

National Pollutant Discharge Elimination System

**MUNICIPAL SEPARATE STORM SEWER DISCHARGE**

**PERMIT NUMBER: MD0068365**

**STATE DISCHARGE NUMBER: 11-DP-3322**

**CHARLES COUNTY, MD**

**ANNUAL REPORT**

**JULY 2014 - JUNE 2015**



**Prepared for:**

Maryland Department of the Environment  
Water Management Administration  
1800 Washington Boulevard  
Baltimore, MD 21230

**Submitted by:**

Charles County Government  
Department of Planning and Growth  
Management  
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**DIGITAL DATA (ATTACHED CD)**

Geodatabase – CharlesCounty\_2015\_MDE\_NPDES\_MS4.mdb

**Feature Classes**

Quarterly Grading Permit	Rest BMP	Outfall Drainage Area
Alternate BMP Point	BMP POI	BMP Drainage Area
Outfall	Monitoring Site	Monitoring Drainage Area
Municipal Facilities	Alternate BMP Line	Alternate BMP Polygon

**Stormwater**

SwStructures	Streams	swEasements
Stream HydroJunctions	daSwales	swEasementsFC
Grass Swales	daEasements_FC	swIndustrialPermittedFacilities
swPipes	daWaterQualityImprovement	swESD_Parcels
swCulvert	PGM_INDEX	swCasing
swVirtualDrainline1	swBMP	swFederalStateOwnedLand
swEasementCOGO	swWaterQualityImprovement	

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AltBMPLineInspections	CountywideStormwaterAssesment	PermitInfo
AltBMPPointInspections	ErosionSedimentControl	QuarterlyGradingPmtInfo
AltBMPPolyInspections	FiscalAnalysis	RespPersonnelCertInfo
BiologicalMonitoring	IDDE	RestBMPInspections
BMP	ImperviusSurface	ShorelineManagementPractices
BMPInspections	LocalConcern	StrRestProtocols
ChemicalApplication	LocalStormwaterWatershedAssessment	SWM
ChemicalMonitoring	Narrative Files	

**Impervious Surface**

ISA_PARCELS	ISA_POLY	ISA_Watershed_POLY
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**Chemical Monitoring Data**

2014-2015EMC_AH.xlsx	MDChemicalMonitoringDatabase_AH.xlsm
2014-2015EMC_AMES.xlsx	MDChemicalMonitoringDatabase_AMES.xlsm

**Illicit Discharge Data**

2015_IDDE_Sampled_Outfalls	2015_visual_survey_extents
Charles_County_2015.mxd	Charles_County_Visual_2015.mxd
IDDEforMDE.mdb	Photos from Annual Inspections (JPG)

**Other Data (PDF)**

Final Report	Appendices
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## I. Introduction

Charles County, Maryland has been operating its municipal separate storm sewer system (MS4) under a National Pollutant Discharge Elimination System (NPDES) MS4 permit since 1997, when the first five year permit was issued by the Maryland Department of Environment, Water Management Administration (MDE/WMA). On July 31, 2002, the County was issued a second, five-year permit. Each permit issuance or renewal is referred to as a generation, for example, first generation, second generation, and so on. The County's first and second generation permits covered stormwater discharges from the MS4 within the Development District, which is the County's urban area.

NPDES MS4 permits are typically issued on a five year cycle however, if re-issuance is delayed, the existing permit is considered administratively extended until a new permit is issued.

A third generation, five-year MS4 permit was issued on December 26, 2014, and expanded the permit coverage to the entire county. This permit also initiated permit conditions which significantly increase the cost of permit implementation. These conditions include expanding the Geographical Information System (GIS) data countywide, restoring 20% of the County's untreated impervious area countywide, and preparing watershed restoration plans to address both local and bay total maximum daily loads (TMDLs).

As part of this comprehensive water quality control permit, the County is required to report to the Maryland Department of the Environment, Water Management Administration (MDE/WMA) annually regarding the status and progress of the permit conditions. The annual reports are based on State/County fiscal year, and are due on the anniversary date of the permit.

This report is based on Fiscal Year 2015 (July 1, 2014 - June 30, 2015). Because the most recent permit started in the middle of Fiscal Year 2015, the annual report is organized into two parts. The first part addresses the second generation permit for the first half of Fiscal Year 2015, and the second part addresses the third generation permit for the second half of Fiscal Year 2015.

During this reporting year, the following MDE/WMA actions were relevant to permit implementation:

- **August 2014** - issuing revised guidance called, "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated;"
- **November 2014** – approving relocation of the County's chemical monitoring station;
- **March 2015** – reviewing the County's 2014 NPDES MS4 Annual Report;
- **March 2015** – issuing "NPDES MS4 Geodatabase Design and User's Guide;"
- **May 2015** – assigning Charles County a new MDE/WMA liason;

- **June 2015** – verifying the TMDLs in Charles County requiring restoration plans; and
- **June 2015** – auditing the County’s chemical monitoring program.

The items above related to the chemical monitoring are discussed under the chemical monitoring sections of the report, and the item related to TMDLs is discussed in that section of the report.

Because the County’s third generation permit, greatly expanded the permit scope in land area, programs, and cost of implementation, the County has taken the following organizational actions to increase coordination and facilitate smoother permit implementation in a timely manner:

- **March 2015** – initiating monthly department wide progress meetings; and
- **April 2015** – initiating quarterly consultant progress meetings and shared webpage for more efficient communication.

This report summarizes the actions taken by the County to fulfill the requirements of the NPDES permit. Following each permit condition is a description of the work completed during the reporting year. The sections of the report are numbered to correspond with the permit numbering.

In cases where the new Geodatabase format is being used, the data is submitted in this format.

## II. Definitions

*Terms used in this permit are defined in relevant chapter of the Code of Federal Regulations (CFR) or the Code of Maryland Regulations (COMAR). Terms not defined in CFR or COMAR shall have the meanings attributed by common use unless the context in which they are used clearly requires a different meaning.*

## III.A. Permit Administration

### Overview of Permit Conditions

1. *By 7/31/2003, Charles County shall provide MDE with the names, titles, addresses, phone numbers, and functions of all primary administrative and technical personnel responsible for compliance with this permit.*

### 2015 Status (July 1 – Dec 31, 2014)

The County's liaison to MDE for permit implementation is the Charles County Planning Division, located at 200 Baltimore Street, P.O. Box 2150 (mailing address), La Plata, MD 20646.

Steven Ball, Planning Director  
301-645-0632 (Phone), [BallSt@charlescountymd.gov](mailto:BallSt@charlescountymd.gov)

Charles Rice, Manager of Environmental Programs  
301-645-0651 (Phone), [RiceC@charlescountymd.gov](mailto:RiceC@charlescountymd.gov)

Karen Wiggen, Planner  
301-645-0683 (Phone), [WiggenK@charlescountymd.gov](mailto:WiggenK@charlescountymd.gov)

Rachel O'Shea, Planner  
301-396-5237 (Phone), [OSheaR@charlescountymd.gov](mailto:OSheaR@charlescountymd.gov)

Permit requirements are managed by staff within the Departments of Planning and Growth Management and Public Works as shown on the following table.

*Table 1: Charles County Personnel Responsible for Permit Compliance*

<i>Personnel</i>	<i>Responsibilities</i>
<b>DEPARTMENT OF PLANNING AND GROWTH MANAGEMENT (301-870-3935)</b>	
Mr. Peter Aluotto, Director Charles County Department of Planning & Growth Management <a href="mailto:aluotop@charlescountymd.gov">aluotop@charlescountymd.gov</a>	Oversees NPDES MS4 programs implemented by the Department of Planning and Growth Management.
Mr. Steven Ball, Planning Director Planning Division <a href="mailto:ballst@charlescountymd.gov">ballst@charlescountymd.gov</a>	Manages water quality monitoring programs; operating budget, annual permit reports, permit reapplication, and special programmatic tasks.
Mr. Frank Ward, Chief Construction Permits and Inspection Services <a href="mailto:wardf@charlescountymd.gov">wardf@charlescountymd.gov</a>	Manages stormwater, drainage, and sediment and erosion control, permitting, inspection, and enforcement programs.
Mr. John Stevens, Chief Capital Services <a href="mailto:stevensj@charlescountymd.gov">stevensj@charlescountymd.gov</a>	Manages impervious area evaluation, and identification and implementation of Watershed Restoration capital projects.
Mr. Jason Groth, Chief Resource Infrastructure Management <a href="mailto:grothj@charlescountymd.gov">grothj@charlescountymd.gov</a>	Manages Geographical Information Systems and water conservation education.
<b>DEPARTMENT OF PUBLIC WORKS (301-870-2778)</b>	
Mr. Bill Shreve, Director Charles County Department of Public Works <a href="mailto:shreveb@charlescountymd.gov">shreveb@charlescountymd.gov</a>	Oversees NPDES MS4 programs implemented by the Department of Public Works.
Mr. Dennis Fleming, Chief Environmental Resources Facilities Division <a href="mailto:flemingd@charlescountymd.gov">flemingd@charlescountymd.gov</a>	Manages industrial stormwater permits for County properties managed by the Division, and trash, litter and recycling programs.
Mr. Stephen Staples, Chief County Roads Facilities Division <a href="mailto:stapless@charlescountymd.gov">stapless@charlescountymd.gov</a>	Manages maintenance of roads, drainage, and stormwater facilities owned by the County.
Mr. Thomas Roland, Chief Parks and Grounds Facilities Division <a href="mailto:rolandt@charlescountymd.gov">rolandt@charlescountymd.gov</a>	Manages maintenance of parks and grounds owned by the County or part of the recreational system.
Mr. Semyon Simanovsky, Chief Maintenance and Operations Division <a href="mailto:simanovs@charlescountymd.gov">simanovs@charlescountymd.gov</a>	Manages industrial stormwater permits for County wastewater treatment plants.

### III.B. Legal Authority

#### Overview of Permit Conditions

1. *By 7/31/2003, Charles County shall provide MDE with recertification from the County Attorney that it possesses the authority to directly perform the activities described in 40 CFR 122.26 (d)(2)(I), and this permit.*
2. *Charles County shall maintain adequate legal authority, in accordance with NPDES regulations 40 CFR 122.26(d)(2)(I), throughout the term of this permit. In the event that any provision of its legal authority is found to be invalid, the County shall make the necessary changes to maintain adequate legal authority.*

#### FY 2015 Status (July 1 – Dec 31, 2014)

Recertification was provided by the County Attorney via a letter forwarded to Mr. Brian Clevenger of the Maryland Department of the Environment, Water Management Administration, dated June 19, 2003. A copy of this letter was included in the 2003 NPDES Annual Report.

The County will maintain adequate legal authority throughout the term of this permit, and in the event that any provision of its legal authority is found to be invalid, the County will make the necessary changes to maintain adequate legal authority.

### III.C. Source Identification

#### Overview of Permit Conditions

1. *By 7/31/2003, Charles County shall submit an example of its Geographic Information System (GIS) capabilities that includes the identification of all data layers available, the stage of development, metadata, and a description of how data are stored, accessed, and used. The example shall include the following information:*
  - a. *Geologic features: topography, soils, steep slopes, etc.*
  - b. *Land use: existing and planned based on present zoning or current master plans, public and private ownership, and population density.*
  - c. *Resources: streams, stream buffer areas, floodplains, wetlands, forests, forest conservation areas, areas of special concern*

- d. *Infrastructure: storm drain systems, including major outfalls, inlets, appurtenant conveyances, and associated drainage areas; stormwater management facilities; sanitary sewer systems within the resource areas identified in Part III.C.1.c above; and chemical, physical, and biological monitoring sites.*
- e. *Significant discharges: sewage treatment plants, industrial operations, hazardous waste sites, landfills, NPDES permitted sites (both point source and stormwater permittees), impervious areas (e.g. roads, parking lots, and rooftops), known as problem areas (e.g. flood prone of water quality impaired areas), and estimated pollutant loads; and*
- f. *Schedule: time-frame for completing GIS development within the Development District.*

FY 2015 Status (July 1 – Dec 31, 2014)

As required by this condition, the County submitted an example of its GIS capabilities in 2003. All coverages were in ArcView shapefile format, projected to Maryland State Plane coordinates in NAD83 datum in meters. Metadata was also included for these coverages.

- 2. *By 7/31/2003, Charles County shall submit its database identifying major outfalls. Data shall be submitted on CD-ROM(s) and include all major outfalls, associated inlets, appurtenant conveyances, drainage areas, and private storm drain systems.*

FY 2015 Status (July 1 – Dec 31, 2014)

This information was included in the County's June 2002 to July 2003 annual report as required.

- 3. *Charles County shall compile any new source identification information on a continual basis and summarize the data collection in its annual reports.*

FY 2015 Status (July 1 – Dec 31, 2014)

Since 2003, the County has annually submitted updated GIS data and summarized the data collection in its annual reports. All coverages are in ArcView shapefile format, and projected to Maryland State Plane coordinates in NAD83 datum in meters.

In Fiscal Years 2012 - 2015 the County has contracted with Spatial Systems Associates to expand and improve the County's stormwater GIS coverage countywide. This project includes stormwater infrastructure and impervious surfaces. The data for this project includes the fields specified in Attachment A is included on the attached CD.

## *Training*

The Department of Planning and Growth Management staff was provided training by Spatial Systems Associates on how to use the new features provided on the County's Stormwater GIS website. The first training was held on May 22, 2014 and 25 staff attended. The purpose of the training was to demonstrate the capabilities of the stormwater website, increase number of users, and gain feedback on tool modifications to better meet user needs. The primary purpose of the website is for maintenance and inspection of the County's stormwater BMPs and outfalls, however is also useful in review of new projects. Website capabilities include:

- trace tool used to trace flow in a drainage system upstream for identifying potential sources of illicit discharges;
- project locator tool used to locate BMPs by permit number;
- easement identifiers, used to view easements of record;
- micro-BMP tool used to view approved permits for micro-BMPs;
- inspection tool used to identify status of stormwater BMP inspections; and
- BMP features tool, used to link bmps in GIS to information in the urban BMP database.

## *Impervious Surface Mapping*

Prior to 2013, the County's impervious surface data was created using Feature Analyst, which is sophisticated computer software that can extract impervious surfaces from high quality digital aerial orthophotography. Because the image radiometry of the pixels varies due to shadows, reflections, and different pavement materials, "training" the software to accurately classify impervious surfaces, requires extensive interaction with the operator.

In 2013, as part of the current Spatial Systems Associates project, the County has moved from Feature Analyst to actual impervious surface. This was done by updating the County's 2007 planimetric line data to 2011 aerial photographs, converting to polygon data, and calculating actual impervious surface area.

4. *Annually, Charles County shall submit stormwater management facility construction completion data for MDE’s Urban Best Management Practice (BMP) database.*

FY 2015 Status (July 1 – Dec 31, 2014)

The Fiscal Year 2015 database of stormwater management facility construction completion information is included in Appendix A and on the attached CD. It shows a total of 1,781 BMPs, an increase of 267 from the 1,514 shown in the records for Fiscal Year 2014. Of the total, 1,714 BMPs are active. Several of the BMPs added to the database this year have been identified by Spatial Systems Associates, Inc. during the first phase of expanding the source identification from the Development District to the entire county. Updated Maryland grid coordinates have been provided in NAD 83 meters.

**III.D. Discharge Characterization**

Overview of Permit Conditions

1. *Annually, Charles County shall perform long-term discharge characterization monitoring of an outfall and an associated in-stream monitoring station using the following minimum requirements for chemical, biological, and physical monitoring:*
  - a. *For Chemical Monitoring:*
    - i. *Monitoring shall be performed in the Zekiah Swamp watershed at the outfall and its associated in-stream station in the St. Charles area to characterize runoff from commercial land use;*
    - ii. *Continuous flow measurements shall be recorded at the in-stream monitoring station. These data shall be used to facilitate annual and seasonal pollutant load estimates;*
    - iii. *Twelve (12) storm events shall be monitored per year at the outfall and in-stream monitoring locations with at least three (3) occurring per quarter. Quarters shall be based on calendar year. If extended dry weather periods occur, base flow samples shall be taken at least once per month at the in-stream monitoring station, and if flow is observed, at the outfall;*
    - iv. *Discrete samples of stormwater flow shall be collected at the outfall and in-stream monitoring stations using automated or manual sampling methods. Measurements of pH and water temperature shall be taken; and*
    - v. *At least (3) samples determined to be representative of each storm event shall be submitted to a laboratory for analysis according to the methods listed under 40 CFR, Part 136 and event mean concentrations (EMCs) shall be developed for the following parameters;*

<i>Biochemical Oxygen Demand (BOD<sub>5</sub>)</i>	<i>Total Cadmium</i>
<i>Total Kjeldahl Nitrogen (TKN)</i>	<i>Nitrate plus Nitrite</i>
<i>Total Petroleum Hydrocarbons (TPH)</i>	<i>Total Phosphorus</i>
<i>Total Copper</i>	<i>Total Phenols</i>
<i>Total Zinc</i>	<i>Fecal Coliform</i>
<i>Total Suspended Solids (TSS)</i>	<i>Total Lead</i>
<i>Oil and Grease (Optional)</i>	

- b. *For Biological Monitoring*
  - i. *Monitoring shall commence with the chemical monitoring; and*
  - ii. *The stream reach between the outfall and the in-stream monitoring station shall be monitored each Spring and Fall using the U.S. Environmental Protection Agency’s (EPA) Rapid Bioassessment Protocol III or other method approved by MDE.*
  
- c. *For Physical Stream Assessment:*
  - i. *A geomorphologic stream assessment shall be conducted in the stream reach between the outfall and in-stream monitoring station. This assessment shall include, at a minimum, an annual comparison of permanently monumented stream channel cross-sections, an annual comparison of the stream profile, and a stream habitat assessment using techniques as defined by the EPA’s “Rapid Bioassessment Protocol for use in Wadeable Streams and Rivers,” or other similar method approved by MDE; and*
  - ii. *Annually, a hydrologic and/or hydraulic model shall be used (e.g., TR-20, HEC-RAS, HSPF, SWMM, etc.) to analyze the effects of rainfall; discharge rates; stage; and, if necessary, continuous flow on channel geometry.*

FY 2015 Status (July 1 – Dec 31, 2014)

*Chemical Monitoring at Current Stations & Process of Selecting New Stations*

Charles County continued the long-term chemical monitoring program at the Arthur Middleton Elementary School July 2014 through December 2014, which is summarized below.

