the term of the permit. As noted above, the County expressly reserves its right to an MS4 permit that imposes no more than an MEP level of effort.

Based on the assumptions outlined in the assessment, the County determined 9,413 acres of impervious area remained untreated through the end of the previous permit which expired in 2009. Therefore, the impervious surface restoration requirement for 20% is 1,883 impervious acres.

On April 6, 2016, MDE provided comments and requested additional information from the County they deemed necessary to approve the County's impervious area assessment. As directed, Harford County will provide a response to their comments by August 1, 2016.

For the purposes of this financial assurance plan, Harford County has used 9,413 acres of impervious surfaces as untreated. The following represents the County's progress towards addressing watershed restoration for 20% of the untreated impervious surfaces.

	Acres
Untreated Impervious Surfaces	9,413
20% Requirement	1,883
Watershed Restoration *(2009 through 2015)*	-73
Watershed Restoration *(1/1/16 throughFY2016*	-59
Balance *(through 5/10/2016)*	1,751

Based on the County's estimated cost per impervious acre of $55,000, the cost to implement watershed restoration for an additional 1,751 acres is approximately $96 M for the 4 remaining years of the permit, or $24 M annually. As discussed in the County's MEP analysis, this level of spending exceeds the County's ability to fund the program through the general fund or fund the program through bond sales.

Harford County's Maximum Extent Practicable

The County's MEP analysis was submitted to MDE for consideration during the comment period for the tentative determination for the County's permit. This analysis determined the County can complete watershed restoration for 10% of the untreated impervious surfaces, or 941 acres based on financial capabilities and short timeframes. As listed above, the County has completed 182 acres, leaving a balance of 759 acres. The estimated cost to implement watershed restoration for 759 acres is approximately $42 M for the 4 remaining years of the permit, or $10.4 M annually. The following table provides a tentative schedule for implementation of watershed restoration projects.

	Acres
Watershed Restoration *(2009 through 2016)*	175
Watershed Restoration *(FY2017)*	68
Watershed Restoration *(FY2018)*	256
Watershed Restoration *(FY2019)*	247
Watershed Restoration *(FY2020)*	195
Total	941

Septic Systems

Harford County has also proposed alternative watershed restoration credits for connecting septic systems to the wastewater treatment plant and upgrading septic systems for denitrification. These programs are administered by the Harford County Health Department and fulling funded with Bay Restoration Funds. The following table provides a tentative schedule for implementation of these projects.

	Acres
Septic connections and upgrades *(2009 through 2016)*	112
Septic connections and upgrades *(FY2017)*	11
Septic connections and upgrades *(FY2018)*	11
Septic connections and upgrades *(FY2019)*	11
Septic connections and upgrades *(FY2020)*	11
Total	156

Additionally, Harford County has listed the annual practice of septic system pumping for 300 impervious acres. This represents an average annual volume of 10 million gallons delivered to the wastewater treatment plant from septic haulers.

Nutrient Trading

MDE is currently working with the Maryland Water Quality Trading Advisory Committee (WQTAC) to develop a *Water Quality Trading Manual*, which will include guidelines for MS4s to participate in nutrient trading to comply with impervious surface area restoration permit requirements. One scenario includes trading with the County's wastewater treatment plant (WWTP). Harford County is proposing to use a WWTP credits to address the remaining watershed restoration for 10% watershed restoration for untreated impervious surfaces. This would be a temporary trade to allow the County to continue to build program capacity and complete projects within more realistic timeframes.

Summary

Harford County has proposed a capital improvement program through the end of the MS4 permit term to address watershed restoration for 10% of the untreated impervious surface. An additional 1.7% from septic upgrades or connection to the wastewater treatment plant and 3% from annual septic pumping. An additional 10% will be proved through nutrient trading with the County's wastewater treatment plant. Enclosed are the spreadsheets developed by MDE for submittal of the financial assurance plan.

Harford County Financial Assurance Plan (May 10, 2016)

Article 4-202.1(j)(1)(i)1: Actions that will be required of the county or municipality to meet the requirements of its National Pollutant Discharge Elimination System Phase I Municipal Separate Storm Sewer System Permit.

Untreated impervious surfaces (acres) or baseline: 9,413

Impervious Surface Restoration Plan (ISRP) Requirement 20%

RESTORATION TYPE	BMP CLASS	IMPERVIOUS ACRES	COST[2,3]	% ISRP COMPLETE	STATUS	PROJECTED YEAR[1]
Operation Programs						
(SEPP) Septic Pumping	A	300	$0	3.2%	Under Construction	2016
(SEPP) Septic Pumping	A	300	$0	3.2%	Planning	2017
(SEPP) Septic Pumping	A	300	$0	3.2%	Planning	2018
(SEPP) Septic Pumping	A	300	$0	3.2%	Planning	2019
(SEPP) Septic Pumping	A	300	$0	3.2%	Planning	2020
Average Operations Next Two Years (FY2017-FY2018)		300.0	$0	3.2%		
Average Operations Permit Term (FY2009-FY2020)		310.8	$0	3.3%		

Capital Projects						
(STRE) Stream Restoration	A	38	$1,150,000	0.4%	Under Construction	2016
(SEPC) Septic Connections to WWTP	A	2.3	N/A	0.0%	Under Construction	2016
(SEPD) Septic Denitrification	A	9.1	N/A	0.1%	Under Construction	2016
(STRE) Stream Restoration	A	30	$1,450,000	0.3%	Under Design	2017
(PMED / PWED / WEDW / WSHW) Stormwater Retrofit	S	23	$1,410,000	0.2%	Under Design	2017
(FPU) Tree Plantings	A	15	$500,000	0.2%	Planning	2017
(SEPC) Septic Connections to WWTP	A	3.2	N/A	0.0%	Planning	2017
(SEPD) Septic Denitrification	A	7.8	N/A	0.1%	Planning	2017
(STRE) Stream Restoration	A	185	$11,080,000	2.0%	Under Design	2018
(PMED / PWED / WEDW / WSHW) Stormwater Retrofit	S	13	$700,000	0.1%	Under Design	2018
(PMED / PWED / WEDW / WSHW) Stormwater Retrofit	S	43	$2,400,000	0.5%	Planning	2018
(FPU) Tree Plantings	A	15	$500,000	0.2%	Planning	2018
(SEPC) Septic Connections to WWTP	A	3.2	N/A	0.0%	Planning	2018