In the fall and winter of 2013, Charles County began the process of selecting new chemical monitoring stations located in the Acton-Hamilton watershed of the Development District. The proposed stations will be located downstream of several water quality retrofits and enhancement projects to be built over the next several years. In March 2014, MDE met with the County at the

proposed chemical monitoring station. MDE proposed that the County wait on moving the Arthur Middleton Elementary School site to the Acton-Hamilton site until further study could be performed to ensure the magnitude of the proposed water quality projects would be large enough to show a water quality difference. Based on guidance from MDE to delay the relocation of the sampling stations, sampling resumed at Arthur Middleton School in July 2014.

In response to MDE's request for further study, Vista Design, Inc. produced a report titled *Acton-Hamilton Watershed NPDES Watershed Restoration Concept Study* in August 2014, which includes an analysis of the treated and untreated impervious area within the Acton-Hamilton watershed and all of the proposed stormwater retrofit improvements. Based on this report, which was updated in 2015 using better data, the Acton-Hamilton study area is approximately 730 acres of which 238.54 acres are impervious surfaces. Of the total County/private impervious area, 105.41 acres are considered to be "treated", meaning water quality management for the first 1" of stormwater runoff is provided per current standards. For the remaining County/private impervious area, 106.58 acres of "untreated" or "undertreated", several proposed stormwater facilities and retrofits to existing stormwater facilities are planned. After implementation is complete, the total proposed "treated" impervious surfaces area will be 178.18 acres which represents 75% of all the impervious surfaces in the study area.

MDE reviewed the *Acton-Hamilton Watershed NPDES Watershed Restoration Concept Study* in November 2014, and indicated a final proposal to relocate the monitoring stations could be submitted for MDE's review and formal approval. Monitoring at the new stations began in 2015, and is included in Part 2 of this report.

#### **Arthur Middleton Elementary School Monitoring**

The chemical monitoring program was established at the Arthur Middleton Elementary School in December 2005. The sampling stations were located within an inlet upstream of the proposed wetland and at an instream station below the storm drain outfall. The sites were established prior to the construction of the wetland to develop a pre-retrofit baseline for pollutant inflow to the receiving channel. The inlet was established as Site 002, and the instream station was established as Site 001.

Sampling began at these sites on January 18, 2006, and continued until April 2, 2007, when the sampling array was removed as construction of the wetland began. Construction of the wetland was completed in April, 2008. In August, 2008, sampling resumed at the Arthur Middleton Elementary School. The inlet was reestablished as the outfall station, and the concrete weir overflow was established as the instream monitoring station.

Flow data for the instream station was calculated by measuring the flow depth at the weir control structure for the wetland and computing the discharge from a rating table. As such, flow data is only available for the instream station for sampled events.

Four storms were sampled at the Arthur Middleton Elementary School stations during the 2014-2015 reporting year. Storm event samples were collected on September 6, 2014, September 25, 2014, October 15, 2014, and November 17, 2014. During the September 25, 2014 and November 17, 2014 storms, the concrete weir overflow from the stormwater wetland did not discharge. Representative rising, peak, and falling limb samples were not able to be collected for these events at the in stream station.

*Table 2: Number of Chemical Monitoring Samples - Middleton Elementary School Stations*

Year	Month	Wet Weather Sample		Baseflow Sample	
		Outfall	Instream	Outfall	Instream
2006	January	1	1		
	February	1	1		
	March				
	April	1	1		
	May	1	1		
	June	1	1		
	July	1	1		
	August	1	1		
	September	1	1		
	October	1	1		
	November	1	1		
	December				
2007	January	1	1		
	February	1	1		
	March	1	1		
	April			1	1
2008	August	1	1		
	September	1	1		
	October	1	1		
	November	1	1		
	December	1	1		
2009	January				
	February	1	1	1	1
	March	1	1		
	April	1	1		
	July			1	1
	August			1	1
2010	January	2	2		
	February	1	1		
	March	1	1		
	April	1	1		
	May	1	1		
	June	1	1		
	August	1	1		

Year	Month	Wet Weather Sample		Baseflow Sample	
		Outfall	Instream	Outfall	Instream
2011	December	2	2	1	1
2013	April	2	2		
	May	1	1		
	June	1	1		
	August	1	1		
	October	1	1		
2014	September	2	1		
	October	1	1		
	November	1			

The monitoring protocol consisted of three discrete samples, representative of the rising limb, peak, and falling limb of the storm hydrograph for each storm event, collected at each monitoring station. All samples were collected manually so that fecal coliform and TPH could also be analyzed. Based on the County’s draft NPDES permit, collected samples during this reporting year were not analyzed for Cadmium, Phenols, Oil and Grease, and Fecal Coliform. Hardness and E-coli were added to the list of parameters analyzed due to the County’s draft NPDES permit. Martel Laboratories in Towson, Maryland performed the laboratory analyses for each event.

The combined results from the chemical monitoring for the current reporting year are contained in Appendix C and included in the NPDES database on CD.

**Arthur Middleton Elementary School Event Mean Concentrations**

Using the available flow data and laboratory results for each discrete sample collected at the sites, event mean concentrations (EMCs) were computed for each constituent. EMCs were weighted based on the depth of flow for each limb of the storm. Depth was recorded during sampling events for the inlet and instream station. The chemical concentrations were multiplied by the flow volume, summed and divided by the total flow volume to compute a weighted average for each storm event.

During the September 25, 2014 and November 17, 2014 storms, no discharge was observed going over the concrete weir overflow from the stormwater wetland. Event mean concentrations for these storms were not calculated from the instream site.

If a parameter was not detected in the laboratory analysis, a value of zero was used for the low end of the possible range, and the detection limit was used for the high end of the range. The flow-weighted EMCs for each storm were then averaged to determine the average EMC for each parameter at each site. Average flow-weighted EMCs by calendar year for the Arthur Middleton Elementary School (Sites 001 and 002) are provided in Tables 3 and 4.

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*Table 3: Annual Average Flow-Weighted EMC and Number of Events Sampled, Site 002 – Middleton Elementary School*

Year	TKN	NOx	TP	TSS	BOD	Pb	Cd	Cu	Zn	TPH	Phenols	O&G	Fecal Col.	E-coli	Hardness
	mg/L	mg/L	MPN	MPN	mg/L										
	Events	Events	Events	Events	Events										
2006	1.73	0.67	0.29	24	16	0.011	0.001	0.007	0.062	2.7	0.03	3.50	4885	N/A	N/A
	10	10	10	10	10	10	10	10	10	10	10	10	10		
2007	0.95	1.17	0.13	72	5	0.022	0.001	0.011	0.049	3.3	0.03	3.27	157	N/A	N/A
	4	4	4	4	4	4	4	4	4	4	4	4	4		
2008	2.17	0.40	0.16	11	9	0.071	0.002	0.011	0.284	3.9	0.04	5.59	34402	N/A	N/A
	5	5	5	5	5	5	5	5	5	5	5	5	5		
2009	1.14	0.28	0.15	17	4	0.021	0.001	0.005	0.112	1.9	0.03	2.87	685	N/A	N/A
	4	4	4	4	4	4	4	4	4	4	4	4	4		
2010	1.73	0.71	0.27	68	10	0.006	0.001	0.009	0.057	2.6	0.04	3.15	18794	N/A	N/A
	8	8	8	8	8	8	8	8	8	8	8	8	8		
2011	1.10	0.42	0.24	59	3	0.007	0.0003	0.006	0.051	3	0.01	3	94	N/A	N/A
	3	3	3	3	3	3	3	3	3	3	3	3	3		
2012	1.62	0.31	0.28	31	21	0.002	N/A	0.005	0.036	2.5	N/A	N/A	N/A	2550	20.5
	4	4	4	4	4	4		4	4	4				4	4
2013	1.50	0.02	0.28	44	8	0.009	N/A	0.006	0.051	2.5	N/A	N/A	N/A	2146	22.1
	2	2	2	2	2	2		2	2	2				2	2
2014	1.02	0.40	0.29	41	10	0.003	N/A	0.006	0.054	1.7	N/A	N/A	N/A	361859	12.3
	4	4	4	4	4	4		4	4	4				4	4
NURP	2.35	0.960	0.47	140.0	11.0	0.180		0.050	0.180						

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*Table 4: Annual Average Flow-Weighted EMC and Number of Events Sampled, Site 001 – Middleton Elementary School*

Year	TKN mg/L Events	NOx mg/L Events	TP mg/L Events	TSS mg/L Events	BOD mg/L Events	Pb mg/L Events	Cd mg/L Events	Cu mg/L Events	Zn Mg/L Events	TPH mg/L Events	Phenols mg/L Events	O&G mg/L Events	Fecal Col. MPN Events	E-coli MPN Events	Hardness mg/L Events
2006	1.05 10	0.61 10	0.14 10	19 10	4 10	0.008 10	0.001 10	0.005 10	0.055 10	2.5 10	0.03 10	2.85 10	3564 10	N/A	N/A
2007	0.52 4	1.11 4	0.06 4	27 4	3 4	0.007 4	0.001 4	0.004 4	0.080 4	2.5 4	0.03 4	2.5 4	58 4	N/A	N/A
2008	0.46 5	0.05 5	0.06 5	7 5	2 5	0.003 5	0.001 5	0.002 5	0.018 5	2.4 5	0.02 5	2.6 5	3524 5	N/A	N/A
2009	0.95 4	0.06 4	0.08 4	9 4	15 4	0.004 4	0.001 4	0.004 4	0.019 4	1.9 4	0.02 4	2.1 4	109 4	N/A	N/A
2010	0.53 8	0.44 8	0.06 8	13 8	2 8	0.006 8	0.001 8	0.003 8	0.015 8	3.0 8	0.03 8	3.0 8	4543 8	N/A	N/A
2011	0.3 3	0.39 3	0.04 3	9 3	3 3	0.001 3	0.0003 3	0.001 3	0.022 3	3 3	0.01 3	3 3	17 3	N/A	N/A
2012	0.59 4	0.08 4	0.05 4	7 4	6 4	0.001 4	N/A	0.003 4	0.014 4	2.5 4	N/A	N/A	N/A	903 4	48.5 4
2013	0.85 2	0.25 2	0.12 2	23 2	8 2	0.003 2	N/A	0.003 2	0.022 2	2.5 2	N/A	N/A	N/A	1196 2	47.7 2
2014	1.15 2	0.16 2	0.14 2	27 2	4 2	0.001 2	N/A	0.000 2	0.025 2	0.2 2	N/A	N/A	N/A	5832 2	24.5 2
NURP	2.35	0.960	0.47	140.0	11.0	0.180		0.050	0.180						

### **Arthur Middleton Elementary School Discussion**

The results of the laboratory analysis (both individual samples and EMCs) were reviewed for the storm and base flow events during the permit period. Findings are summarized below:

#### Inlet Site (002)

- A first flush effect was observed for the sampling station. Concentrations were typically higher for rising limb samples than for peak.
- The 9/6/2014 storm event had elevated concentration of TSS, Lead, and Zinc.
- The 9/25/2014 storm event had elevated concentrations of BOD and E-coli. E-coli were very high during the rising and peak limb samples for the 9/25/2014 storm.
- The 10/15/2014 storm event had elevated concentrations of Lead.
- The 10/15/2014 storm event had elevated concentrations of BOD and TSS.

#### Instream Site (001)

- A first flush effect was not observed for the sampling station. Concentrations were typically higher for peak or falling limb samples than for the rising limb.
- Almost all samples collected had concentrations at or above the detection limit.

Federal and State acute and chronic criteria are presented in Table 5 below. The laboratory data are compared, where possible, to these criteria to assess the extent of possible pollution within this watershed. Criteria are used to protect against both short-term and long-term effects. Numeric criteria are important where the cause of toxicity is known or for protection against pollutants with potential human health impacts or bioaccumulation potential. Narrative criteria can be the basis for limiting toxicity in discharges where a specific pollutant can be identified as contributing to the toxicity.

Criteria do not exist for all parameters measured at the monitoring stations. In addition, a clear cause and effect relationship between water quality and ecological condition is difficult to determine. However, these comparisons can be used as general indicators of water quality impairment. Both State and Federal criteria are based on ambient stream conditions. Chronic criteria consider the maximum levels at which aquatic life can survive if continuously subjected to a pollutant concentration. Acute criteria reflect the maximum level at which an aquatic organism can survive if periodically subjected to a pollutant concentration. Since storm events represent a periodic condition, wet-weather samples are compared only to acute criterion.

*Table 5: State and Federal Water Quality Criteria Available for Parameters Sampled at Arthur Middleton Elementary School*

Parameter (mg/L ,except as noted)	Chronic	Acute	Reference
Metals (µg/L):			
Lead	2.5	65	COMAR 26.08.02.03-2
Copper	9	13	COMAR 26.08.02.03-2
Zinc	120	120	COMAR 26.08.02.03-2
Total P	0.10	1972 305(a) Report to Congress (EPA 440/9-74-001)	
BOD5	7	Quality Criteria for Water, EPA 1986	
Nitrate	10	Quality Criteria for Water, EPA 1986	
TSS	500	1972 305(a) Report to Congress (EPA 440/9-74-001)	
TKN	None	---	
TPH	None	---	
E. Coli(1) (MPN/100ml)	235	COMAR 26.08.02.03-3	
Hardness	None	---	

(1): Used most restrictive standard as a conservative approach: frequent full body contact recreation criterion.

The results of the laboratory analysis (both individual samples and EMCs) for the 2014-2015 reporting year were compared to the values reported in Table 5 as well as the Nationwide Urban Runoff Project (NURP) values reported in Table 3 and 4. Findings are summarized below:

Inlet Site (002)

- All individual samples and average EMC’s for Lead, NOx, and TSS were below reported criteria values.
- Copper and Zinc average annual EMC values were both below reported criteria values; however, acute criteria for copper was met at 13 µg/L during the 9/6/2014 peak limb sample and for the 9/25/2014 rising limb sample. Acute criteria for zinc were exceeded for the 9/6/2014 rising limb storm sample.
- The average annual EMC and a majority of individual samples for Total Phosphorus and BOD were above reported criteria values. The average annual EMC and all individual samples for E-coli were above reported criteria values.
- All the average EMCs for the sampling period were below literature values from the Nationwide Urban Runoff Project (NURP) taken in the early 1980s.

Instream Site (001)

- All individual samples and average EMC's for Copper, Zinc, NOx, and TSS were below reported criteria values.
- The average annual EMC and a majority of individual samples for Total Phosphorus were above reported criteria values. The average annual EMC and most of the individual samples for E-coli were above reported criteria values.
- All the average EMCs for the sampling period were below literature values from the Nationwide Urban Runoff Project (NURP) taken in the early 1980s.

**Arthur Middleton Elementary School Comparison Between Sites 002 and 001**

The upstream monitoring site (002) is located upstream of the wetland. Since there have not been significant changes to the watershed over the course of the monitoring program, the event mean concentrations would be expected to be comparable with data obtained prior to the wetland construction.

In fact, the EMCs are variable, but these continue to be fairly consistent for this sampling station. No significant increasing or decreasing trends are apparent.

The stormwater wetland was constructed with the intent of reducing the discharge of pollutants to receiving waters. Therefore, it is expected that the event mean concentrations present at the downstream monitoring site (001) would be reduced from previous years. Additionally, a reduction from the event mean concentrations present at the upstream station (002) would be expected for each event.

During the reporting year, EMCs at the instream station were significantly lower than those found at the outfall station, for the majority of pollutants. This continues the trend observed in 2009 through 2013, and indicates that the wetland is functioning to improve water quality.

Table 6 below identifies the pollutant removal efficiencies observed for each reporting year, based on the yearly average EMCs. Efficiencies published by MDE in the *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated: Guidance for National Pollutant Discharge Elimination System Stormwater Permits, August 2014* are provided for NOx, TP, and TSS.

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*Table 6: Observed Pollutant Removal Efficiencies: 2014-2015 Reporting Year*

Year	TKN	NOx	TP	TSS	BOD	Pb	Cd	Cu	Zn	TPH	Phenols	O&G	Fecal Col.	E-coli	Hardness
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
2008	78.8	87.5	62.5	36.4	77.8	95.8	50.0	81.8	93.7	38.5	50.0	53.5	89.8	N/A	N/A
2009	16.7	78.6	46.7	47.1	-275.0	81.0	0.0	20.0	83.0	0.0	33.3	26.8	84.1	N/A	N/A
2010	69.4	38.0	77.8	80.9	80.0	0.0	0.0	66.7	73.7	-15.4	25.0	4.8	75.8	N/A	N/A
2011	72.7	7.1	83.3	84.7	0.0	85.7	0.0	83.3	56.9	0.0	0.0	0.0	81.9	N/A	N/A
2012	63.3	75.7	82.3	77.0	71.7	100.0	N/A	100.0	62.0	0.0	N/A	N/A	N/A	64.6	-136.0
2013	43.3	100.0	57.9	48.1	10.5	69	N/A	100.0	56.7	0.0	N/A	N/A	N/A	44.3	-115.6
2014	-12.2	60.8	50.5	34.3	64.5	74.3	N/A	96.9	53.0	89.1	N/A	N/A	N/A	98.4	-98.8
MDE (2011)		20.0	45.0	60.0											
MDE (2014)		33.0	52.0	66.0											

*Biological and Physical Stream Assessments*

Beginning in the Fall of 2005, a study site has been monitored for biological and physical condition on a tributary to Mattawoman Creek. The data collected by KCI and Coastal Resources, Inc. in the Spring 2015 reporting year is summarized under Part 2 of this report, since it occurred in the spring under the new permit.

2. *Charles County shall evaluate the effectiveness of a stormwater management system constructed in accordance with the 2000 Maryland Stormwater Design Manual for stream channel protection effectiveness. The assessment shall include:*
  - a. *By 7/31/2003, a small watershed shall be selected to adequately assess the best management practice (BMP) design criteria found in the 2000 Maryland Stormwater Design Manual. The watershed selected shall be either an area where future development is to occur, where existing BMPs control a majority of the drainage area and can be retrofitted to reflect the design manual design criteria, or a combination of both. The selection of the small watershed to be monitored shall be made in consultation with MDE.*
  - b. *Within six months of MDE’s approval of the selected watershed to be monitored, Charles County shall survey the stream for the purposes of evaluating channel stability in conjunction with ensuing development or significant retrofitting. Permanently monumented cross-sections shall be established at areas where stream geometry changes and at critical areas in the flow path (e.g., restrictions, etc.). A baseline stream profile shall also be established to assess aggradation and degradation.*
  - c. *In each annual report, Charles County shall provide MDE with a comparison survey for each established cross-section and a comparison survey of the stream profile*
  - d. *A hydrologic and/or hydraulic model shall be used (e.g., TR-20, HEC-RAS, HSPF, SWMM, etc.) to analyze the effects of rainfall; discharge rates; stage; and, if necessary, continuous flow on channel geometry.*

FY 2015 Status (July 1 – Dec 31, 2014)

*Maryland Stormwater Manual Effectiveness Study*

Since 2003, the County has been conducting stream monitoring on the tributary to Piney Branch to evaluate the effectiveness of stormwater management designed under the *2000 Maryland Stormwater Design Manual* regulations to adequately provide channel protection. The most recent assessment was conducted on March 17-19, 2015. Because the assessment was conducted in the spring, results are included in Part 2 of this report for the County’s third generation permit.

3. *Annually, Charles County shall describe in detail its monitoring activities for the previous year and include the following:*
  - a. *A detailed description of weather conditions and any equipment failures;*
  - b. *A detailed description of field data collection methods and documentation of any variations to the minimum requirements for chemical, biological, or physical monitoring;*
  - c. *Chemical, biological, and physical monitoring results recorded on MDE’s long-term monitoring databases;*
  - d. *An analysis of monitoring data integrating the field results from the chemical, biological, and physical monitoring;*
  - e. *Annual and seasonal pollutant load estimates using the long-term monitoring data;*
  - f. *A comparison survey for each established cross-section and a comparison survey of the stream profile for the monitoring conducted to assess the stream channel protection effectiveness of a stormwater management system constructed in accordance with the 2000 Maryland Stormwater Design Manual; and*
  - g. *Any requests and accompanying justifications for proposed modifications to the monitoring program.*

FY 2015 Status (July 1 – Dec 31, 2014)

Information addressing items III.D.3.a-f, above, is found under Section III.D.1 and 2. Pollutant loading information is provided in Part 2 of this report. Descriptions of the field data collection methods and the analysis of the data for the monitoring requirements are discussed under III.D, above. Comparison surveys conducted to assess the stream channel protection effectiveness are included in Part 2 of this report for the County’s third generation permit.

### III.E. Management Programs

#### Overview of Permit Conditions

1. *Charles County shall maintain an acceptable stormwater management program in accordance with the Environmental Article, Title 4, Subtitle 2, Annotated Code of Maryland. At a minimum, Charles County shall:*
  - a. *Conduct preventative maintenance inspections of all stormwater management facilities at least on a triennial basis. Documentation identifying the facilities inspected, the number of maintenance inspections, follow-up inspections, and enforcement actions(s) used to facilitate inspection order compliance, maintenance inspection schedules, and any other relevant information shall be submitted in the County's annual reports;*
  - b. *Implement the stormwater management design policies, principles, methods, and practices found in the 2000 Maryland Stormwater Design Manual and COMAR;*
  - c. *Track the progress toward satisfying Part III.E.1.b. above; and*
  - d. *Report annually the modifications needed to address problems associated with implementing the 2000 Maryland Stormwater Design Manual in Charles County.*

#### FY 2015 Status (July 1 – Dec 31, 2014)

##### *Stormwater Management Maintenance Inspections*

The County continues to conduct preventative maintenance inspections of all stormwater management (SWM) devices on a triennial basis. During the first half of Fiscal Year 2015, 295 preventative maintenance inspections were performed. These inspections were comprised of 116 first and third year inspections, 171 compliance inspections, and 8 enforcement inspections. Detailed inspection reports of each inspection are maintained within the project file folder. Two types of certified letters are typically sent to initiate compliance. No major structural problems were found.

During the first half of Fiscal Year 2015, 41 devices identified as unacceptable in Fiscal Year 2014 were brought into compliance and 16 devices identified as unacceptable in the years previous to Fiscal Year 2014 were brought into compliance. A copy of the County's database showing inspections during Fiscal Year 2015 is included in Appendix B. The entire digital inspection database is included in the Urban Best Management Practice Access database.

Since 1990 the SWM Maintenance Inspections Inventory designates "S" for satisfactorily maintained SWM devices and "U" for unsatisfactorily maintained devices. We believe that the vast majority of the issues pertaining to a "U" rating of a SWM device do not affect the function of the SWM device and therefore are listed as "pass".

Beginning in Calendar Year 2012 a “pass” has been entered in the BMP Status column to indicate that the device is “performing”, as a more descriptive designation so that one can easily determine if the function of the device is compromised by simply reviewing the database.

SWM devices that receive a "U" or "unsatisfactory" designation during a triennial maintenance inspection, primarily fall into this category due to the lack of maintenance of the devices. The types of maintenance that is required usually includes, but not limited to the following: mowing, fence repair, removal of woody vegetation, in-flow & out-flow protection repair and minor erosion/stabilization. While these types of maintenance issues still require the structure(s) to be classified as "unsatisfactory" it is the opinion of the Department of Planning and Growth Management (Department) that the pond or other SWM device performance is not substantially degraded in most cases.

A major obstacle of the Department to consistently bring "unsatisfactory" devices into compliance in a timely manner is related to the required delegation of maintenance of SWM devices to Homeowners' Associations (HOAs) and private businesses that have little to no experience with the long term maintenance of these facilities. The Department has observed a continued lack of understanding of the responsible parties on how and why they should maintain these facilities. The Department has been conducting annual seminars for the public, specifically on how to properly maintain these facilities and will meet in the field when requested to assist the public to bring the facilities into compliance. However, a major hurdle the responsible parties continue to encounter is they have failed to fiscally plan for the costs of maintenance. The lack of funds requires an extended period of time for a HOA or business to bring a facility into "satisfactory" condition, where the Department works more as a facilitator to assist the HOA or business in lieu of an enforcement authority. The Department is examining additional enforcement measures, including legal action when necessary, to improve the overall maintenance of stormwater management devices.

Beginning July 1, 2013, the County moved the source of the stormwater program funding from the Environmental Service Fund to the Watershed Protection and Restoration Fund, and implemented a Stormwater Remediation Fee as required under recent State of Maryland legislation passed by the General Assembly. As part of the increased Stormwater Remediation Fee, the County initiated improvements to the enforcement program to encourage better compliance regarding facility maintenance. Additional discussion will be needed to consider fees on property owners within the unacceptable communities to assist the County in maintaining the SWM sites, with special emphasis on stormwater control structures and secondary emphasis placed on site beautification.

The following table summarizes the information found in the Stormwater Inspection database. Facilities found acceptable and unacceptable are reported based on their status at end of the calendar year.

*Table 7: Summary of Stormwater Management Device Inspections*

	2007	2008	2009	2010	2011	2012	2013	2014*
Total projects inspected	287	212	131	121	178	150	144	116
Total swm devices inspected	516	363	268	275	330	274	310	259
Total inspections performed including re-inspections**	761	501	378	427	477	343	420	295
Acceptable swm devices	253 (49%)	214 (59%)	140 (52%)	120 (44%)	176 (53%)	90 (33%)	147 (47%)	164 (63%)
Unacceptable swm devices	263 (51%)	149 (41%)	128 (48%)	155 (56%)	154 (47%)	184 (67%)	163 (53%)	95 (37%)

\*The “2014” column represents only the second half of Calendar Year 2014 (July 1-Dec 31, 2014).

\*\*Each project may contain more than one device. The number of inspections is higher than the number of devices, due to repeat inspections of the same device with some devices found acceptable after re-inspection.

*Implementing the 2000 Maryland Stormwater Design Manual and Tracking Implementation Progress of the 2000 Stormwater Design Manual and Modifications Needed to Improve Deficiencies*

The County continues to implement the stormwater management design policies, principles, methods, and practices found in the 2000 Maryland Stormwater Design Manual and COMAR. In October 2014 MDE found the County’s stormwater program acceptable. A copy of the approval letter is in Appendix D.

Per the Maryland Stormwater Management Act of 2007, which requires use of environmental site design to the maximum extent practicable, the County adopted new stormwater regulations on July 13, 2010. These regulations went into effect on August 1, 2010. The Notice on the adoption of the Stormwater Management and Storm Drainage Ordinances, including Procedures on Requesting an Administrative Waiver, was included in the County’s 2011 NPDES MS4 Annual Report.

In the first half of Fiscal Year 2015, no projects were issued permits that had a stormwater management waiver, with the exception of those projects that qualified for the SWM Administrative Waiver to utilize the 2000 SWM regulations.

In the first half of Fiscal Year 2015, the SWM Waiver Review Fee was increased to \$440.00 + \$88/study point over two. Additionally, in the first half of Fiscal Year 2015 the Stormwater Fee-in-lieu remained at \$1.35/square foot disturbed.

The following table, lists the 112 SWM Administrative Waivers requested through the first half of Fiscal Year 2015, and shows no changes from prior year. Not all requests were approved and not all projects have applied for or been issued permits.

*Table 8: Stormwater Management Waiver Requests*

9B Applewood Center	Harvest Ridge Lots 6 & 7	Pleasant Acres Lots 4-8
Abberly Square Apartments	Henry Ford Circle Lot 2	Potomac Metal Storage
Adams Crossing	High Pointe	Quicktree Farm
Albion	Highgrove Sections 7 & 8	Richland's Crossing
Aqualand Marina	Holly Hall	Ridge Grove Estates
Aspenleigh	Hollybrook Farm	Rose Hill Plantation
Autumn Hills	Homefield (Fieldside)	Saddle Ridge
Autumn Woods	Hope Park	Sailor's Retreat Entrance Plan
BB&T White Plains Corporate Plaza Unit "H"	Hunter Springs	Scotland Heights
Beaver Creek	Hunter's Brooke	Shad Crossing (Formerly Earnshaw)
Belmont	Inters. Rosewick & La Plata Prkwy	Shops @ Waldorf Center
Benedict Plantation Kingsbrook Pl.	Kadan Route 227	SMECO – Phase B Temporary Construction Access
Bensville Acres	Keswick	Southwinds Phases 2 & 3
Boroughs Hall	Key Point Woods	St. Charles Pumping Station 3B
Bowie Office Building	Khan's (Fadul's) Addition to Pinefield	Staples Addition - Festival Way
Brentwood	Kingsview 6B	Stoltzfus
Brookwood Estates II	Kleen Wave Autowash	Stonebridge
Bryans Green	Knotting Hill	Stonewell
Bryan's Road Market Place	Langley Estates	Summit Ridge Sections 1 & 2
Bryans Village	Linden Grove Section I	Swan Point, The Villages of
Chandlerstown	Linden Grove section II	The Heritage @ St. Charles
Chelsea Manor	Lord's Creek	The Meadows @ Forgotten Farm
Coachman's Path & Woodville Road	Matin Property Mosque	The Willows Subdivision
CPV St. Charles Gough - Parcel D	McCormick	Timber Ridge
CPV St. Charles Parcel B	Middle Business Park	Town Center South
Davenleigh	Middletown South	Turtle Creek
Deer Park Estates	Mill Spring Estates	US 301 Park and Ride
Dominion TL-552/532 Pipeline Imp.	Millseat Subdivision	Waldorf Retail & Commercial Center
Dorchester Landing II	Mimosa Addition to Mt. Carmel Woods	Waldorf Tech Park
Eagle Ridge	Mona Property	Waldorf Town Center
Fair Fountain Farm	Mt. Carmel Woods Pumping Station	Waldorf West
Falcon Ridge Subdivision	Myers Estates	Westlake Square
Fischer's Grant	North Pointe Phase 3	Westside Estates 2&3
Gleneagles Neighborhood Parcel Q	Oliver's Crossing	White Plains Corporate Plaza
Gleneagles Neighborhood South	Pinecrest Subdivision	Windsor Manor
Gleneagles North	Piney Brae	Windsor Mill
Groves @ Piney Church	Piney Church Road South Realign.	
Hamilton Heights	Piney Grove Estates	

The following table summarizes the stormwater management credits applied to single family lots for the first half of Fiscal Year 2015. Rooftop runoff disconnection continues to be the most used credit, as has been demonstrated in previous years.

*Table 9: Summary of Fiscal Years 2013 thru 2015 SWM Credits for Residential Single Family Building Permits*

	Fiscal Year 2013	Fiscal Year 2014	Fiscal Year 2015*
Number of approved Residential Building Permits:	476	498	269
SWM Credits Approved:			
Rooftop Runoff Disconnection	1,015	1,023	568
Rooftop Runoff Disconnection – Compensating Drywells	140	127	77
Non Rooftop Runoff Disconnection	49	2,583	71
Grass Channel	11	17	2
Sheet Flow to Buffer	14	25	6
Environmental Site Design (Offsite)	0	24	25
Standard Plan	0	0	0
Stormwater Management Facility	0	327	157
Natural Area of Conservation	1	8	1
Rain Garden	15	43	19
Rain Barrels	8	0	1
Alternate Surface			6

\*Includes the first half of Fiscal Year 2015 (July 1 – Dec 31, 2014).

Since the County’s adoption of the stormwater management regulations (August 1, 2010) requiring environmental site design (ESD) to the maximum extent practicable (MEP), through the first half of Fiscal Year 2015, a total of 150 projects have submitted Concept SWM Plans, which is Step 1 of the regulation. During that same time period, 104 projects have also submitted Site SWM Plans, which is Step 2 of the regulation.

	Fiscal Year 2011	Fiscal Year 2012	Fiscal Year 2013	Fiscal Year 2014	Fiscal Year 2015*
VSC (Step 1)	35	27	38	33	17
VSS (Step 2)	16	27	21	25	15

\*Includes the first half of Fiscal Year 2015 (July 1 – Dec 31, 2014).

In the first half of Fiscal Year 2015, 17 additional projects have submitted Concept SWM Plans and there have been 15 Site SWM Plans submitted for review.

2. *Charles County shall maintain its illicit detection and elimination program. At a minimum, Charles County shall:*
  - a. *Ensure that all discharges to the municipal separate storm sewer that are not composed entirely of stormwater are either permitted by MDE or eliminated;*
  - b. *Annually, field screen at least 100 outfalls. Each outfall having a discharge or suspected of having an illicit discharge shall be sampled using a chemical test kit;*
  - c. *Report annually the results of field screening activities on MDE’s illicit connection detection database. The following narrative shall also be included: the number of illegal storm drain connections, the results of investigations made, any enforcement used, the disposition of all illegal storm drain system connections found as a result of this portion of Charles County’s stormwater management program, and an updated list of targeted outfalls and an inspection schedule; and*
  - d. *Identify all County-owned facilities requiring an NPDES discharge permit and submit documentation that a permit has been obtained for each. The implementation status of pollution prevention plans for these County-owned facilities shall also be submitted with the County’s annual reports.*

FY 2015 Status (July 1 – Dec 31, 2014)

*Illicit Connection Detection Field Screening and Database*

The Fiscal Year 2015 outfall screening was conducted in May and June 2015, so is included in Part 2 of this report.

*Enforcement Activities*

Enforcement activities continued during the first half of Fiscal Year 2015 as discussed in this section. When a potential illicit discharge is reported to the County, the first step is determining responsibility, by identifying if the property is public or privately owned. If it is determined to be on public property the appropriate agency is notified. If it is determined to be a private responsibility, notification is sent to the property owner. Each case is issued a number in the County’s inspection tracking system. Following is a table of tracking numbers and status for cases that were active in Fiscal Year 2015.

Several of the cases from previous years that were determined to be structural problems, such as corroded or damaged pipe, or eroded outfall, which fell under the ownership of the County or Homeowner Associations were either assigned to the County Roads Division for repair, or put into the County capital Drainage System Improvement Program for repair, depending on scale.