(SEPD) Septic Denitrification	A	7.8	N/A	0.1%	Planning	2018
(STRE) Stream Restoration	A	87	$2,505,000	0.9%	Under Design	2019
(STRE) Stream Restoration	A	85	$4,700,000	0.9%	Planning	2019
(PMED / PWED / WEDW / WSHW) Stormwater Retrofit	S	60	$3,300,000	0.6%	Planning	2019
(FPU) Tree Plantings	A	15	$500,000	0.2%	Planning	2019
(SEPC) Septic Connections to WWTP	A	3.2	N/A	0.0%	Planning	2019
(SEPD) Septic Denitrification	A	7.8	N/A	0.1%	Planning	2019
(STRE) Stream Restoration	A	100	$5,500,000	1.1%	Planning	2020
(PMED / PWED / WEDW / WSHW) Stormwater Retrofit	S	80	$4,400,000	0.8%	Planning	2020
(FPU) Tree Plantings	A	15	$500,000	0.2%	Planning	2020
(SEPC) Septic Connections to WWTP	A	3.2	N/A	0.0%	Planning	2020
(SEPD) Septic Denitrification	A	7.8	N/A	0.1%	Planning	2020
Subtotal Capital Next Two Years (FY2017-FY2018)		346	$18,040,000	2.8%		
Subtotal Capital Permit Term (FY2009-FY2020)		1028.3	$46,388,000	10.9%		

Other						
Nutrient Trading with WWTP		940	$0	10.0%		
Subtotal Other Next Two Years (FY2017-FY2018)		940	$0	10.0%		
Subtotal Other Permit Term (FY2009-FY2020)		940	$0	10.0%		
Total Next Two Years (FY2017-FY2018)		**1586.0**	**$18,040,000**	**16.0%**		
Total Permit Term (FY2009-FY2020)		**2279.1**	**$46,388,000**	**24.2%**		

[1] Projected year is the year the project is constructed

[2] Cost is the total cost for the project including planning, design, and construction

[3] Cost is not related to annual fiscal costs. Planning, design, and construction typically do not occur within a single fiscal year.

VERSION 4-7-16

Harford County Financial Assurance Plan (May 10, 2016)

Article 4-202.1(j)(1)(i)2: Projected annual and 5-year costs for the county or municipality to meet the impervious surface restoration plan (ISRP) requirements of its National Pollutant Discharge Elimination System Phase I Municipal Separate Storm Sewer System Permit.

DESCRIPTION	PAST UP THRU FY 2015 [1]	CURRENT YEAR 1 FY 2016	PROJECTED YEAR 2 FY 2017	PROJECTED YEAR 3 FY 2018	PROJECTED YEAR 4 FY 2019	PROJECTED YEAR 5 FY 2020	TOTAL COSTS
Operating Expenditures							
Street Sweeping Program							$0
Inlet Cleaning							$0
Support of Capital Projects		$100,000	$150,000	$200,000	$250,000	$300,000	$1,000,000
Debt Service Payment			$100,000	$690,000	$1,270,000	$1,800,000	$3,860,000
Other							$0
Capital Expenditures							
General Fund							$0
WPR Fund		$3,810,000	$3,351,000	$8,850,000	$7,000,000	$8,000,000	$31,011,000
Debt Service							$0
Grants & Partnerships		$1,508,000	$2,330,000	$4,600,000	$4,000,000	$4,000,000	$16,438,000
Other							$0

Subtotal operation & paygo		$3,910,000	$3,601,000	$9,740,000	$8,520,000	$10,100,000	$35,871,000
Total Expenditures		**$5,418,000**	**$5,931,000**	**$14,340,000**	**$12,520,000**	**$14,100,000**	**$52,309,000**

Total ISRP costs except debt service: $48,449,000

Compare ISRP costs (except debt service) / total ISRP proposed actions: 104.44%

[1] Harford County has not provided this information because it is beyond the requirements of the statute

VERSION 4-7-16

Harford County Financial Assurance Plan (May 10, 2016)

Article 4-202.1(j)(1)(i)3: Projected annual and 5-year revenues or other funds that will be used to meet the cost for the county or municipality to meet the impervious surface restoration plan requirements under the National Pollutant Discharge Elimination System Phase I Municipal Separate Storm Sewer System Permit.

DESCRIPTION	PAST UP THRU FY 2015[1]	CURRENT YEAR 1 FY 2016	PROJECTED YEAR 2 FY 2017	PROJECTED YEAR 3 FY 2018	PROJECTED YEAR 4 FY 2019	PROJECTED YEAR 5 FY 2020	TOTAL NEXT 2-YEARS FY 17-18*	TOTAL
Annual Revenue Appropriated for ISRP[2]		$9,750,000	$11,400,000	$11,550,000	$11,750,000	$11,950,000	$22,950,000	$56,400,000
Annual Costs towards ISRP[2]		$5,418,000	$5,931,000	$14,340,000	$12,520,000	$14,100,000	$20,271,000	$52,309,000

Compare annual costs / revenue appropriated: **88%**

Reporting Criteria **75%**

[1] Harford County has not provided this information because it is beyond the requirements of the statute

[2] Impervious Surface Restoration Plan (ISRP)

VERSION 4-7-16

Harford County Financial Assurance Plan (May 10, 2016)

Article 4-202.1(j)(1)(i)4: Any sources of funds that will be utilized by the county or municipality to meet the requirements of its National Pollutant Discharge Elimination System Phase I Municipal Separate Storm Sewer System Permit.