# NPDES MS4 Annual Report – Part 1 | FY2015

*Table 10: Potential Discharges into the Storm Drain System*

Outfall #	Description of Issue(s)/Address	Tracking #	Status
Upland	Exposed Oil Drums behind building (11785 Holly Auto Center Lane)	RFA 140188	10/21/2014- Compliance letter sent 5/6/2015- No oil drums observed (CASE CLOSED)
Upland	Large quantities of tires, oil drums, mufflers & trash, uncovered and in drainage channel (11770 Holly Auto Center Lane)	RFA 140189	10/21/2014- Compliance letter sent 5/6/2015- No oil drums or trash observed (CASE CLOSED)
Upland	Exposed containers of Petroleum Hydrocarbon Solvent in parking lot (11780 Holly Auto Center Lane)	RFA 140190	10/21/2014- Compliance letter sent 5/6/2015- No containers observed (CASE CLOSED)
Upland	Overland car wash flow into BMP (11760 Holly Auto Center Lane)	RFA 140191	10/21/2014- Compliance letter sent 5/6/2015- No overland flow observed (CASE CLOSED)
159	Discharge of carwash to stormdrain (2282 Crain Highway)	RFA 140595	10/22/2014- Compliance letter sent 1/30/2015- Indoor curbing added to contain carwash (CASE CLOSED)
Upland	Storage of hazardous materials, outside and uncovered (70 Industrial Park, Suite 3J)	RFA 140596	10/22/2014- Compliance letter sent 5/8/2015- Materials are being stored in small bump-out on side of building (CASE CLOSED)
Upland	Discharge of car wash to stormdrain (3JP Morgan Court)	RFA 140650	10/22/2014- Compliance letter sent 5/8/2015- Business using drywash system per inspection (CASE CLOSED)
Upland	Discharge of grease to stormdrain (11100 Billingsley Road)	RFA 140657	8/27/2014- Compliance letter sent 9/28/2014- Grease interceptor connected to sanity sewer (CASE CLOSED)
Upland	Discharge of carwash to stormdrain (4610 Crain Highway)	RFA 140867	12/12/2014- Compliance letter sent 5/6/2015- Property is vacant (CASE CLOSED)
Upland	Trash/debris strewn across property (26 Irongate Drive)	RFA 140868	12/12/2014- Compliance letter sent 5/8/2015- Recycling company no longer in business, property is vacant and debris removed (CASE CLOSED)
Upland	Exposed paint materials in parking area (18 Irongate Drive, Ste.K)	RFA 140871	12/12/2014- Compliance letter sent 1/6/2015- YHS Best Const. called to say materials do not belong to him, since parking area is part of complex 2/7/2015- Compliance letter sent to Waldorf Glass 5/8/2015- Property no longer in business, no paint cans observed (CASE CLOSED)

Repairs to several of the outfalls identified as having erosion in the previous years’ outfall inspections have been repaired as listed in Tables 11 and 12. Table 13 lists a stormwater pond repair and stream restoration projects done by the County. See Appendix N of the 2014 NPDES MS4 Annual Report for the Drainage Systems Improvement Program budget, and Appendix J of the 2014 NPDES MS4 Annual Report for a description of the Meadowland stormwater pond repair.

*Table 11: Private Outfall, Culvert, and Inlet Repair Projects*

Outfall #	Location	Description	County Tracking #	Year Identified	Date Completed	Acres Treated
23	Mall Circle	Outfall Repair	N/A	2008	2010	TBD
112	Mall Circle	Outfall Repair	RFA 130483	2013	2014	TBD
33	Days Court	Culvert Repair	RFA 130647	2013	2014	TBD
Upland	Mall Circle	Outfall Repair	RFA 140103	2014	2014	TBD
30	M & T Bank	Culvert Repair	RFA 140150	2014	2014	TBD

*Table 12: County Outfall, Culvert, and Inlet Repair Projects*

Outfall #	Location	Description	Cost	Date Completed	Acres Treated
179	Beechwood Drive	Outfall Repair	15,000	1-Jul-07	TBD
157	Briarwood	Outfall Repair	4,000	9-Jun-09	TBD
96	St. Charles	Outfall Repair	2,600	16-Jun-09	TBD
54	Kipling Drive	Trash Removal	2,000	9-Jun-09	TBD
139	Shiloh Church Road	Outfall Repair	1,520	1-Jul-10	TBD
14	Theodore Green Blvd.	Erosion Stabilized	1,800	1-Jul-10	TBD
212	Duckhorn Court	Inlet Repair	475	3-Jun-10	TBD
121	Holly Ave./Dogwood Dr.	Pipe & Outfall Repair	TBD	30-Jun-12	TBD
6	Hampshire Circle	Outfall Repair	4,000	30-Jun-12	TBD
18	Temi Drive	Outfall Repair	4,000	30-Jun-12	TBD
Not Devt Dist	Duval Drive	Outfall Repair	4,000	30-Jun-12	TBD
14	Theodore Green Blvd.	Bank Erosion Stabilized and Culvert Repaired	10,485	11-Sep-13	TBD
18	Temi Drive	Outfall Repair	43,000	11-Oct-13	TBD
178	Valley Drive	Metal corrosion & Erosion	TBD	TBD	TBD
78	Red Oak Lane (RFA 130646)	Metal Corrosion	TBD	TBD	TBD
Upland	Lisa Drive (VCI 130013)	Metal Corrosion	TBD	TBD	TBD
Upland	Spruce Street (VCI 130013)	Metal Corrosion	TBD	TBD	TBD
Upland	Dennis Road (VCI 130013)	Metal Corrosion	TBD	TBD	TBD

*Table 13: County Stream Restoration and Stormwater Management Pond Repairs*

<b>Outfall #</b>	<b>Location</b>	<b>Description</b>	<b>Cost</b>	<b>Date Completed</b>	<b>Acres Treated</b>
106	Tanglewood Drive Pond VCI 080068 (a.k.a. Tawny Road)	Outfall Repair & 400 lf Stream Restoration (Step Pool Conveyance System)	TBD	TBD	4
207	Holly Tree Lane VCI 130058 (Previously VCI 080067)	1,200 lf Stream Restoration (Step Pool Conveyance System)	TBD	TBD	48
Upland	Meadowlands Subdivision	Pond Maintenance	TBD	TBD	TBD
31	Plaza Drive VCI 150024 (Previously RFA 130648)	SWM Facility Conversion to Submerged Gravel Wetland, and Pipe Repairs	TBD	TBD	TBD

*Proposed Program Improvements*

The County is currently in the process of reviewing its IDDE program for programmatic updates, revisions, and improvements. Key aspects include updating County Code applicable to Illicit Discharge with provisions for enforcement, updates to County Standard Operating Procedures, update a County responsible personnel organizational chart, and make recommendations for a consolidated data management/reporting system. Proposed enhancements also include development of new education and outreach materials to facilitate compliance, as well as a more in depth staff training program.

*County Owned Facilities Requiring a NPDES Discharge Permit*

To date, the following County owned facilities requiring a NPDES discharge permit and the status of their pollution prevention plans have been identified in the following table.

*Table 14: County Facilities with NPDES Industrial Stormwater Permits*

<b>County Owned Facilities</b>	<b>NPDES Discharge Permit #</b>	<b>Pollution Prevention Plan</b>
Charles County Municipal Landfill #2	12SW0182 (Last Issued: Aug 14, 2014)	Yes
Charles County Department of Public Works Maintenance Yard	12SW2160 (Last Issued: Sep 5, 2014)	Yes
Charles County - Mattawoman WWTP	12SW1214 (Last Issued: July 28, 2014)	Yes

3. *Charles County shall maintain the implementation of its existing program to respond to illegal dumping and spills including procedures for public reporting and citizen complaints.*

FY 2015 Status (July 1 – Dec 31, 2014)

On July 1, 2001 the County adopted Water Quality Control Regulations which provides the Department of Planning and Growth Management (PGM) the authority to find and stop illicit discharges into the County’s storm drainage and stream system. Subsequently, PGM adopted an implementation method entitled, “Policy/Procedure: Water Quality Violation Notification, Remediation, Case Documentation and Annual Review for Program Effectiveness and Reporting,” as attached in the appendix of the 2003 Charles County NPDES MS4 Annual Report. However both of these have since been replaced as follows.

On July 13, 2010 the County adopted separate Stormwater Management and Storm Drainage Ordinances, to replace the previously combined Stormwater Management and Drainage Ordinance. At this time Illicit Discharge Regulations were adopted in the *Storm Drainage Ordinance, Section 19.2 Illicit Discharge*, which can be viewed at:

<https://www.charlescountymd.gov/sites/default/files/pgm/cpis/stormdrainorord.pdf>

On March 25, 2013 the Department of PGM authorized a new Illicit Discharge Standard Operating Procedure (SOP) to replace the above Policy/Procedure. The new SOP describes five steps: (1) Receiving reports of suspected illicit discharges; (2) Performing an inspection; (3) Determining the severity of the suspected illicit discharge; (4) Control of Illicit Discharge; and (5) Tracking and Reporting. A copy of this SOP is included in the County’s 2014 NPDES MS4 Annual Report.

After implementing the 2013 SOP for a period of time, it was determined revisions were needed, and a proposed draft SOP is being developed to incorporate more educational materials.

Discharges to the Storm Drain System – In November 2014, the County established an online reporting system for citizens to enter suspected illicit discharges. The link to the online reporting system is: <https://www.charlescountymd.gov/content/report-abandoned-structure-or-similar-complaint>, and an image follows.

During the first half of Fiscal Year 2015, no citizen complaints for illicit discharge were received.

11/20/2015 Report a Structure or Property Complaint | www.charlescountymd.gov



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### Report a Structure or Property Complaint

Please fill out the following form to submit your complaint. If you would like an e-mail confirmation or updates on the status of your complaint, please leave an e-mail address.

**Date**  
Month Day

**Email Address**

**Name**

**Type of Complaint (Choose all that apply) \***

- Abandoned Structure
- Junk Car
- Property Maintenance
- Illicit Discharge
- Site Drainage Problems
- Tall Grass
- Work Without Permits
- Other/Misc.

**Description of Complaint \***

Please provide a description of your complaint (e.g. the car is located on the left side of the house facing away from the street).

**Location of Complaint**  
Please provide the address for the complaint location. If you do not have this, please provide the address that you do have that is closest to the complaint location.

**Street Address 1 (or Nearest Cross Street) \***

**Street Address 2**

**City \***

**Additional directions**

If address of the complaint house is not available and you have provided the closest address, please provide a description of the house (e.g. it is a white house with blue shutters and a black mailbox).

Submit

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**OFFICIAL WEBSITE OF THE CHARLES COUNTY GOVERNMENT**  
200 Baltimore Street | P.O. Box 2150 | La Plata, Maryland 20646  
Mobile Site

301-645-0550 | 301-870-3000 | MD Relay: 711 • 1-800-735-2258 (TDD)  
Monday-Friday 8:00 a.m. - 4:30 p.m.  
Equal Opportunity County

https://www.charlescountymd.gov/content/report-abandoned-structure-or-similar-complaint 1/2

4. *Charles County shall consider applying to MDE for delegation of erosion and sediment control enforcement authority. Erosion and sediment control activities in Charles County currently are the responsibility of MDE’s Compliance Program. In addition, erosion and sediment control education activities, specifically “responsible personnel” certification classes, are currently conducted by MDE.*
  - a. *By 7/15/04, Charles County shall complete a report evaluating the potential for implementing an erosion and sediment control program. This report shall be submitted to MDE and include feasibility of applying to MDE for delegation of erosion and sediment control enforcement authority in accordance with Environment Article, Title 4, Subtitle 1, Annotated Code of Maryland, benefits, and local support.*
  - b. *Beginning 7/15/03, report quarterly, information regarding earth disturbances exceeding one acre or more. Data submitted as a result of this permit condition shall include site, name, site owner and address, disturbed area, local grading permit number.*

FY 2015 Status (July 1 – Dec 31, 2014)

- a) The County’s NPDES MS4 Annual Report for June 2003 through July 2004 includes the report evaluating the potential for implementing an erosion and sediment control program. Final delegation by MDE occurred in June 2006.

Every two years since, MDE has evaluated Charles County’s program and found it to be acceptable.

- b) For the period July 1, 2014 through December 31, 2014 the County issued 28 permits which disturbed one acre or more, each. Of these, 20 were Development Services permits, and 8 were single family dwelling permits. The Development Services permits included: 8 residential, 4 commercial, 7 industrial, and 1 County watershed restoration project. Appendix E includes the data for earth disturbances greater than one acre.

5. *Charles County shall implement and maintain a public education and outreach program to reduce stormwater pollutants. Public outreach and education efforts are to be integrated with the discharge characterization monitoring, watershed restoration, illicit connection detection, erosion and sediment control, and stormwater management program implementation requirements of this permit. These efforts are to be documented and summarized in the County’s annual reports. At a minimum, Charles County shall:*
  - a. *Provide information regarding the following water quality issues to the general public:*
    - i. *Water conservation;*
    - ii. *Stormwater management facility maintenance;*
    - iii. *Erosion and sediment control;*
    - iv. *Lawn care and landscape management (e.g., the proper use of herbicides, pesticides, and fertilizers, ice and snow control, cash for clippers, etc.);*
    - v. *Household hazardous waste;*
    - vi. *Litter control, recycling, and composting;*
    - vii. *Car care, mass transit, and alternative transportation;*
    - viii. *Private well and septic system management;*
    - ix. *Pet waste management;*
    - x. *Procedures for public identification and reporting of illicit discharges.*
  - b. *Provide information when requested regarding the following water quality issues to the regulated community:*
    - i. *NPDES permitting requirements;*
    - ii. *Pollution prevention plan development;*
    - iii. *Proper housekeeping; and*
    - iv. *Spill prevention and response.*

FY 2015 Status (July 1 – Dec 31, 2014)

The County provides information regarding water quality issues to the general public in various ways, including the website, brochures, news media, and one-on-one. The County’s Departments of Public Works and Planning and Growth Management work on addressing the outreach initiatives, with support from outside agencies, such as University of Maryland Extension and Tri-County Council for Southern Maryland. In Fiscal Year 2014 a new position was added to the Department of Planning and Growth Management to support the outreach activities. Under this new position, and in partnership with the Department of Public Works Environmental Resources staff, several significant and exciting events took place in the first half of Fiscal Year 2015.

Following is a discussion of activities, events, and outreach materials the County provides.

*Maryland Science Center Permanent Stormwater Exhibit - Maryland MS4 Partnership*

In October 2014, the Charles County Commissioners pledged \$25,000 in Fiscal Year 2016 funds to support an effort coordinated among the Maryland MS4 Phase I jurisdictions to create a nationally recognized exhibit on the challenges and solutions associated with runoff of polluted stormwaters into Maryland streams and lakes and the Chesapeake Bay.



The exhibit will have three components: a permanent exhibit at the Maryland Science Center; a traveling exhibit of one or more of the hands-on-demonstrations found at the permanent exhibit; and an independent video showing the hands-on demonstrations, that could be disseminated to schools and other interested audiences.

*County Fair*

Each year at the fall County Fair the County distributes information on recycling as well as natural resources and low impact development techniques. Brochures are distributed by the Department of Public Facilities. These include, “Reduce Reuse Recycle Directory” and “It is Easy Being Green.” In addition, coloring and activity books titled, “Learn About Water Conservation” and “Keep Our Environment Clean” are provided for children.



*Educational Signs*

In early 2014, educational signage was installed at the Bryans Road Village Green County Park. Beneath the park is an underground stormwater facility to manage the stormwater runoff from the shopping center's impervious surface. This opportunity demonstrates the County's restoration program and protection of Mattawoman Creek Watershed, and encourages residents do the same.



Following is the sign layout and photo of the installed sign.

**PROTECTING THE**  
*Mattawoman Creek*  
and the wildlife that lives here.

**BRYANS ROAD VILLAGE GREEN**

**What makes Bryans Road Village Green so special?**  
Cleaning polluted rainwater runoff from urban or developed areas is a mandate of the federal Clean Water Act. To meet the mandate, Charles County Government is installing facilities and implementing practices that will reduce the pollution caused by rainwater runoff from impervious surfaces such as compacted soil, paved areas, and rooftops.

You are now standing on an underground facility built by Charles County Government, for the purpose of cleaning polluted rainwater before it flows into a small stream leading to the Mattawoman Creek estuary.

When it rains, the water flows across 10 acres of impervious surface in this parking area, washing off dirt, oil, gasoline drippings, and other pollutants. The rainwater then flows into grates, which you can see in the parking area. The pipes below the grates lead to the underground arched chambers. These chambers (shown in the photos below) store the water to mimic natural hydrology and filter out the pollutants. Finally, clean water comes out of the pipe across the street and continues its journey to the estuary. Just as important as the underground facility is this above ground beautification of Bryans Road Village Green!

**Mattawoman Creek, it's hopping with wildlife!**  
From extremely rare and sensitive Magnolia Bogs along small forested streams to the wild population of American Lotus in the expansive tidal wetlands, the Mattawoman Creek Watershed is home to one of the most biodiverse ecosystems in Maryland.

**What can YOU do to help Mattawoman Creek?**

**Pet Waste:**  
• When walking your pet, remember to pick up the waste and dispose of it properly in the trash.

**Lawn Care Tips:**  
• Use pesticides and fertilizers sparingly.  
• Carefully read all labels and follow application directions.  
• Test the soil to be sure the amount of fertilizer needed.  
• Consider using organic fertilizers, which release nutrients more slowly.  
• Use Integrated Pest Management (IPM) methods to reduce dependence on pesticides.  
• Use native Maryland plant species in your landscape.

**Beneficial Landscaping Options:**  
Permeable Pavement   Rain Gardens   Rain Barrels   Grassy Swales

**Auto Care:**  
Use a commercial car wash that treats or recycles its wastewater.   Or, wash your car on your grass so the water infiltrates into the ground.   Maintain your car and always recycle used motor oil.   Check your car for drips and oil leaks regularly and fix them promptly.

**The Creek's estuary, streams and wetlands are among the most productive fin-fish spawning and nursery areas in the entire Chesapeake Bay.** In addition to over 50 species of fish identified here by the Maryland Department of Natural Resources, there are nearly 230 species of birds that can be found in the extensive forests. At a single site, 18 species of reptiles and amphibians were observed.

Wildlife Photo Credits: Mattawoman Watershed Society and George Jett

*Green Expo Events*

Since Charles County’s first Green Expo in April 2010, each year the event continues to draw a large group of interested participants and provides the opportunity to learn about the most innovative environmental solutions.

*Charles County Government*  
**NewsRelease** 

For Immediate Release  
2014-264  
Tuesday, August 19, 2014 - 11:15am

**2014 Green Expo and Tech Showcase Draws Large Crowd**



Despite rainy weather, the 2014 Green Expo and Tech Showcase event on Saturday, Aug. 9 at Regency Furniture Stadium had a large turnout. The Tech Showcase featured electric vehicles (EV) and Eco-Shred provided free, secure document shredding. Residents brought an estimated 15,000 pounds of paper for shredding. The Green Expo featured educational products and innovative ways to save money by adopting sustainable practices. We thank our sponsors, MOM’s Organic Market, Passport BMW, Southern Maryland Electric Cooperative, Standard Energy Solutions, Maryland Volt, Toyota of Waldorf, and Solar City.

PHOTO CUTLINE: A representative from Southern Maryland Electric Cooperative, a participating sponsor, talked with a citizen about how to make your home more energy efficient and cut electricity costs.

###

*Charles County Government Television (CCGTV) – Cable Channel 95*

In 2014, environmental education information was broadcast on CCGTV. This included ads on the County’s septic pump-out program, shred events, and rain barrel workshops, an announcement the results of the County’s Fiscal Year 2014 stormwater survey, lawn care tips, as well as running an illicit discharge video that was purchased from Excal Visual.



*Educational Videos*

Charles County Government purchased an Excal Visual illicit discharge video, which came in several formats, to address different audiences, so while the short version for the general audience was run on CCGTV, the more detailed versions will be used for staff training.

After the illicit discharge educational video was run on CCGTV for a period of time, it was posted to the County’s illicit discharge webpage, as shown below. Under the video is a phone number and link for online reporting reporting of suspected illicit discharges.



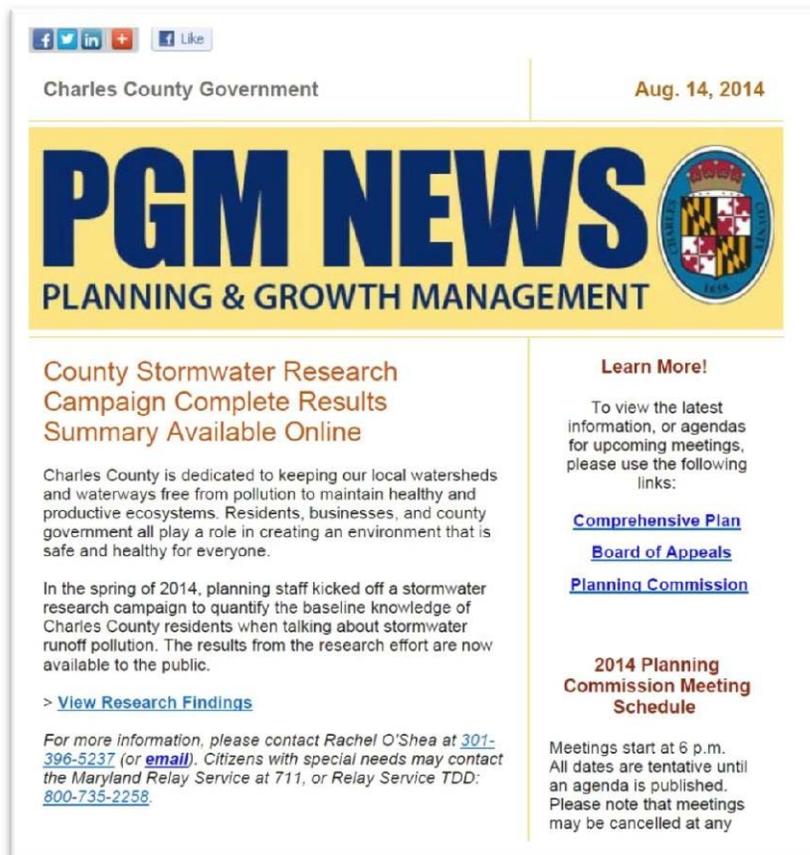
We all play a part in keeping waterways clean.

**How to Report an Illicit Discharge**

- If you suspect an illicit discharge is being released into the storm sewer system, contact the County at **301-645-0540**. This number is only staffed during normal business hours (Monday through Friday 8 a.m. to 4:30 p.m.),
- If you suspect an illicit discharge is going into the storm sewer system during non-business hours, please call the Maryland Department of the Environment’s toll-free 24-Hour emergency number for pollution problems in Maryland at **866-633-4686**, or **866-MDE-GOTO**.
- Or click **here** to submit an online complaint form.

*Charles County Departmental Digital Newsletters for the Public*

In the first half of Fiscal Year 2015, the Charles County Department of Planning and Growth Management initiated a newsletter that is distributed to County residents via digital media. The August 2014 edition provided links to the County’s stormwater research campaign. (Full results of the stormwater research campaign were included in the 2014 NPDES MS4 Annual Report.) Digital newsletters are an easy way to keep residents up to date about upcoming events and opportunities, related to environmental education.



*Septic System Pump Out Reimbursement Program*

To encourage proper septic system maintenance and to support the County’s TMDL restoration plans, a reimbursement program was launched in the first half of Fiscal Year 2015. The department’s digital newsletter was one of the promotional tools, along with CCGTV, and a press release.



**County Launching Septic Pump-Out Reimbursement Program Application Available Online**

Charles County Government, Department of Planning and Growth Management is tasked with developing and implementing programs and actions to meet nutrient load reduction targets set in the County's Phase II Watershed Implementation Plan (WIP) Strategy. The WIP strategy recommended pumping out 20% of the county's septic systems on an annual basis to help meet the WIP nutrient pollution reduction goals. The County has developed a septic pump-out reimbursement program to encourage residents to pump out their septic systems every 3 to 5 years. Pumping of septic systems is recommended to maintain the effectiveness and longevity of the system and provides a reduction of nutrient leaching over time.

The reimbursement program will be structured around an application process. Residents will fill out the application; attach the contractor's receipt and mail to the County. Residents will include their property location to verify which reimbursement rate the system qualifies for. The reimbursement rates are below:

- ⌄ 50% of the pump-out cost for septic systems located in Charles County
- ⌄ 75% of the pump-out cost for septic systems located within the critical area of Charles County

Applications will be mailed directly to the Department of Planning and Growth Management for processing. Once the pump-out receipt and property location are verified, a check will be mailed out to the resident. Properties with a septic system are eligible once every three years for reimbursement of system pump-outs.

> [View Program Application](#)

*For more information, please contact Rachel O'Shea at [301-396-5237](tel:301-396-5237) (or [email](#)). Citizens with special needs may contact the Maryland Relay Service at 711, or Relay Service TDD: [800-735-2258](tel:800-735-2258)*

time due to severe weather or lack of a quorum.

- ⌄ August 18
- ⌄ September 8 and 22
- ⌄ October 6 and 20
- ⌄ November 10 and 24
- ⌄ December 8 and 22

Those citizens with special needs, may contact Theresa Pickeral, Dept. of Planning and Growth Management, at [301-638-2409](tel:301-638-2409) or the Maryland Relay Service TDD [1-800-735-2258](tel:1-800-735-2258).

**PGM Public Notices**

Links to the latest public notices from Planning and Growth Management, are provided below:

- > [Notice 14-04](#)
- > [Notice 14-05](#)
- > [Notice 14-06](#)
- > [Notice 14-07](#)
- > [Notice 14-08](#)
- > [Notice 14-09](#)
- > [Notice 14-10](#)
- > [Notice 14-11](#)

**Up-to-date public notices** are maintained on the county's website. Please use the following link to view a complete listing:

> [PGM Public Notices](#)

**Get Connected!**

Guidelines for maintaining septic systems, as well as, an online application was created to support the program, as shown on the following pages.



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- ▼ Department of Planning and Growth Management
  - ▶ Capital Services
  - ▶ Codes, Permits and Inspection Services (CPIS)
  - ▶ Planning
  - ▶ Resource and Infrastructure Management

### Department Links

- ▶ Board of Appeals
- ▶ Board of Charles County Commissioners
- ▶ CCG Public Notices
- ▶ Comprehensive Plan Update
- ▶ Mapping Services
- ▶ PGM Public Notices
- ▶ PGM Publications
- ▶ PGM Roundtable
- ▶ Planning Commission
- ▶ Property Standards Task Force
- ▶ Report a Structure or Property Complaint
- ▶ Slideshows and Presentations
- ▶ Waldorf Urban Redevelopment Corridor

### Staff Only

- ▶ GroupWise Login
- ▶ Planning Commission Board Docs (Staff Only)
- ▶ Workgroups Application

## Guidelines for Maintaining Your Home's Septic System

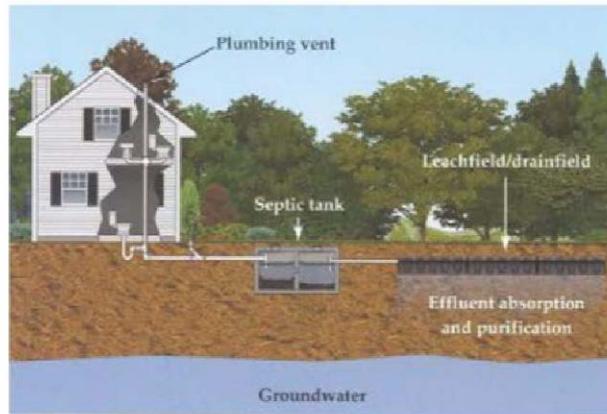


Photo Credit: ihenselhome.com

### How Does a Septic System Work?

- A septic tank is designed so that the solids and other material settle and form a sludge layer at the bottom of your tank or float forming a scum layer on top. The clear effluent in the middle is then passed through and distributed to the drain field where the soil absorbs the effluent.
- Up to 50 percent of the solids retained in the tank decompose and the remainder accumulates in the tank. Biological and chemical additives are not needed to aid or accelerate decomposition.
- A licensed liquid waste hauler will remove the accumulated sludge layer to prevent any solids from clogging your disposal system and drain fields that could lead to system failure.

### Septic System Maintenance:

- Proper system maintenance is the responsibility of the property owner. By performing a few simple maintenance procedures and having a proper tank pump-out, homeowners can save on costly repairs to their septic system.
- Regular inspection and periodic septic tank pump outs by a licensed liquid waste hauler is essential for the long term care and maintenance of your septic system.
- Septic systems most commonly fail due to improper use and lack of periodic pumping of the septic tank.
- The frequency of septic tank pump outs will depend on the current use of the system and the number of people living in the household. Septic pump outs for residential use is usually recommended at least once every 2 to 3 years. For more information on frequency for your system, consult a licensed liquid waste hauler.

### Proper use of a Septic System:

- Do not use garbage disposals or pour cooking grease, oils or other materials like paper towels, sanitary hygiene products, condoms, cigarettes or plastics into your septic system via the sink or toilet. These materials can

### How Can We Help You?



### Related Links

- ▶ American Planning Association
- ▶ FY16 Fees and Charges
- ▶ Maryland Department of Natural Resources
- ▶ Maryland Department of Planning
- ▶ Maryland Department of the Environment
- ▶ Planning Commission Board Docs
- ▶ Southern Maryland Agricultural Development Commission
- ▶ State of Maryland's Green Website
- ▶ Town of La Plata
- ▶ US Green Building Council
- ▶ Urban Land Institute

### Contact Us

301-645-0540 301-870-3896  
8:00 a.m.-4:30 p.m. M-F

### Mailing Address:

P.O. Box 2150, La Plata, MD 20646

### Physical Address

200 Baltimore St., La Plata, MD 20646



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[charlescountymd.gov](http://charlescountymd.gov)

## Septic System Pump-Out Reimbursement Application

Instructions:

1. No application fee is required.
2. Attach a copy of the invoice from the pumping company and proof of payment.
3. The max reimbursement per pump-out is \$187.50, and may not be received more than once every three (3) years.
4. For questions related to this application, please call the Planning Division at 301-645-0540.
5. The County will not pay for additional costs associated with equipment, parts, upgrades, etc.

**Name of Property Owner(s): \***

Mailing Address:

**Mailing Street Address 1: \***

**Mailing Street Address 2:**

**City: \***

**State: \***

**Zipcode: \***

Address of Subject Property (if different from Mailing Address):

**Street Address 1:**

**Street Address 2:**

**City:**

**State:**

**Zipcode:**

**Phone Number: \***

Only numeric characters. (Ex. 3016450540)

**Email Address: \***

**Property Account Number from Tax Bill (for application tracking purposes only): \***

### How Can We Help You?

Most Popular

How do I...?

*Websites:*

The County posts information on the NPDES MS4 permit program under the Department of Planning and Growth Management’s webpages.

Summary of the program, Annual Reports, and numbers to call for suspected pollutant discharges. The link to the new webpage is:

[www.charlescountymd.gov/pgm/planning/npdes-municipal-separate-storm-sewer-system-permit](http://www.charlescountymd.gov/pgm/planning/npdes-municipal-separate-storm-sewer-system-permit)

Illicit Discharge educational video, and on-line reporting method to assist local residents and businesses in identifying, eliminating and reporting suspected cases:

<http://www.charlescountymd.gov/pgm/planning/illicit-discharge-program>

Guidance on septic maintenance is posted at:

<https://www.charlescountymd.gov/pgm/planning/guidelines-maintaining-your-homes-septic-system>

The County’s Septic Pump-Out Reimbursement Program is posted at:

<https://www.charlescountymd.gov/pgm/planning/septic-system-pump-out-reimbursement-program> The on-line application for Septic Pump-Out Reimbursement page follows.

Septic upgrade and septic connection to sewer assistance information is posted at:

<https://www.charlescountymd.gov/pgm/planning/septic-system-upgrade-assistance>

The Charles County Government and other websites provide information on transit options:

The local VanGo which provides public transit service within the County:

[www.charlescountymd.gov/cs/vango/vango](http://www.charlescountymd.gov/cs/vango/vango)

Southern Maryland has very high ridership rates on the commuter express bus into Washington, D.C., and citizens access the Maryland Mass Transit Authority (MTA) for route schedules via the Tri-County Council for Southern Maryland website for available Commuter and Regional Ridesharing Programs:

<http://tccsmd.org/transportation/ridesharing-program/>

Or link directly to MTA’s website for bus schedules:

<http://mta.maryland.gov/commuter-bus>

Updated information is posted on the County website regularly detailing recycling opportunities, oil/antifreeze collection sites, volume based tag-a-bag sticker locations:

Residents can also request recycling bin delivery and other type information through this website: [www.charlescountymd.gov/pw/recycling/recycling](http://www.charlescountymd.gov/pw/recycling/recycling)



For County facilities the following pet waste disposal information is provided:

The County operates two dog parks and subsequently provides etiquette rules for using the park including scooping and disposing of pet waste appropriately  
[www.charlescountyparks.com/parks/turkey-hill-white-plains-dog-parks](http://www.charlescountyparks.com/parks/turkey-hill-white-plains-dog-parks)

Additionally, pet waste signage and collection was installed at Bryan’s Road Village Green, which is a new County park and one of the County’s restoration sites.



*University of Maryland Extension in Charles County:*

University of Maryland Extension in Charles County promotes environmental stewardship by providing information and educational programs on environmental horticulture, water quality, appropriate and safe fertilizer and pesticide use, and other issues directly to the public, often face-to-face with our citizens.

The Agriculture and Natural Resources Extension Agent promotes water conservation, storm water management, and wise use of pesticides and fertilizers through personal appearances on the county cable station. Recent topics have included proper lawn care.

The Extension faculty and staff provide training to commercial landscapers, and farm operators on proper use of fertilizers and pesticides. This training includes managing storm water and farm ponds, pest control, maintaining good turf to prevent erosion, and an array of other natural resource conservation issues. Extension faculty also train volunteers to become part of the Charles County Master Gardeners, a University of Maryland outreach program providing educational information on environmental horticulture to the public.

Master Gardeners encourage maintaining the quality of our landscapes and environment through the Maryland Bay Wise Yardstick certification program, as well as through field visits throughout the County to assist citizens with their gardening problems. The volunteers also create timely educational displays and hold plant clinics at public events, such as the Charles County Fair. They continue to investigate new environmental education opportunities with local schools.

In 2009 through 2013, Extension faculty worked via a public/private partnership with County Government and a local lawn service business, MRW Lawns, Inc., to provide eight 2-hour community workshops on environmentally sound lawn care.

*Beautification Projects to Encourage Litter Control*

In Spring 2014, the Waldorf Beautification project was established by the Charles County Commissioners to guide and direct the beautification effort. The project utilizes partnerships with entities established in the Waldorf area to promote clean-up and litter control on common areas and roadways, encouraging environmentally-friendly neighborhoods with landscaping, emphasizing conservation of natural resources, and support for programs in schools to educate youth in the earth sciences.