SOURCE	PAST UP THRU FY 2015[1]	CURRENT YEAR 1 FY 2016	PROJECTED YEAR 2 FY 2017	PROJECTED YEAR 3 FY 2018	PROJECTED YEAR 4 FY 2019	PROJECTED YEAR 5 FY 2020	TOTAL PERMIT CYCLE
Paygo Sources							
Stormwater Remediation Fees (WPR Fund)							$ -
Miscellaneous Fees (WPR Fund)							$ -
General Fund (Salaries)		$ 1,100,000	$ 1,500,000	$ 1,600,000	$ 1,700,000	$ 1,800,000	$ 7,700,000
Other Funds 1 (Recordation Tax)		$ 140,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 740,000
Other Funds 2							$ -
Other Funds 3							$ -
Subtotal Paygo Sources	$ -	$ 1,240,000	$ 1,650,000	$ 1,750,000	$ 1,850,000	$ 1,950,000	$ 8,440,000

Debt Service							
County Transportation Bonds							$ -
General Obligation Bonds		$ 5,800,000	$ 5,900,000	$ 5,950,000	$ 6,050,000	$ 6,150,000	$ 29,850,000
Revenue (Utility) Bonds							$ -
State Revolving Loan Fund							$ -
Public-private partnership (debt service)							$ -
Subtotal Debt Service		$ 5,800,000	$ 5,900,000	$ 5,950,000	$ 6,050,000	$ 6,150,000	$ 29,850,000
Grants and Partnerships							
State funded grants		$ 2,325,000	$ 2,700,000	$ 2,700,000	$ 2,700,000	$ 2,700,000	$ 13,125,000
Federal funded grants		$ 525,000	$ 1,300,000	$ 1,300,000	$ 1,300,000	$ 1,300,000	$ 5,725,000
Public-private partnership (matched grant)							$ -
Subtotal Grants and Partnerships		$ 2,850,000	$ 4,000,000	$ 4,000,000	$ 4,000,000	$ 4,000,000	$ 18,850,000

Total Annual Sources of Funds[3]	**$ -**	**$ 9,890,000**	**$ 11,550,000**	**$ 11,700,000**	**$ 11,900,000**	**$ 12,100,000**	**$ 45,040,000**
Percent of Funds Directed Toward ISRP[2]		**99%**	**99%**	**99%**	**99%**	**99%**	

Compare total permit term paygo ISRP[2] costs / subtotal permit term paygo sources: 305%

Compare total permit term ISRP[2] costs / total permit term annual sources of funds: 116%

[1] Harford County has not provided this information because it is beyond the requirements of the statute

[2] Impervious Surface Restoration Plan (ISRP)

[3] Funding excludes programs or portions of programs required outside of the MS4 permit such as illicit discharges, litter and floatables, property management and public education.

VERSION 4-7-16

Harford County Financial Assurance Plan (May 10, 2016)

Article 4-202.1(j)(1)(i)5: Specific actions and expenditures that the county or municipality implemented in the previous fiscal years to meet its impervious surface restoration plan requirements under its National Pollutant Discharge Elimination System Phase I Municipal Separate Storm Sewer System Permit.

Untreated impervious surfaces (acres) or baseline: 9,413 **Impervious Surface Restoration Plan (ISRP) Requirement:** 20%

RESTORATION ID	RESTOR TYPE	BMP CLASS	NUM BMP	IMPERV ACRES	BUILT DATE	COST	% ISRP Complete	STATUS	COMMENTS
Operation Programs									
Septic Pumping	SEPP	A	9,926	298	2015	$0	3.2%	Complete	
Septic Pumping	SEPP	A	9,811	294	2014	$0	3.1%	Complete	
Septic Pumping	SEPP	A	9,719	292	2013	$0	3.1%	Complete	
Septic Pumping	SEPP	A	9,887	297	2012	$0	3.2%	Complete	
Septic Pumping	SEPP	A	11,482	344	2011	$0	3.7%	Complete	
Septic Pumping	SEPP	A	12,959	389	2010	$0	4.1%	Complete	

Septic Pumping	SEPP	A	10,511	315	2009	$0	3.3%	Complete	
Average Operations Complete To Date			10,614	318		$0	3.4%		
Capital Projects									
Retrofit of existing stormwater pond	WPWS	S	1	9.8	2016	$590,000	0.1%	Complete	
Stream restoration	STRE	A	1	19.6	2016	$600,000	0.2%	Complete	
Retrofit of existing stormwater pond	WPWS	S	4	8.4	2016	$250,000	0.1%	Complete	
Retrofit of existing stormwater pond	PMED	S	1	12	2016	$390,000	0.1%	Complete	
New bioretention facility	FBIO	S	1	0.6	2015	$100,000	0.0%	Complete	
Retrofit of existing stormwater pond	MSGW	S	1	0.5	2015	$82,000	0.0%	Complete	
Stream restoration	STRE	A	1	12.4	2015	$550,000	0.1%	Complete	
Septic Connection to WWTP	SEPC	A	4	1.6	2015	N/A	0.0%	Complete	Funded Bay Restoration Fund
Installation of new BAT on existing septic Denitrification	SEPD	A	39	10.1	2015	N/A	0.1%	Complete	Funded Bay Restoration Fund

Tree planting	FPU	A	3	1.8	2014	$50,000	0.0%	Complete	
Stream restoration	STRE	A	1	12.1	2014	$570,000	0.1%	Complete	
Tree planting	FPU	A	4	3.2	2014	$81,000	0.0%	Complete	
Septic Connection to WWTP	SEPC	A	2	0.8	2014	N/A	0.0%	Complete	Funded Bay Restoration Fund
Installation of new BAT on existing septic Denitrification	SEPD	A	43	11.2	2014	N/A	0.1%	Complete	Funded Bay Restoration Fund
Retrofit of existing stormwater pond	WEDW	S	1	3.8	2013	$240,000	0.0%	Complete	
Tree planting	FPU	A	4	1.8	2013	$56,000	0.0%	Complete	
Retrofit of existing stormwater pond	WEDW	S	1	4.8	2013	$320,000	0.1%	Complete	
Stream restoration	STRE	A	1	7.3	2013	$320,000	0.1%	Complete	
Tree planting	FPU	A	1	0.8	2013	$24,000	0.0%	Complete	
Septic Connection to WWTP	SEPC	A	1	0.4	2013	N/A	0.0%	Complete	Funded Bay Restoration Fund
Installation of new BAT on existing septic Denitrification	SEPD	A	23	6	2013	N/A	0.1%	Complete	Funded Bay Restoration Fund