Beautification and litter control is a countywide issue and was expanded in the first half of Fiscal Year 2015 as shown by the new logo:



- b) The County provides the following information when requested regarding NPDES permitting requirements, pollution prevention plan development, proper housekeeping and spill prevention response:

Maryland Wastewater permits Program

<http://www.mde.state.md.us/programs/Water/wwp/Pages/index.aspx>

Maryland Water Permit Applications

[http://www.mde.state.md.us/programs/Permits/WaterManagementPermits/WaterDischargePermitApplications/Pages/Permits/WaterManagementPermits/water\\_permits/index.aspx](http://www.mde.state.md.us/programs/Permits/WaterManagementPermits/WaterDischargePermitApplications/Pages/Permits/WaterManagementPermits/water_permits/index.aspx)

Maryland NPDES Industrial & General Surface Water Discharge Permits

<http://www.mde.state.md.us/programs/Water/wwp/Pages/IndustrialSurfaceDischargePermits.aspx>

Maryland Guidance for Developing Your Storm Water Pollution Prevention Plan

[http://www.mde.maryland.gov/programs/Permits/WaterManagementPermits/WaterDischargePermitApplications/Documents/Marina%20GP/10MA\\_SWPPP\\_guidance.pdf](http://www.mde.maryland.gov/programs/Permits/WaterManagementPermits/WaterDischargePermitApplications/Documents/Marina%20GP/10MA_SWPPP_guidance.pdf)

Maryland Stormwater Pollution Prevention Guidance

<http://www.mde.maryland.gov/programs/Permits/WaterManagementPermits/WaterDischargePermitApplications/Documents/GDP%20Stormwater/MD%20Stormwater%20Hotspots.pdf>

Maryland Pollution Prevention

<http://mde.maryland.gov/programs/researchcenter/factsheets/crossmediafactsheets/pages/researchcenter/factsheets/departmental/index.aspx>

- (6) *Charles County shall develop and implement a plan to reduce pollutants associated with road maintenance activities. At a minimum, an annual progress report shall be submitted that documents the following activities:*
- a. *Cleaning storm drain inlets;*
  - b. *Reducing the use of pesticides, herbicides, fertilizers, and other pollutants associated with roadside vegetative management practices through the use of integrated pest management; and*
  - c. *Controlling the overuse of winter weather deicing materials through continual testing and improvement of materials and effective decision-making.*

2015 Status (July 1 – Dec 31, 2014)

- a. The Roads Division (Roads) responds to any complaints made from residents regarding road quality, drainage, and litter. There are also routine inspections to check for drains that may not be operating properly due to silt and/or trash. Roads has used a vacuum truck for Fiscal Year 2015 to clean 25.4 tons of debris out of storm drain inlets during the first half of FY2015 (dates listed above). There was a decline in the amount of inlets cleaned because upon inspection, many inlets did not require cleaning. The lists of storm drain inlet cleanings are in Appendix F.
- b. The County has applied 570 gallons of herbicide along County roads (a road listing with amount of applied herbicides is available in Appendix F). There was an increase in the use of herbicides because the County recently had staff trained as Licensed Pesticide Applicator and needed to increase the use of herbicides for proper road maintenance.
- c. County staff and contractors are trained on proper salt calibration at least once during Fall before the season begins. The salt spreaders are all calibrated before and after use to ensure they are working properly. Roads has also eliminated the use of magnesium chloride for deicing. The standard operating procedure for deicing has also changed. Roads will not begin to spread salt until the storm is nearly over, rather than spreading salt throughout the storm event.

### III.F. Watershed Restoration

#### Overview of Permit Conditions

1. *Within 12 months of the issuance of this permit, data gathered as a result of prior NPDES activities shall be used to prioritize all watersheds within Charles County in the context of water quality. The methods and scale used to prioritize watersheds shall be determined by Charles County but must include, at minimum, documented water quality problems and the ability to address them. In Charles County's first annual report, the results of this prioritization shall be provided and shall include the methods and scale used as well as the watershed rankings for all land area in the County.*

#### FY 2015 Status (July 1 – Dec 31, 2014)

This task was completed in the June 2002 to July 2003 NPDES MS4 Annual Report.

2. *Within 12 months of the issuance of this permit, Charles County shall select a watershed, or a combination of watersheds, to be restored. The selection of the watershed to be restored shall be based upon Charles County's ability to monitor the progress of all those activities identified in PART III.F.3 below to improve water quality. At least one of the following options for watershed selections shall be used:*
  - a. *A combination of the drainage area above the in-stream monitoring station identified in PART III.D. above and additional contiguous areas equaling ten percent of Charles County's untreated impervious area;*
  - b. *A watershed or combination of watersheds equaling ten percent of Charles County's untreated impervious area where surrogate parameters can be used to determine progress toward watershed restoration; or*
  - c. *A combination of PART III.F.2.a. and PART III.F.2.b. above equaling ten percent of Charles County's untreated impervious area.*

#### FY 2015 Status (July 1 – Dec 31, 2014)

##### *Calculating Impervious Surface*

In an October 2003 Addendum to the June 2002 - July 2003 NPDES MS4 Annual Report, the procedure for determining the impervious restoration acreage goal using option (b) from the above choices, was described and is summarized below, including the iterations that followed.

The 12-digit subwatershed prioritization conducted in 2003 identified part or all of the top nine lowest quality/highest priority for restoration subwatersheds within the Development District. Thus, the Development District was used as the study area for which untreated impervious calculations were made and where specific study areas for potential restoration/retrofits were identified.

For the preparation of the watershed restoration studies in 2004, 2007 and 2011, the method for calculating impervious surface was updated to use the latest available data and technology. In 2004, impervious percentages were calculated for the treated and untreated areas using the 1997 Maryland Department of Planning Land Use/Land Cover GIS data and the recommended imperviousness conversion factors.

In 2007, the impervious coverage was digitized from 2004 aerial photographs using Feature Analyst, a software package that uses ArcGIS and iterative methods to identify color differences on aerial photographs associated with impervious versus open space areas. This method provided a much more accurate measurement of impervious area within the County than was calculated for the 2004 study. In 2010, the impervious area was calculated again using the same ArcGIS software package, and the 2007 aerial photography.

Treated and untreated impervious areas were calculated for the Development District using the following procedure.

- BMP drainage areas were delineated using existing locations of outfalls and their associated drainage areas where data was available. Where data was not available, the remaining BMP drainage areas were delineated using topography and storm drain mapping.
- Areas draining to BMPs were tagged as "treated." Areas that did not drain to a BMP were tagged as "untreated."

In 2013, Spatial Systems Associates, Inc. completed the impervious surface GIS polygon data layer for the County based on 2011 aerial photography.

Later in 2013, to further develop the necessary data for the anticipated expansion of the restoration requirement from the current permit area (Development District) to the entire County, Vista Design, Inc. was contracted to complete an Impervious Area Assessment by Era of the entire County. Earlier studies estimate the County's impervious areas within the Development District, but Vista's work seeks to establish the limits of the County's entire impervious areas, and determine the level of existing water quality treatment currently provided to those areas.

In the performance of their work, Vista utilized current County and State GIS mapping data, as well as limited field observations, to review each developed area, and categorize it as having occurred within one of three Stormwater Management Eras: 1) Prior to 1985 (no water quality provided), 2) between 1985 & 2002 (partial water quality provided), or 3) after 2002 (water quality treatment per current required levels). After categorizing all parcels, Vista Design prepared the Impervious Surface Area Assessment in accordance with MDE guidelines.

As part of the Impervious Surface Area Assessment, Vista Design, Inc. and County staff, identified areas which appear feasible for retrofit water quality restoration areas for use in satisfying the County's anticipated requirement to treat 20% of the County's currently untreated impervious areas. Potential restoration areas were rated based upon the amount of currently untreated impervious areas which the facility could treat and assessed for possible impacts a new/enlarged facility would have on surrounding land owners. Highly rated areas then progress to conceptual design, and potentially final engineering design and construction.

3. *Within 24 months of the issuance of this permit, Charles County shall complete and submit for MDE approval a detailed assessment of the watershed or combination of watersheds selected in PART III.F.2.above. At a minimum, the assessment shall:*
  - a. *Determine current water quality conditions;*
  - b. *Identify and rank water quality problems;*
  - c. *Identify all structural and non-structural water quality improvement opportunities;*
  - d. *Include the results of a visual watershed inspection;*
  - e. *Specify how the restoration efforts will be monitored; and*
  - f. *Provide an estimated cost and a detailed implementation schedule for those improvement opportunities identified in PART III.F.3.c. above.*

*After completing the assessment of its selected watershed, Charles County shall submit a detailed watershed assessment for an additional watershed equaling ten percent of the County's untreated impervious area to MDE by the end of this permit term.*

#### FY 2015 Status (July 1 – Dec 31, 2014)

Three watershed restoration studies, dated 2004, 2007, and 2011, were prepared, each to address 10% of the untreated impervious area in the County's Development District only. These studies form the basis for restoration under the second generation permit. However, in preparation for the third generation permit, countywide watershed assessments have begun, and are described at the end of the historical summary below.

*2004 Watershed Restoration Study*

Per the 2004 Watershed Restoration Study, the total treated and untreated impervious acres for the entire Development District, were 2,250.12 acres and 3,456.96 acres respectively. Ten percent of the Development District's untreated impervious surface was 345.70 acres.

To ensure that an adequate number of sites and untreated impervious acres would be selected that would be eventual candidates for restoration/retrofit design, the study areas were selected to be much larger than the 345.70 acre goal. Seven study areas were ultimately selected that together equal 645.45 acres of untreated impervious area, as shown below.

Study Area Name	Total Study Area (acres)	Area Untreated (acres)	Area of Untreated Impervious Cover (acres)
Acton/Hamilton	865.40	577.43	131.42
Briarwood	51.88	51.86	13.30
Bryans Road	16.24	16.24	11.84
Carrington	1,388.95	1,276.45	212.93
Marbella Delight	103.64	101.95	61.13
Pinefield	687.49	686.62	192.75
Pinefield South	95.23	89.21	22.08
Total	3,208.83	2,799.76	645.45

The complete Watershed Restoration Study was provided in the June 2003 through July 2004 NPDES MS4 Annual Report. The Study found potential improvements that could be applied to restore watershed hydrology and water quality were identified from literature review and prior experience. The improvement alternatives fall into the following six categories, in the preferred order of implementation.

- Source Control      Pollution prevention and non-stormwater discharge control programs
- Land Use              Land conservation and site design measures. Low Impact Development (LID) site planning measures are included here.
- BMP Retrofits        Conversion of existing quantity controls to water quality BMPs
- Multi-site BMPs     End-of-pipe structures, such as ponds, wetlands, and outfall treatments
- Onsite BMPs         Systems designed to reduce stormwater impact at the lot level. LID structural BMPs are included here.
- Stream Restoration   In-stream projects, such as channel stabilization or riparian buffer restoration.

Cost estimates were developed for structural BMPs in the form of unit costs, so that an estimate of the cost of retrofitting a large area could be derived from the size of the systems needed to provide treatment. The costs included design, permitting, and construction, but not right-of-way acquisition, or annualized costs for BMP maintenance or outreach programs.

The approach to developing restoration alternatives for each study area was as follows:

1. Identify the primary impairment in the drainage area.
2. Identify constraints
3. Select potential improvements which address the impairment within the constraints
4. Develop cost estimates
5. Prioritize projects based on cost-effectiveness

The Watershed Restoration Study was presented to the Charles County Commissioners in November 2004, and was approved for implementation. The following prioritization list includes the three study areas with the greatest amount of impervious surface for restoration: Carrington, Pinefield, and Acton-Hamilton. In addition, Bryans Road is included as a County initiative under the Bryans Road Sub-Area Plan.

The prioritization is based on meeting the 10% restoration goal with the fewest areas of impact, which will enable the County to focus outreach, land acquisition, and management efforts, minimize time and cost of construction, and to completely address water quality in the areas of concentration. The estimated costs and areas treated have been refined since 2004 and the following table has been updated to reflect this.

*2004 Watershed Restoration Plan - Estimated Cost and Implementation Schedule\*:*

		Description	Design	Right-of-Way & Construction	Impervious Treated (acres)
FY06-FY09	Carrington	Shallow Marsh	\$126,675		
	Carrington	Shallow Marsh		\$ 1,502,277	45
FY10-FY11	Bryans Road	Underground Storage	\$64,110		
	Pinefield	Wetpond 1 and Filterras**	\$214,490		
	Acton-Hamilton	Bio-Swales (not feasible)	\$96,860		
FY12-FY13	Bryans Road	Underground Storage		\$ 1,302,005	9
	Pinefield	Wetpond 1		\$ 632,269	23
	Pinefield	Wetpond 2	\$50,000		
	Pinefield – Temi Dr.	Submerged Gravel Wetland	\$52,200		
	Acton-Hamilton	Submerged Gravel Wetland	\$86,000		
FY14-FY15	Pinefield	Wetpond 2		\$500,000	13
	Pinefield – Temi Dr.	Submerged Gravel Wetland		\$650,000	13
	Acton-Hamilton	Submerged Gravel Wetland		\$ 2,000,000	40
TOTALS			\$640,335	\$6,086,551	131

*\*Updated in 2012. \*\* The Pinefield filterras have been designed to treat 13 impervious acres at a cost of \$1,187,731, but have been put on hold.*

*2007 Watershed Restoration Study*

For the 2007 study, impervious coverage was digitized from 2004 aerial photographs using Feature Analyst, a software package that uses ArcGIS and iterative methods to identify color differences associated with impervious versus open space areas. This method provided a much more accurate measurement of impervious area within the County.

The total impervious area within the Development District was approximately 4,581 acres, based on the digitized impervious boundaries. Of that amount, 2,607 acres is currently untreated. The improvement recommendations outlined in the 2004 study addressed the treatment of 402.58 acres of untreated impervious area, as recalculated with the new impervious coverage. This is approximately 15% of the total untreated area in the Development District. Meeting the 20% restoration goal would require an additional 119 acres treated.

For the 2007 Watershed Restoration Study, ten study areas were identified that contained a large percentage of untreated impervious area within an impaired stream system. To ensure that an adequate number of sites and untreated impervious acres would be selected that would be eventual candidates for restoration/retrofit design, the study areas were selected to be much larger than the 119 acre goal. The ten study areas that were ultimately selected equal 276.16 acres of untreated impervious area, as shown below.

<b>Study Area Name</b>	<b>Total Study Area (acres)</b>	<b>Area Untreated (acres)</b>	<b>Untreated Impervious Cover (acres)</b>
Fox Run	33.82	33.82	9.40
Lancaster	42.90	40.84	13.06
West Lake Village	267.59	261.45	63.81
Ryon Woods	140.39	136.80	27.08
White Plains	327.97	231.04	31.21
St. Charles	1609.18	409.67	77.21
Wakefield	49.20	49.20	12.94
Bannister	28.33	28.33	6.30
Hunt Club Estates	135.61	131.55	15.39
Northwood	107.72	61.11	19.76
<b>Total</b>	<b>2742.71</b>	<b>1383.81</b>	<b>276.16</b>

These study areas include impervious area from state highways, which are subject to Maryland State Highway Administration's (MSHA) Statewide NPDES permit and not part of the County's responsibility. As highway projects are constructed, there may be an opportunity to share funding for BMP construction, along with credit for pollutant removal from runoff subject to both MSHA and County permits.

Of the nine selected areas, three were selected for stream walks (West Lake Village, White Plains, and St. Charles). The inspection consisted of a walk-through of approximately 7,400 linear feet of perennial/ephemeral streams. The inspection included physical and habitat assessment and documentation of problem areas, including:

- Storm drain outfalls
- Stream channel lateral and vertical erosion
- Channel blockages and/or fish obstructions
- Dumping
- Failing septic or sewer systems
- Buffer impairments or encroachments
- Exposed utilities

<b>Study Area</b>	<b>Type of Monitoring</b>
Fox Run	Habitat, geomorphic assessment
Lancaster	Habitat, geomorphic assessment
West Lake Village	Biomonitoring, physical water quality, habitat, water quality grab
Ryon Woods	Geomorphic assessment
White Plains	Biomonitoring, physical water quality, habitat, water quality grab
St. Charles	Physical water quality, habitat, water quality grab, geomorphic assessment
Wakefield	Physical water quality, habitat, water quality grab
Hunt Club Estates	Habitat, geomorphic assessment
Northwood	Physical water quality, habitat, geomorphic assessment

#### POTENTIAL MANAGEMENT ALTERNATIVES

The improvement alternatives identified to address some of the issues described above fall into the following six categories:

- Source Control: Pollution prevention and non-stormwater discharge control programs
- Land Use: Land conservation and site design measures. Low Impact Development (LID) site planning measures are included here.
- BMP Retrofits: Conversion of existing quantity controls to water quality BMPs
- Multi-site BMPs: End-of-pipe structures, such as ponds, wetlands, and outfall treatments
- Onsite BMPs: Systems designed to reduce stormwater impact at the lot level. LID structural BMPs are included here.
- Stream Restoration: In-stream projects, such as channel stabilization or riparian buffer planting

Forty-two restoration opportunities were identified within the study areas, which combined would treat approximately 142 untreated impervious acres. These include construction of bioretention

areas, small wet ponds, water quality swales, and performing stream restoration or stabilization of failing outfalls. Site-specific discussions and concept plans are included in the 2007 Watershed Restoration Study Report for the priority projects. Prioritization was based on the level of impairment within the receiving waters, amount of impervious drainage to the project limits, and estimated cost of the project. The Study was included with the 2007 NPDES MS4 Annual Report.

The estimated costs and areas treated have been refined since 2007 and the following table has been updated to reflect this. The updated total areas treated have decreased from original estimates, some projects were not feasible, and the estimated cost per acre treated is \$57,418.

*2007 Watershed Restoration Plan - Estimated Cost and Implementation Schedule\*:*

		Description	Design	Right-of-Way & Construction	Impervious Treated (acres)
FY12-FY13	Bannister	Retention Pond (not feasible)	\$281,860		
	Fox Run	Regenerative Step Pool Conveyance			
	Lancaster	Stream Restoration (not feasible)			
	Northwood	Regenerative Step Pool Conveyance			
	Ryon Woods	Grass Channel			
	White Plains	Gravel Wetland			
	St. Charles	Retention Pond & Stream Restoration	\$100,000		
FY14-FY15	Fox Run	Regenerative Step Pool Conveyance		\$600,000	10
	Northwood	Regenerative Step Pool Conveyance		\$800,000	23
	Ryon Woods	Grass Channel		\$50,000	1
	White Plains	Gravel Wetland		\$530,000	6
	St. Charles	Retention Pond & Stream Restoration		\$1,600,000	29
		<b>TOTALS</b>	\$381,860	\$3,580,000	69

\*Updated in 2012.

### *2011 Watershed Restoration Study*

In January 2010 the County contracted with KCI Technologies, Inc. to prepare a third watershed restoration study for an additional 10% untreated impervious surface. It was determined that the total impervious area within the Development District, based on the 2007 data, was 5,508 acres. Of this 2,863 acres have been identified as untreated. Therefore, the restoration goal for the 2011 study was 286.3 acres, which represents 10% of the untreated impervious area.

A variety of study areas were identified for retrofit. These areas were identified based primarily on the amount of untreated area in the development draining to the sites. The study areas include impervious area from state highways, which are subject to Maryland State Highway Administration's (MSHA's) Statewide NPDES permit and not part of the County's responsibility.

As highway projects are constructed there may be an opportunity to share funding for BMP construction, along with credit for pollutant removal from runoff subject to both MSHA and County permits.

The potential project areas were identified in ArcGIS using the treated area polygon and aerial photography. These areas were printed on maps and compared against known proposed development to narrow down the areas most likely for retrofits. 75 individual retrofit sites were identified within the 28 study areas. The proposed impervious area to be treated was approximately 50% of the 286 acre goal. Design and construction of such a large number of sites would be prohibitively expensive. Therefore the majority of sites, with modest to minimal treatment benefits, were eliminated from consideration.

Concept plans were developed for a final list of 17 proposed projects within 9 study areas treating approximately 37 acres of impervious surface. The study estimates the average restoration cost is \$129,000 per impervious acre. See the following table for the list of projects.

Study Area	Number of Proposed Projects
Marbella Delight	3 (Dry Swales, Bioretention)
Northwood	2 (Bioretention, Filterra)
Jenifer Elementary School	1 (Shallow Marsh)
Berry Road North	2 (Bioretention, Dry Swales)
Briarwood	1 (Step Pool Stormwater Conveyance)
Leonardtwn Road	2 (Pond Retrofit, Dry Swales)
Pinefield Center	1 (Retention Pond/ Improved Drainage System)
Potomac Branch Library	1 (Bioretention)
MD-301 Commercial Corridor	4 (Bioretention, Pavement Removal)

The estimated costs and impervious areas treated have been refined since 2011 per the following table.

*2011 Watershed Restoration Plan - Estimated Cost and Implementation Schedule\*:*

		Description	Design	Construction	Impervious Treated (acres)
FY12-FY13	Northwood (a.k.a. Holly Station)	Retention Pond, Bioretention & Swale	\$50,000		
FY14-FY15	Northwood (a.k.a. Holly Station)	Retention Pond, Bioretention & Swale		\$450,000	9
		TOTALS	\$50,000	\$450,000	9

*\*Updated in 2012.*

*2013 – 2018 Detailed Watershed Assessments*

To prepare for the third generation NPDES MS4 permit, in April 2013 the County contracted with KCI Technologies, Inc. to prepare detailed watershed assessments for the 10 major watersheds in the County. These assessments include restoration opportunities identified by the County Capital Service's consultants, such as Vista Design, Inc., Bayland Consulting, GMB, and other sources. Following is the watershed assessment completion schedule for the assessments.

Contract Year	MD 8-digit Watersheds	Number of 12-digit Subsheds	Area (sq mi)	Stream Length (mi)	Synoptic Sampling Sites
1	Port Tobacco River	5	43.9	104.5	47
2	Mattawoman Creek	9	69.9	140.1	51
2	Patuxent River Lower	4	28.2	37.9	14
3	Gilbert Swamp	10	39.0	93.2	34
3	Zekiah Swamp	16	102.0	195.5	72
3	Wicomico River	5	27.3	49.3	18
4	Potomac River Upper Tidal	1	3.2	4.6	2
4	Potomac River Middle Tidal	3	30.1	59.2	22
4	Potomac River Lower Tidal	5	44.3	65.9	24
4	Nanjemoy Creek	5	73.0	134.0	49

As described in section III.F.2. above, in 2014-2015 the limits of the County's entire impervious surface based on polygons will be calculated, and the level of existing water quality treatment currently provided to those areas will be calculated to determine the best approach to achieve the watershed restoration goal.

4. *Within 30 months of the issuance of this permit, Charles County shall begin to implement restoration efforts according to the schedule outlined in PART III.F.3.f. above. Annual reports shall document:*
  - a. *The progress toward meeting the schedule identified in PART III.F.3.f. above;*
  - b. *The estimated cost and the actual expenditures for program implementation; and*
    1. *The monitoring data or surrogate parameter analyses used to determine water quality improvements.*

FY 2015 Status (July 1 – Dec 31, 2014)

Following is the historical progression of building the County's program to initiate the 10% impervious surface restoration goal. Completion of the 10% within the permit term is not required. Each project undertaken towards the goal is described, along with the issues encountered.

*Carrington – Shallow Marsh Projects*

In Fiscal Year 2005 the County began the first three Capital Improvement watershed restoration projects in Carrington Neighborhood. Two of these are wetland habitat projects on elementary school sites and the third is a water quality feature on neighborhood association property. Success of the proposed Carrington watershed restoration projects depended on support and interest from the community and the schools.

Charles County issued a request for proposals in the Fall of 2005 to have the three Carrington projects designed. Design began January 2006, and was completed in the Fall of 2006. Construction of the project was bid in November 2006 and awarded to Environmental Quality Resources, LLC in February 2007.

A ribbon-cutting event for both wetland projects was held on April 16, 2008. The event was titled, “Connecting Children to Nature – Schoolyard Habitat Celebration and Fishing Derby.” This event was videotaped for running on the County's and the School's cable channels and was aired in 2008. The Charles County Department of Planning and Growth Management received the *2010 Grand Award* and the *2010 Outstanding Project Award in Environmental* for the projects by the American Council of Engineering Companies of Maryland.

See permit Section III.D.1 of Part 1 of this report for chemical monitoring of the restoration project at Middleton Elementary School.

*Pinefield – Pond Retrofit*

Request for Proposals (RFP) 08-36 for the design and engineering of Pinefield and Acton-Hamilton projects was released in April 2008. The RFP was for full concept and engineering, which was determined to be too open-ended and causing inflated bid pricing. To address the inflated bid pricing, Addendum #1 was issued in May 2008, postponing bids, until the County could have 25% design completed and remove the uncertainty in project scope. In July 2009, RFP 09-40 was released which included concepts. Bids were received in August 2009, and Vista Design, Inc. was awarded the contract to begin work November 2009.

Improvements in Pinefield included expanding a wet pond, adding filterrras, as well as pipe repair and outfall replacement of the pipe on Dogwood Drive that daylighted behind Holly Avenue and an outfall pipe on Temi Drive. The County's permit for Pinefield is VCI 090111.

In 2012, Dogwood Drive Drainage Improvements were bid for construction under RFP 12-04 and completed. This consisted of partially replacing and rehabbing a major drainage pipe that was failing in several locations. In 2013 the Temi Drive outfall pipe repair was complete.

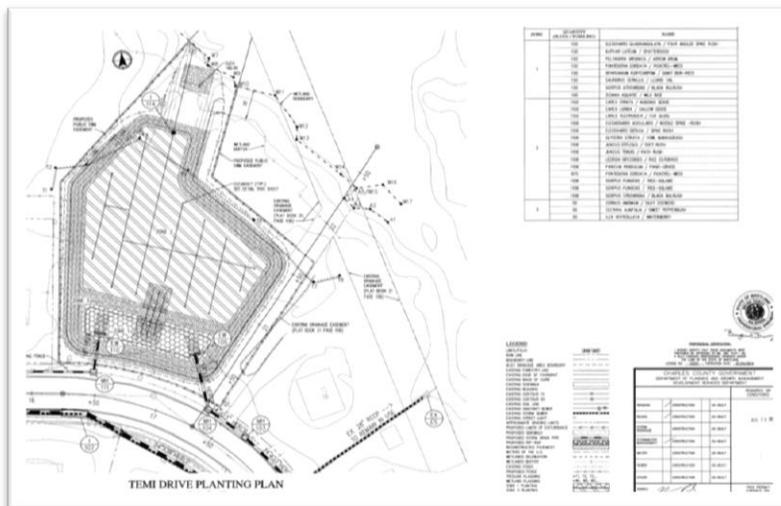
Due to the completion of the U.S. Army Corps of Engineers’ *Stormwater Improvement Plan for Pinefield*, July 2011, the filterras that had been previously designed and issued construction permits, were put on hold to be potentially superseded or done in conjunction with the U.S. Army Corps of Engineers stormwater drainage improvements. The U.S. Army Corps of Engineers’ plan included treating much of the drainage area to the filterras via a less costly retention pond. However designing the retention pond was dependent upon the County obtaining access to the property. Permission to access project sites and property acquisition continue to be a significant time consuming part of the watershed restoration process.

Construction to enlarge the pond to treat an additional 22 acres of untreated impervious area began under RFP 12-18 in August 2012 and completed in May 2013 by Sandy Excavating, Inc. Photos of the pond construction and Temi Drive outfall repair can be found in the 2013 NPDES MS4 Annual Report.

*Pinefield at Temi Drive - Submerged Gravel Wetland*

In 2012, Vista Design, Inc. completed a watershed restoration concept for an additional portion of Pinefield called Temi Drive that will reroute drainage from a corroded steel pipe and eroded outfall, to a gravel wetland that will provide water quality treatment for approximately 15.2 acres of untreated impervious area. In 2013 the gravel wetland began design under permit VCI 130063.

In 2014 the Temi Drive project received bids under Instruction to Bidders (ITB) 15-10 for construction and again in 2015 under ITB 16-10. The project should begin construction in Spring 2016. The facility has been proposed in the Pinefield Civic Association open space along Temi Drive at the lowest elevation. A graphic of the approved design follows.



*NPDES Temi Drive Concept*

*Acton-Hamilton – Submerged Gravel Wetland and Created Wetland*

Request for Proposals (RFP) 08-36 for the design and engineering of Pinefield and Acton-Hamilton projects was released in April 2008. Bidding on the RFP was postponed until 25% design could be completed. In July 2009, RFP 09-40 was released, and bids were received in August 2009, and Vista Design, Inc. was awarded the contract for VCI 090112.

Improvements in Acton-Hamilton were subject to re-evaluation in 2010. This included issuing change orders to (1) delete proposed bioretention facilities and replace with filtergrass, (2) delete dry swales and replace with bioretention, and (3) preliminary surveying, engineering and permitting services in support of a regional stormwater concept. Due to the complete revamp of the project, the regional stormwater facility was initiated under permit VCI 120088.

Staff and the consultant met with Maryland Department of the Environment (MDE) regarding the regional stormwater concept, which MDE supported. This project was designed to treat over 40 acres of impervious surfaces from areas near Route 301 west to Timberbrook Drive. This project is being designed as a submerged gravel wetland. Minimum disturbance to the existing stream is proposed. In 2013, the permit is 100% complete with the Charles Soil Conservation District and MDE approval. There is a small list of easements to be acquired prior to the project being constructed. Additional delays to construction include the necessary engineering to reroute a sewer line from running through the center of the proposed facility, which had not been known to exist in the area. Designing and rerouting the sewer line around the proposed facility began in 2012. Final permitting and construction is anticipated in 2016.



*Acton Hamilton Submerged Gravel Wetland*

*Bryans Road – Underground Storage and Dry Swale*

In June 2007, the County hired Johnson, Mirmiran and Thompson (JMT) to develop a preliminary design study report for the Bryans Road Town Common to incorporate stormwater management for the site. On June 11, 2008 JMT presented the final concept to the County Commissioners who agreed to take the project to the Bryans Road Improvement Committee for discussion and proceed with land acquisition and engineering. The project proposes to treat approximately 9+ acres of untreated impervious surface and also serve as a Bryans Road Town Square to help revitalize the town center and attract new mixed use development. In July 2009 the engineering of the Bryans Road Town Common was awarded to Vista Design, Inc. The owner of the property did not allow soil borings during the County's acquisition process, which delayed the engineering until June 2010, when the property was finally acquired. The engineering under permit VCI 090078 was completed in late 2011.

The Bryans Road Town Common includes underground detention pond for treating runoff from the shopping center parking area, and a dry swale along Matthews Road that treats the roadway and a portion of the rooftop of the shopping center. Additional features include landscape islands to delineate traffic lanes through the parking area, pedestrian linkages (including a bridge) from senior housing to nearby restaurants, and new underground drainage infrastructure to the facility. In June 2012 the construction of Bryans Road NPDES project was bid under RFP 12-15 and in August 2012 was awarded to Sandy Excavating, Inc. Construction began in the Fall of 2012 and completed in October 2013. Photos of the construction can be found in the 2012 NPDES MS4 Annual Report. Photos of the completed project are in the 2013 NPDES MS4 Annual Report. In August 2014 educational signage about how the project functions to clean the stormwater was installed at the park entrance. A full layout of the sign can be found in Section III.E.5 of this report.

*Potomac Heights Community – Dry Swales, Check Dams, and Wet Pond*

Potomac Heights is a 126 acre site in the County's Development District along the Potomac River just north of the Town of Indian Head. The community is owned by the Potomac Heights Mutual Homeowner's Association (HOA) with no individual home lots. The community was constructed long before codes regulating stormwater were in place. The existing stormwater treatment and drainage system includes improperly placed and non-standard structures, under-sized pipes, lack of appropriate cover, flat or negligible slopes and no means for treating stormwater runoff for quality. In many areas stormwater runoff from the roadways is directed towards homes causing flooding and property damage.

The project includes road improvements, swales, pipes and stormwater facilities to address the flooding problems and water quality management for 26 acres of untreated impervious surface.

The HOA is primarily interested in drainage improvements, however the County offered to fund any water quality improvements that could be achieved through the proposed drainage improvements.

The project was submitted to the County for permit review in August 2009 under VR 090077. The project has recently received all applicable permits and is scheduled for construction under permit VR 090077. The County's proposed cost share for water quality improvements is \$720,645. This is proposed to be funded through the NPDES program at an average of \$26,990 per treated acre. In December 2013 the County agreed to cost share the stormwater restoration improvements to ensure impervious surface credit towards the NPDES MS4 permit requirements. The agreement is recorded in Liber 8432 Folio 314.

In 2012 the applicant applied for a new permit for the improvements under VR 120095. The project was issued a permit on August 19, 2014. In 2015, construction is underway.

*Bannister, Fox Run, Lancaster, Northwood, Ryon Woods and White Plains*

The RFP 11-09 for design and engineering of watershed restoration projects was issued for response in January 2011. The County received 17 bids and selected Vista Design, Inc. The project consists of field and research reconnaissance of site-specific data, conceptual, preliminary, semi-final, and final design phases. Public information meetings with stakeholders and coordination with property owners of the four affected neighborhoods and or locations to solicit input and address concerns took place during Fiscal Year 2013. The conceptual projects for each community proposed to address 54.6 acres of untreated impervious area, however as described below the acreage has been revised based on engineering plans.

*Projects included in RFP 11-09:*

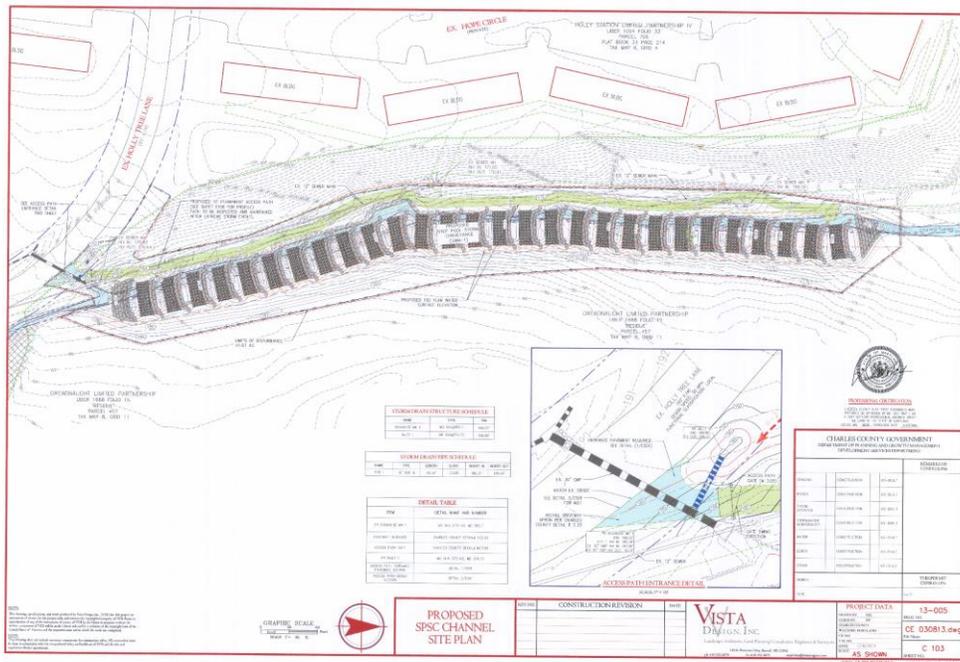
<b>Community</b>	<b>Project Type</b>	<b>Treated Impervious Area</b>
Bannister	Retention Pond	6.3(On hold, not currently feasible)
Fox Run	Outfall Stabilization, Channel Restoration	9.5
Lancaster	Channel Restoration	12.5(On hold, not currently feasible)
Holly Tree Lane (a.k.a. Northwood)	Channel Restoration portion only (Retention Pond, Infiltration, Bioretention on hold)	48 (Revised from 12.3 acres)
Ryon Woods	Channel Restoration, Infiltration	1 (Revised from 4.7 acres)
White Plains	Infiltration/Shallow Wetland	5 (Revised from 9.4 acres)

As design began, it was determined Bannister and Lancaster were not currently feasible and put on hold. The other projects began the design process under the following permits: Fox Run VCI 110102; Ryon Woods VCI 110099; and White Plains VCI 120067. Northwood had previously been a stream restoration project designed and permitted under VCI 080068 by AB Consulting,

Inc. associated with a County road project. However it was determined that redesigning this project into a regenerative step pool conveyance system would provide additional acres of water quality treatment, thus the project evolved into two separate projects: the redesign of the stream restoration permitted under Holly Tree Lane VCI 130058, with a separate design for stormwater retention pond, bioretention, and water quality swale. Two bids were received in November 2012 for the Holly Tree Lane regenerative step pool storm conveyance, which was awarded to Vista Design, Inc. early in 2013.