Septic Connection to WWTP	SEPC	A	1	0.4	2012	N/A	0.0%	Complete	Funded Bay Restoration Fund
Installation of new BAT on existing septic Denitrification	SEPD	A	8	2.1	2012	N/A	0.0%	Complete	Funded Bay Restoration Fund
Retrofit of existing stormwater pond	WPWS	S	1	11.7	2011	$520,000	0.1%	Complete	
Stream restoration	STRE	A	1	4.7	2011	$220,000	0.0%	Complete	
New bioretention facility	FBIO	S	1	0.9	2011	$160,000	0.0%	Complete	
New bioretention facility	STRE	A	1	0.6	2011	$180,000	0.0%	Complete	
Stream restoration	STRE	A	1	16.8	2011	$380,000	0.2%	Complete	
Demolition of townhouse community	IMPP	A	1	2.1	2011	N/A	0.0%	Complete	Costs not available
New bioretention facility	FBIO	S	1	0.6	2010	$110,000	0.0%	Complete	
Subtotal Capital Complete To Date			154	168.9		$5,793,000	1.79%		
Other									
							0.0%		

							0.0%		
Subtotal Other Complete To Date			0	0		$0	0.0%		
Total Complete to Date			**10,768**	**487.3**		**$5,793,000**	**5.2%**		

VERSION 4-7-16

Harford County, MD Department of Public Works

Watershed Protection and Restoration

Completed Capital Improvement Projects

Summary (From Permit Expiration through 2016)

Total Credits	Total Design		Total Construction		Total Cost	Total Grant		Cost per Impervious Acre
135.71 acres	$2,944,250	20%	$11,805,580	80%	$14,749,830	$1,414,503	10%	$108,682

Supplemental Information for developing the MS4 Finanical Assurance Plan

Abingdon Library Bioretention (CIP0015)

2510 Tollgate Road (ADC (2012) 49F5)

Install new bioretention facility.

Design Initated - Apr 2010

Construction Completed - Oct 2010

Project Size - 1.82 inches rainfall treated

Drainage Area - 0.47 acres (100% impervious)

Credit Type - SWM Facility

Credit Value - 1 ac imp per 1 inch rainfall treated

Credits	Design		Total Construction		Total Cost	Grant		Cost per Impervious Acre
0.6 acres	$18,847	18%	$87,797	82%	$106,644	$53,322	50%	$177,740

Costs do not include County salaries for inspections or project management

Impervious Credits calculated based on "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", August 2014

Amoss Mill Road Tree Planting (CIP0061)

4929 Amoss Mill Road (ADC (2012) 10A5)

Planted 126 trees with funds from MD DNR Stream Challenge grant.

Design Initated - Oct 2014
Construction Completed - Oct 2014

Project Size - 0.47 acres

Credit Type - Pervious Urban to Forest
Credit Value - 0.38 ac imp per 1 ac planted

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
0.18 acres	N/A	$8,448 100%	$8,448	$8,448 100%	$46,933

Bynum Ridge Stream Stablization (CIP0012)

Near intersection of Bynum Ridge Road and Bowles Terrace (ADC (2012) 41C1)

Remove concrete block wall, regrade and stabilize banks.

Design Initated - Jun 2006
Construction Completed - Jul 2011

Project Size - 465 feet

Credit Type - Stream Stabilization
Credit Value - 0.01 ac imp per liner foot

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
4.65 acres	$91,896 42%	$125,082 58%	$216,978	$0	$46,662

Costs do not include County salaries for inspections or project management

Impervious Credits calculated based on "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", August 2014

Cedarwood Pump Station Demolition (CIP0068)

Near intersection of Cedarwood Drive and Popularwood Court (ADC (2012) 40F3)

Abandoned pump station and removal of impervious surfaces

Design Initated - Sep 2011
Construction Completed - Aug 2012

Project Size - 2905 square feet

Credit Type - Imprevious Urban to Pervious
Credit Value - 0.75 ac imp per 1 ac imp removed

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
0.05 acres	N/A	N/A	N/A	$0	N/A

Churchville Recreation Complex Tree Planting (CIP0049)

111 Glenville Road (ADC (2012) 43E1)

Planted 111 trees with funds from MD DNR Stream Challenge grant.

Design Initated - Oct 2013
Construction Completed - Oct 2013

Project Size - 0.64 acres

Credit Type - Pervious Urban to Forest
Credit Value - 0.38 ac imp per 1 ac planted

Credits	Design	Total Construction		Total Cost	Grant		Cost per Impervious Acre
0.24 acres	N/A	$7,434	100%	$7,434	$7,434	100%	$30,975

Costs do not include County salaries for inspections or project management

Impervious Credits calculated based on "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", August 2014

Edwards Lane Tree Planting (CIP0060)

2360 Edwards Lane (ADC (2012) 43A4)

Planted 556 trees with funds from MD DNR Stream Challenge grant.

Design Initated - Oct 2014
Construction Completed - Oct 2014
Project Size - 2.54 acres
Credit Type - Pervious Urban to Forest
Credit Value - 0.38 ac imp per 1 ac planted

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
0.97 acres	N/A	$25,952 100%	$25,952	$25,952 100%	$26,755

Forest Hill Elementary School Bioretention (CIP0016)

2407 Rocks Road (ADC (2012) 31C5)

Install new bioretention facility.

Design Initated - Oct 2009
Construction Completed - Jun 2011
Project Size - 1.4 inches rainfall treated
Drainage Area - 0.39 acres (71% impervious)
Credit Type - SWM Facility
Credit Value - 1 ac imp per 1 inch rainfall treated

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
0.91 acres	$65,418 40%	$96,416 60%	$161,834	$0	$177,840

Costs do not include County salaries for inspections or project management

Impervious Credits calculated based on "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", August 2014

Foster Branch at Trimble Road Stream Restoration (CIP0032)

Near intersection of Trimble Road and Foster Knoll Drive (ADC (2012) 56B8)

Elevated the existing stream channel with a subsoil rock mixture and excavated the adjoining riparian are to reconnect with the floodplain. Installed clay blocks to maintain baseflow. Installed riffle grade control with river jack and rock weirs.

Design Initated - Nov 2012
Construction Completed - May 2014

Project Size - 1213 feet

Credit Type - Stream Restoration
Credit Value - 0.01 ac imp per liner foot

Credits	Design		Total Construction		Total Cost	Grant		Cost per Impervious Acre
12.1 acres	$98,923	17%	$471,122	83%	$570,045	$275,000	48%	$47,111

Friends Pond SWM Retrofit (CIP0018)

Near intersection of Jarrettsville Road and Rocks Road (ADC (2012) 31C6)

Partnered with Parks and Recreation to add water quality management to the SWM rehabiliation.

Design Initated - Aug 2008
Construction Completed - Oct 2011

Project Size - 1.01 Inches rainfall treated
Drainage Area - 36 acres (32% impervious)

Credit Type - SWM Retrofit
Credit Value - 1 ac imp per 1 inch rainfall treated

Credits	Design		Total Construction		Total Cost	Grant	Cost per Impervious Acre
11.7 acres	$167,724	32%	$350,082	68%	$517,806	$0	$44,257

Costs do not include County salaries for inspections or project management

Impervious Credits calculated based on "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", August 2014

Harford Center Tree Planting (CIP0053)

Near intersection of Level Road and Earlton Road (ADC (2012) 35F7)

Planted 137 trees with funds from MD DNR Stream Challenge grant.

Design Initated - Oct 2013 | Project Size - 0.57 acres | Credit Type - Pervious Urban to Forest

Construction Completed - Oct 2013 | Credit Value - 0.38 ac imp per 1 ac planted

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
0.22 acres	N/A	$9,983 100%	$9,983	$0	$45,377

Harford Christian School Tree Planting (CIP0062)

1736 Whiteford Road (ADC (2012) 23C2)

Planted 352 trees with funds from MD DNR Stream Challenge grant.

Design Initated - Oct 2014 | Project Size - 1.65 acres | Credit Type - Pervious Urban to Forest

Construction Completed - Oct 2014 | Credit Value - 0.38 ac imp per 1 ac planted

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
0.62 acres	N/A	$15,972 100%	$15,972	$15,972 100%	$25,761

Costs do not include County salaries for inspections or project management

Impervious Credits calculated based on "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", August 2014

Heaven Waters Boulton Street Tree Planting (CIP0048)

Boulton Street at Kelly Fields (ADC (2012) 41C6)

98 Planted 98 trees with funds from MD DNR Stream Challenge grant.

Design Initated - Oct 2013 | Project Size - 0.52 acres | Credit Type - Pervious Urban to Forest

Construction Completed - Oct 2013 | Credit Value - 0.38 ac imp per 1 ac planted

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
0.2 acres	N/A	$7,546 100%	$7,546	$7,546 100%	$37,730

Hickory Elementary School Bioretention (CIP0017)

2100 Conowingo Road (ADC (2012) 31A6)

Construt bioretention facility

Design Initated - Oct 2009 | Project Size - 1.32 inches rainfall treated | Credit Type - SWM Facility

Construction Completed - Jun 2011 | Drainage Area - 0.68 acres (79% impervious) | Credit Value - 1 ac imp per 1 inch rainfall treated

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
0.6 acres	$64,250 36%	$114,763 64%	$179,013	$0	$298,355

Costs do not include County salaries for inspections or project management

Impervious Credits calculated based on "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", August 2014

Lower Wheel Creek SWM Retrofit & Stream Restoration (CIP0027)

Near intersection of Wheel Road and Arthur Woods Drive (ADC (2012) 49F4)

Stablize eroding stream banks and retrofit existing water quality structures.

Design Initated - Jan 2011
Construction Completed - Jun 2016

Project Size - 0.27 inches rainfall treated
Drainage Area - 19.41 acres (38% impervious)

Credit Type - SWM Facility
Credit Value - 1 ac imp per 1 inch rainfall treated

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
2 acres	$315,601 16%	$1,624,042 84%	$1,939,643	$0	$969,822

Lower Wheel Creek SWM Retrofit & Stream Restoration (CIP0027)

Near intersection of Wheel Road and Arthur Woods Drive (ADC (2012) 49F4)

Stablize eroding stream banks and retrofit existing water quality structures.

Design Initated - Jan 2011
Construction Completed - Jun 2016

Project Size - 1960 feet

Credit Type - Stream Restoration
Credit Value - 0.01 ac imp per liner foot

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
19.6 acres	$315,601 16%	$1,624,042 84%	$1,939,643	$0	$98,961

Costs do not include County salaries for inspections or project management

Impervious Credits calculated based on "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", August 2014

Lower Wheel Creek SWM Retrofit & Stream Restoration (CIP0027)

Near intersection of Wheel Road and Arthur Woods Drive (ADC (2012) 49F4)

Stablize eroding stream banks and retrofit existing water quality structures.

Design Initated - Jan 2011	Project Size - 0.6 inches rainfall treated	Credit Type - SWM Facility
Construction Completed - Jun 2016	Drainage Area - 12.6 acres (33% impervious)	Credit Value - 1 ac imp per 1 inch rainfall treated

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
2.52 acres	$315,601 16%	$1,624,042 84%	$1,939,643	$0	$769,700

Lower Wheel Creek SWM Retrofit & Stream Restoration (CIP0027)

Near intersection of Wheel Road and Arthur Woods Drive (ADC (2012) 49F4)

Stablize eroding stream banks and retrofit existing water quality structures.

Design Initated - Jan 2011	Project Size - 0.67 inches rainfall treated	Credit Type - SWM Facility
Construction Completed - Jun 2016	Drainage Area - 10.69 acres (34% impervious)	Credit Value - 1 ac imp per 1 inch rainfall treated

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
2.51 acres	$315,601 16%	$1,624,042 84%	$1,939,643	$0	$772,766

Costs do not include County salaries for inspections or project management

Impervious Credits calculated based on "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", August 2014

Lower Wheel Creek SWM Retrofit & Stream Restoration (CIP0027)

Near intersection of Wheel Road and Arthur Woods Drive (ADC (2012) 49F4)

Stablize eroding stream banks and retrofit existing water quality structures.

Design Initated - Jan 2011
Construction Completed - Jun 2016

Project Size - 0.6 inches rainfall treated
Drainage Area - 6.07 acres (37% impervious)

Credit Type - SWM Facility
Credit Value - 1 ac imp per 1 inch rainfall treated

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
1.38 acres	$315,601 16%	$1,624,042 84%	$1,939,643	$0	$1,405,538

Magnolia Middle School Tree Planting (CIP0056)

299 Fort Hoyle Road (ADC (2012) 56C8)

Planted 120 trees with funds from MD DNR Stream Challenge grant.

Design Initated - Apr 2014
Construction Completed - Apr 2014

Project Size - 0.6 acres

Credit Type - Pervious Urban to Forest
Credit Value - 0.38 ac imp per 1 ac planted

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
0.23 acres	N/A	$5,295 100%	$5,295	$5,295 100%	$23,022

Costs do not include County salaries for inspections or project management

Impervious Credits calculated based on "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", August 2014

Mt Soma Property Tree Planting (CIP0054)

Near intersection of Old Joppa Road and MD Rt 1 (ADC (2012) 41A8)

Planted 500 trees with funds from MD DNR Stream Challenge grant.

Design Initated - Apr 2014
Construction Completed - Apr 2014

Project Size - 2.54 acres

Credit Type - Pervious Urban to Forest
Credit Value - 0.38 ac imp per 1 ac planted

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
0.97 acres	N/A	$28,684 100%	$28,684	$28,684 100%	$29,571

Norrisville Elementary Bioretention (CIP0031)

5302 Norrisville Road (ADC (2012) 9E4)

Construct a bioretention facility

Design Initated - Mar 2012
Construction Completed - Jun 2015

Project Size - 2.12 inches rainfall treated
Drainage Area - 1.25 acres (40% impervious)

Credit Type - SWM Facility
Credit Value - 1 ac imp per 1 inch rainfall treated

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
0.625 acres	$4,495 4%	$108,106 96%	$112,601	$50,000 44%	$180,162

Costs do not include County salaries for inspections or project management

Impervious Credits calculated based on "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", August 2014

North Harford High School Tree Planting (CIP0058)

211 Pylesville Road (ADC (2012) 12A8)

Planted 70 trees with funds from MD DNR Stream Challenge grant.

Design Initated - Apr 2014 | Project Size - 0.4 acres | Credit Type - Pervious Urban to Forest

Construction Completed - Apr 2014 | Credit Value - 0.38 ac imp per 1 ac planted

Credits	Design	Total Construction		Total Cost	Grant		Cost per Impervious Acre
0.15 acres	N/A	$3,593	100%	$3,593	$3,593	100%	$23,953

Patterson Mill High School Tree Planting (CIP0057)

85 Patterson Mill Road (ADC (2012) 50A1)

Planted 400 trees with funds from MD DNR Stream Challenge grant.

Design Initated - Apr 2013 | Project Size - 2.15 acres | Credit Type - Pervious Urban to Forest

Construction Completed - Apr 2013 | Credit Value - 0.38 ac imp per 1 ac planted

Credits	Design	Total Construction		Total Cost	Grant		Cost per Impervious Acre
0.82 acres	N/A	$23,688	100%	$23,688	$23,688	100%	$28,888

Costs do not include County salaries for inspections or project management

Impervious Credits calculated based on "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", August 2014

Perryman Wellfield Tree Planting (CIP0059)

Near intersection of Michaelsville Road and Woodley Road (ADC (2012) 52C8)

Planted 810 trees with funds from MD DNR Stream Challenge grant.

Design Initated - Apr 2014
Construction Completed - Apr 2014

Project Size - 4.77 acres

Credit Type - Pervious Urban to Forest
Credit Value - 0.38 ac imp per 1 ac planted

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
1.81 acres	N/A	$43,183 100%	$43,183	$43,183 100%	$23,858

Plumtree Run at Tollgate Stream Restoration (CIP0013)

Near intersection of Tollgate Road and Ruth Avenue (ADC (2012) 23G01)

Combination of bank stablization, livestock exclusion, culvert replacement, invasive species management.

Design Initated - Oct 2007
Construction Completed - May 2011

Project Size - 1680 feet

Credit Type - Stream Restoration
Credit Value - 0.01 ac imp per liner foot

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
16.8 acres	$80,000 21%	$303,000 79%	$383,000	$215,000 56%	$22,798

Costs do not include County salaries for inspections or project management

Impervious Credits calculated based on "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", August 2014

Walters Mill Tree Planting (CIP0050)

Walters Mill Road Shawnee Drive (ADC (2012) 22B7)

Planted 497 trees with funds from MD DNR Stream Challenge grant.

Design Initated - Oct 2013 | Project Size - 2.85 acres | Credit Type - Pervious Urban to Forest

Construction Completed - Oct 2013 | Credit Value - 0.38 ac imp per 1 ac planted

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
1.09 acres	N/A	$31,099 100%	$31,099	$31,099 100%	$28,531

Washington Court Demolition (CIP0042)

Near intersection of Cedar Drive and Juniper Lane (ADC (2012) 56F6)

Demolish structures on County owned property.

Design Initated - N/A | Project Size - 122800 square feet | Credit Type - Imprevious Urban to Pervious

Construction Completed - Jan 2011 | Credit Value - 0.75 ac imp per 1 ac imp removed

Credits	Design	Total Construction	Total Cost	Grant	Cost per Impervious Acre
2.11 acres	N/A	N/A	N/A	$0	N/A

Costs do not include County salaries for inspections or project management

Impervious Credits calculated based on "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", August 2014

Wheel Creek at Calvert Walks Stream Restoration (CIP0030)

Near intersection of Tollgate Road and Foxhall Drive (ADC (2012) 50F3)

Constructed upstream rock step pools to reduce headcut, bank erosion and velocities. Graded banks to establish floodplain within existing channel. Planted shrubs and live stakes along the stream and trees in the buffer.

Design Initated - Oct 2009
Construction Completed - May 2013

Project Size - 725 feet

Credit Type - Stream Restoration
Credit Value - 0.01 ac imp per liner foot

Credits	Design		Total Construction		Total Cost	Grant		Cost per Impervious Acre
7.25 acres	$101,401	31%	$223,282	69%	$324,683	$204,951	63%	$44,784

Wheel Creek at Country Walk 1A SWM Retrofit (CIP0024)

Near intersection of Wheel Road and Tollgate Road (ADC (2012) 49F4)

Convert existing SWM facility to provide channel protection volume by excavation and riser modification.

Design Initated - Feb 2013
Construction Completed - Jun 2016

Project Size - 0.81 Inches rainfall treated
Drainage Area - 47.73 acres (22% impervious)

Credit Type - SWM Retrofit
Credit Value - 1 ac imp per 1 inch rainfall treated

Credits	Design		Total Construction		Total Cost	Grant	Cost per Impervious Acre
9.82 acres	$185,424	27%	$492,314	73%	$677,738	$0	$69,016

Costs do not include County salaries for inspections or project management

Impervious Credits calculated based on "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", August 2014

Wheel Creek at Festival at Bel Air SWM Retrofit (CIP0026)

Near intersection of Wheel Road and MD Route 24 (ADC (2012) 50A3)

Convert existing SWM facility to shallow marsh providing channel protection and water quality volumes by excavation, riser modifications, and raising the embankment. Install marsh plantings.

Design Initated - Aug 2012
Construction Completed - Feb 2016

Project Size - 0.51 Inches rainfall treated
Drainage Area - 25.68 acres (91% impervious)

Credit Type - SWM Retrofit
Credit Value - 1 ac imp per 1 inch rainfall treated

Credits	Design		Total Construction		Total Cost	Grant	Cost per Impervious Acre
12 acres	$182,456	38%	$296,599	62%	$479,055	$0	$39,921

Wheel Creek at Gardens of Bel Air SWM Retrofit (CIP0022)

Near intersection of Tollgate Road and Darby Lane (ADC (2012) 50F3)

Converted in-stream SWM facility to provide 61% channel protection volume and no water quality volume through excavation, replacing the riser, raising the embankment and planting shrubs and perennial meadow seed mix.

Design Initated - Sep 2009
Construction Completed - Jul 2013

Project Size - 3.28 Inches rainfall treated
Drainage Area - 104.15 acres (34% impervious)

Credit Type - SWM Retrofit
Credit Value - 1 ac imp per 1 inch rainfall treated

Credits	Design		Total Construction		Total Cost	Grant		Cost per Impervious Acre
4.79 acres	$66,990	21%	$255,129	79%	$322,119	$156,504	49%	$67,248

Costs do not include County salaries for inspections or project management

Impervious Credits calculated based on "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", August 2014

Woodbridge Stream Restoration (CIP0020)

Near intersection of Magnolia Rd and Hanson Rd (ADC (2012) 28H03)

Stabilize streambanks to accommodate reduced flows expected from retrofiting existing SWM facility upstream.

Design Initated - Nov 2008
Construction Completed - Apr 2015

Project Size - 1237 feet

Credit Type - Stream Restoration
Credit Value - 0.01 ac imp per liner foot

Credits	Design		Total Construction		Total Cost	Grant		Cost per Impervious Acre
12.4 acres	$155,986	28%	$397,097	72%	$553,083	$258,832	47%	$44,603

Woodbridge SWM Retrofit (CIP0019)

Near intersection of Magnolia Rd and Hanson Rd (ADC (2012) 56C6)

Converted existing SWM facility to provide 100% channel protection and 16% water quality volumes through riser modification, excavation and planting shrubs and meadow perennial seed mix. Installed new stormdrain to increase drainage area in the facility.

Design Initated - Dec 2009
Construction Completed - Oct 2013

Project Size - 2.7 Inches rainfall treated
Drainage Area - 30.8 acres (32% impervious)

Credit Type - SWM Retrofit
Credit Value - 1 ac imp per 1 inch rainfall treated

Credits	Design		Total Construction		Total Cost	Grant	Cost per Impervious Acre
3.8 acres	$82,435	35%	$153,704	65%	$236,139	$0	$62,142

Costs do not include County salaries for inspections or project management

Impervious Credits calculated based on "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated", August 2014

Harford County MS4
Active Watershed Restoration Projects

6/24/2016

Project		Impervious Credits (ac)	Grant	Total Cost	Cost / Imp Acre	Design [1]	Construction [1]
CIP0070	***Abingdon Library Water Quality Improvements***	3.3	$0	$239,978	$72,721	Mar 2016	Jun 2017
CIP0074	***Bear Cabin Branch Wetland and Stream Restoration***	36.8	$775,000 [2]	$975,000	$26,495	Sep 2017	Jul 2018
CIP0029	***Bynum at St Andrews Way Stream Restoration***	30.0	$0	$1,968,568	$65,619	Jul 2009	Jun 2018
CIP0034	***Church Creek ES SWM Retrofit & Stream Restoration***	24.0	$0	$1,668,180	$69,508	Jan 2016	Nov 2018
CIP0036	***Foster Branch at Dembytown Stream Restoration***	19.4	$500,000 [2]	$881,557	$45,441	Aug 2014	Nov 2016
CIP0037	***Foster Branch at Still Meadow Stream Restoration***	15.0	$0	$575,000	$38,333	Sep 2016	Jun 2018
CIP0072	***Ha Ha Branch Stream Restoration***	25.0	$0	$870,000	$34,800	Jul 2016	Jun 2019
CIP0014	***Heavenly Pond Wetland & Stream Creation***	8.0	$0	$897,187	$112,148	Nov 2011	Sep 2017
CIP0069	***Jarrettsville Highways Shop SWM Retrofit***	5.0	$0	$200,000	$40,000	Jul 2016	Jun 2017
CIP0046	***Leight Center Parking Lot Green Infrastructure***	0.5	$125,000 [2]	$233,966	$487,429	Dec 2015	Sep 2016
CIP0043	***Northwest Branch Declaration Run Stream Restoration***	19.4	$0	$1,096,252	$56,508	Dec 2015	Jul 2017

1 Notice to Proceed
2 Approved grant funding

Harford County MS4
Active Watershed Restoration Projects

6/24/2016

Project		Impervious Credits (ac)	Grant	Total Cost	Cost / Imp Acre	Design[1]	Construction[1]
CIP0039	***Plumtree Run at Barrington Stream Restoration***	30.0	$0	$2,485,040	$82,835	Aug 2014	Jul 2017
CIP0035	***Ring Factory ES SWM Retrofit & Stream Restoraion***	18.6	$700,000 [2]	$950,939	$51,126	Sep 2014	Nov 2016
CIP0021	***Sunnyview Drive Stream Restoration***	30.0	$800,000	$1,346,446	$44,882	Jun 2005	Jul 2017
CIP0025	***Wheel Creek at Country Walk 1B SWM Retrofit***	5.9	$240,000 [2]	$337,052	$56,934	Feb 2013	Nov 2016
CIP0033	***Willoughby Beach SWM Retrofit & Stream Restoration***	42.1	$600,000	$1,605,899	$38,145	Mar 2014	Jul 2017
CIP0071	***Woodland Run Stream Restoration***	17.0	$0	$655,000	$38,529	Aug 2016	Jun 2019

1 Notice to Proceed
2 Approved grant funding

Watershed Protection and Restoration Program Annual Report Table

Article 4-202.1(i)(4): "The percentage and amount of funds in the local watershed protection and restoration fund spent on each of the purposes provided in subsection (h)(4) of this section;"

Program Element	Cost	Percent of WPRF
Capital Improvements for Stormwater Management	$4,074,596	84%
O & M of SWM Systems and Facilities	$35,025	1%
Public Education and Outreach	$0	0%
Stormwater Management Planning (see Md. Environment Code Ann. § 4-202.1(h)(4)(iv))	$713,781	15%
Review of Stormwater Management Plans and Permit Applications for New Development	$0	0%
Grants to Nonprofit Organizations	$0	0%
Adminstration of WPRF	$0	0%
TOTAL	$4,823,402	100%

Number of Properties Subject to Fee	-
Reporting Year	2016
Permit Number	11-DP-3310
Comments:	

VERSION 4-7-16

Jurisdiction	Agency	Local Ordinance Submitted to MDE	MDE Approval of Fee Reduction Policy	Fee Reduction Amount	Annual Single Family Residential Rate	Annual Commercial Rate	Equivalent Residential Unit (ERU) impervious
		Use: Yes or No	Use the approval date or N/A	Reduction amount(s), if any, with reason for reduction(s)		Use: N/A, amount of flate rate, rate amount per ERU,	

Directions:

Notes:

ERU = Equivalent residential unit

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Rate Structures

Commercial Capped Rates	Non-profits, Religious Organizations	Exemptions	Federal Facilities Status
		General description of exemption(s), if any	Use: No Facilities, Exempt, or Charged

	Additional Sources of Funds				
Federal Facility Fee(s)/Rate(s)	Additional Source 1	Additional Source 2	Additional Source 3	Estimated Annual Revenue	Notes

Use: N/A or the fee and rate structures
for federal facilities

Article 4-202.1(i)(3): "The amount of money deposited into the watershed protection and restoration fund in the previous fiscal year by source;"

Source		Amount
Annual Single Family Residential Fees Collected	$	-
Annual Commercial Fees Collected	$	-
Non-profits, Religious Orgs Fees Collected	$	-
Unnamed Additional Source 1	$	-
	$	-

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All SWM Projects Implemented in Previous FY for the 20% Restoration Requirement

REST BMP ID	REST BMP TYPE	BMP CLASS	NUM BMP	IMP ACRES	BUILT DATE	IMPL COST	IMPL STATUS	IMPL COMP YR	
CIP0046	FBIO / MSGW	S	3	0.5		$33,966	Design	2017	Leight Center
CIP0014	STRE	A	1	8		$199,745	Design	2017	Heavenly Pond
CIP0029	STRE	A	1	30		$28,292	Design	2018	St Andrews
CIP0034	WPWS / STRE	S / A	4	24		$348,180	Design	2019	Church Creek ES
CIP0070	FBIO / MSGW / FPU	S	3	3.3		$213,883	Design	2017	Abingdon Library Design / Build
CIP0036	STRE	A	1	19.4		$54,181	Design	2017	Foster Branch at Dembytown
CIP0035	WPWS / STRE	S / A	3	18.6		$188,500	Design	2017	Ring Factory
CIP0039	WPWS / STRE	S / A	3	30		$136,493	Design	2018	Plumtree
CIP0043	WPWS / STRE	S / A	3	19.4		$271,252	Design	2018	NW Declaration Run
CIP0033	WPWS / STRE	S / A	4	42.1		$164,977	Design	2018	Willoughby Beach
CIP0027	WPWS / STRE	S / A	5	28	Jun-16	$687,537	Constructed	2016	Lower Wheel Phase 1
CIP0027	STRE	S	1	38		$1,098,541	Under construction	2017	Lower Wheel Phase 2
CIP0024	WPWS	S	2	9.82	Jun-16	$492,313	Constructed	2016	CW 1A
				271.1		$3,917,860.00			

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