### *Holly Tree Lane (a.k.a. Northwood) - Step Pool Storm Conveyance*

The NPDES project, permitted under VCI 130058, is designed to treat over 28 acres of untreated impervious area from Route 301 to Holly Tree Lane, via step pool storm conveyance system. The project was bid under Invitation to Bidders 16-03 for construction in Spring 2016. Following is a graphic of the project.



*Holly Tree Lane Step Pool Conveyance System*

*Fox Run – Step Pool Storm Conveyance*

Fox Run NPDES project was issued a construction permit under VCI 110102 on April 24, 2014. The project was designed to treat 9.51 acres of untreated impervious area in the neighborhood of Fox Run. This project also improves issues with the outfall pipe and severe erosion at the outfall channel. The project has been designed as a step pool storm conveyance system. No right-of-way is needed, since the County owns the property. In April 2013 the Charles County Commissioners recorded a 15.68 acre Forest Conservation easement over the existing forest on the property to establish a Forest Conservation Bank.

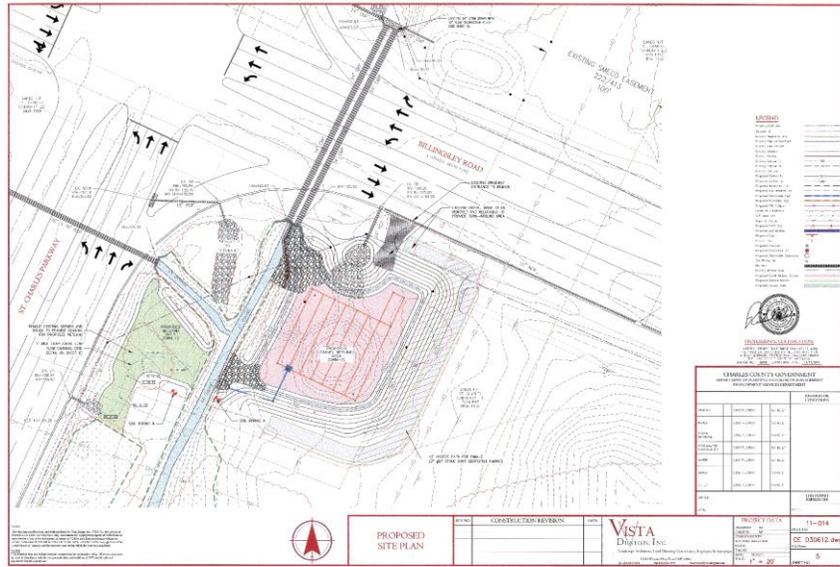
The step pool project was publicized under Invitation to Bidders (ITB) 13-24 in May 2013. A contract was awarded to Reliable Contracting in the amount of \$823,015. Notice to Proceed was issued on September 10, 2013 and the project was completed by October 2014. Photos of the project when it was first identified, after temporary restoration, and after final step pool implementation are included in the 2014 NPDES MS4 Annual Report.

*Ryon Woods – Grass Swales, Level Spreader, and Check Dams*

Ryon Woods NPDES project VCI 110099 was designed to treat over 1 acre of untreated impervious area and also correct serious drainage issues for the neighborhood of Ryon Woods. The project consists of two separate grass swales with check dams designed for water quality. In addition, drainage was redirected from homeowners' yards. Right of way acquisitions were completed early in 2013. In September 2013, a purchase order was awarded to Macia Construction in the amount of \$23,550 to construct the project. The project was completed in Fall 2013. Photos of the completed project are in the 2014 NPDES MS4 Annual Report.

*White Plains – Submerged Gravel Wetland*

The White Plains NPDES project VCI 120067 is being designed to treat 5.25 acres of impervious surfaces from the White Plains area. This project is designed as a submerged gravel wetland with minimum disturbance to the existing stream. In 2014, the engineering plans are 100% complete with Charles Soil Conservation District approval and MDE permit approval imminent. There is a small list of easements required before this project can be constructed. Below is a graphic of the project.



*White Plains Shallow Wetland*

*Port Tobacco - Stream Restoration*

In 2014 Charles County partnered with the Port Tobacco River Conservancy to have LimnoTech apply for a National Fish and Wildlife Foundation Chesapeake Bay Stewardship Technical Assistance grant for the design, engineering and permitting of restoration of the Port Tobacco River just below the Port Tobacco Road bridge. This grant was awarded in June 2014, and surveying began in August 2014. Engineering was 90% complete in 2015. Delays began in 2015 due to the need for an historical assessment prior to MDE permit approval, and negotiations with the owners for access or purchase of the property. A full description of the project is part of the grant application which is in Appendix P of the 2014 NPDES MS4 Annual Report.

*Tenth District Fire Department – Redevelopment*

This project is permitted under VC 140006, and is a redevelopment project requiring partial stormwater management, however full stormwater management was provided. All redevelopment projects count towards the restoration goals of the County, and the County has started to track these for credit.

*Benedict Point – Shoreline Erosion Control, Tree Planting, and Bioretention*

In 2014, the County began evaluating stormwater restoration for the Benedict Point property to determine the needs and cost effective restoration opportunities. The County Commissioners requested that all environmental remediation be completed prior to consideration for acquisition.

*Historic Benedict Village Enhancement - Redevelopment*

A small redevelopment project was completed under VCI 140021 for the State of Maryland 1812 Commission and National Park Service. Existing impervious surface was removed and a raingarden installed. The project was completed in August 2014. A photo is included in the 2014 NPDES MS4 Annual Report.

*County Road Projects*

*Acton Lane* - As the County improves or expands existing roads there is the opportunity to treat existing untreated impervious surface. In Fall 2014 the Acton Lane Phase 3 sediment basin, located at the end of Tred Avon Court, was successfully converted to a stormwater management facility under permit VCI 040021, effectively treating 8 impervious acres. A picture of the completed pond follows.



*Acton Lane Wet Pond in 2014*

*Stavors Road* - In November 2012, engineering of Stavors Road is at 100% completion under permit VCI 110060. The proposed facilities are estimated to cost of \$200,000 and provide stormwater management for 4 acres of untreated impervious area. However, this project requires extensive easements to proceed to construction.

*Tanglewood* – This project was first identified as a failed stormwater facility and which has been redesigned with a step pool storm conveyance system outfall under VCI 150005 to treat 11.97 acres of previously untreated impervious surface. The project was bid under Invitation to Bidders (ITB) 16-09 in the Fall of 2015 for anticipated Spring 2016 construction.

*Old Washington Road* - In Fall of 2014 the County issued a request for proposals (RFP) for the design of the County’s first green street. RFP 15-16 is titled, “Waldorf Urban Redevelopment Corridor Infrastructure Improvements Study,” and is for the upgrade of the Old Washington Road corridor. This area was rezoned in recent years to accommodate a transit oriented, mixed-use, walkable urban center in Waldorf. As part of this 300 acre redevelopment, the study will include a Stormwater Master Plan to determine the feasibility of incorporating and maximizing stormwater management from the study area in the design of Old Washington Road as a green street. For more details on the Stormwater Master Plan, see the Special Provisions of the Scope of Work in Appendix J in the 2014 NPDES MS4 Annual Report. Following is a graphic of the study area:

Waldorf Urban Redevelopment Corridor Infrastructure Improvements Study

RFP#15-16

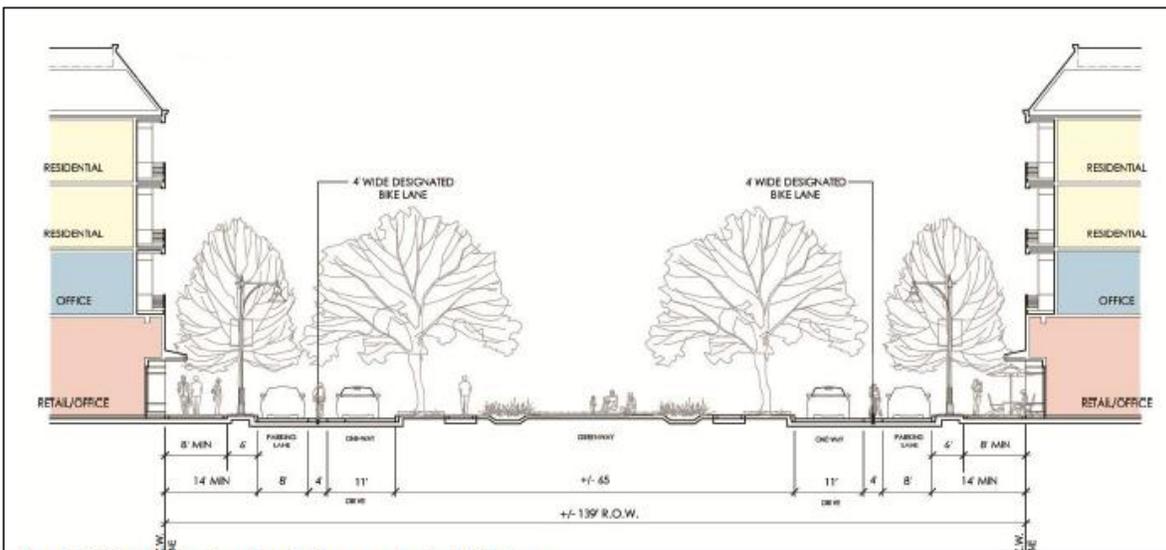


Figure 7.1. Waldorf Urban Local Road: One-way road along Civic Green.

Source: Downtown Waldorf Vision Plan & Design Guidelines, 2010.

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*Table 15: Watershed Restoration Progress in the Development District (Fiscal Years 2006 - 2015)*

	Description	Design	Right-of-Way & Construction	Acres Treated (proposed)	Acres Treated (complete)	Balance (acres)
<b>Goal: Initiate Restoration of 10% of Untreated Impervious Surface in the Development District</b>						<b>286</b>
FY06-FY07	Carrington	126,675				
FY08-FY09	Carrington		1,502,277		45	241
FY10-FY11	Bryans Road	64,110				
	Pinefield	214,490				
	Acton-Hamilton Bioswales (not feasible)	96,860				
FY12-FY13	Bannister (not feasible)	281,860				
	Fox Run					
	Lancaster (not feasible)					
	Holly Tree Lane					
	Ryon Woods					
	White Plains					
	Bryans Road		1,302,005		10.23	230.77
	Pinefield – Pond Retrofit		632,269		22.34	208.43
	Pinefield – Temi Drive	52,200				
	Acton-Hamilton – Submerged Gravel & Created Wetland	86,000				
Stavors Road Improvements	5,000					
FY14-FY15	Fox Run		823,015		9.51	198.92
	Ryon Woods		30,000		0.95	197.97
	Acton Lane Roadway		250,000		8	189.97
	Potomac Heights		720,645	26		163.97
	Holly Tree Lane		1,800,000	28.3		135.67
	White Plains		450,000	5.25		130.42
	Stavors Road Improvements		200,000	3.55		126.87
	Pinefield – Temi Drive		510,000	15.2		111.67
	Acton-Hamilton – Submerged Gravel & Created Wetland		1,200,000	34.9		76.77
	Tanglewood	80,000	1,200,000	11.97		64.8
	Charles County Plaza	32,150				
	Post Office Lake	6,250				
	Wakefield Lake	6,000				
Melwood	10,300					
Old Washington Road	160,000					

*Table 16: Watershed Restoration Progress Outside of Development District (Fiscal Years 2014 - 2015)*

	Description	Design	Right-of-Way & Construction	Acres Treated (proposed)	Acres Treated (complete)	Total
FY14-FY15	Port Tobacco Stream Restoration VCI 140076	55,000*				
	Benedict Point Shoreline Erosion Control	8,515				
	Department of Public Works Campus Stormwater Retrofit	19,980				
	Tenth District Fire Dept. VC 140006		86,000	2.8	2.8	2.8
	Historic Benedict – Project A VCI 140021			0.15	0.15	2.95

\*Grant funding of \$40,000 from National Fish and Wildlife Foundation Chesapeake Bay Stewardship Fund and \$15,000 County funds for Design services.

*Table 17: Watershed Restoration Projects In Permitting and Construction Phases*

Project	Type of BMP	Drainage Area	Impervious Area	Impervious Area Treated (%)	Impervious Area Treated (ac.)
Pinefield – Temi Drive VCI 130063	Submerged Gravel Wetland	40.01	15.2	0	15.2
Holly Tree Lane (a.k.a. Northwood) VCI 130058	Step Pool Storm Conveyance	106.6	49.22	20.92	28.3
Acton-Hamilton VCI 120088	Submerged Gravel & Created Wetland	730	258.86	112.58	34.9
White Plains VCI 120067	Submerged Gravel Wetland	192.5	45.4	0	5.25
Stavors Roads Improvements VCI 110060	Infiltration Pond	16.6	3.64	1	3.55
Tanglewood Drive VCI 150005	Step Pool Storm Conveyance	56.55	21.46	9.49	11.97
Potomac Heights VR 120095	Dry Swales, Check Dams and Wet Pond	77	26	0	26
Charles County Plaza VCI 150024	Submerged Gravel Wetland	23.06	19.9	1.26	18.64

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*Table 18: Completed Watershed Restoration Projects in the Development District thru FY 2015*

<b>Project</b>	<b>Type of BMP</b>	<b>Drainage Area (ac.)</b>	<b>Impervious Area (ac.)</b>	<b>Impervious Area Currently Treated (ac.)</b>	<b>Impervious Area Treated (ac.)</b>
Gustavus Brown Elementary School Wetland VCI 060034	Shallow Marsh	75.5	25.33	0	25
Arthur Middleton Elementary School Wetland VCI 060035	Shallow Marsh	36.4	13.1	0	12
Arthur Middleton Elementary School Weir VCI 060035	Existing Channel	60.5	18.1	0	5
Fillmore Road Weir VCI 060036	Existing Channel	33.7	10.1	0	3
Bryans Road VCI 090078	Storm Filter, Filterra, Dry Swales	18.6	10.22	0	10.23
Pinefield VCI 090111	Wetpond Expansion	51	22.3	0	22.34
Ryon Woods VCI 110099	Grass Swale and Level Spreader	4.7	1.38	0	0.95
Fox Run VCI 110102	Step Pool Storm Conveyance	23.1	9.5	0	9.51
Acton Lane Roadway VCI 040021	Wet Pond	32.51	17.39	9.39	8
<b>Total</b>					<b>96.03</b>

*Table 19: Completed Watershed Restoration Projects Outside the Development District thru FY 2015*

<b>Project</b>	<b>Type of BMP</b>	<b>Drainage Area (ac.)</b>	<b>Impervious Area (ac.)</b>	<b>Impervious Area Currently Treated (ac.)</b>	<b>Impervious Area Treated (ac.)</b>
Tenth District Volunteer Fire Dept. VC 140006	Submerged Gravel Wetland, Grass Channel	5.43	2.87	0	2.87
Historic Benedict Village Enhancements Project A VCI 140021	Rain Garden	0.20	0.15	0	0.15
<b>Total</b>					<b>3.02</b>

### **III.G. Program Funding**

#### Overview of Permit Conditions

1. *Annually, Charles County shall submit a fiscal analysis of the capital, operation, and maintenance expenditures necessary to comply with all conditions of this permit.*
2. *Charles County shall maintain adequate program funding to comply with all conditions of this permit.*

#### 2015 Status (July 1 – Dec 31, 2014)

Since the County's first generation NPDES MS4 permit was issued in 1997, the County has had dedicated enterprise funding to ensure permit compliance. The two original enterprise funds include the Environmental Service Fund, and the Inspection and Review Fund. Later in 2013, the Watershed Protection and Restoration Fund was adopted. Revenues to support the enterprise funds are from the Environmental Service Fee, Lot Recordation Fee, Inspection and Review Fees, Stormwater Remediation Fee and most recently a small subsidy from the Real Estate Transfer Tax.

The adopted Fiscal Year 2015 and 2016 Enterprise Funds are in Appendix G. A full fiscal analysis of permit funding is found in Part 2 of this Annual Report.

### **III.H. Assessment of Controls**

#### Overview of Permit Conditions

1. *Annually, Charles County shall submit estimates of expected pollutant load reductions as a result of its proposed management programs.*

#### 2015 Status (July 1 – Dec 31, 2014)

One key component of Charles County's pollution reduction program is the identification of current pollution loads. This enables the County to identify current trends in water quality within receiving waters and evaluate the success of the overall NPDES Stormwater Permit Program. The pollutant loading estimate is determined based on two factors: loads produced from current land uses within the County and reductions from existing stormwater controls.

Because this task is done annually at the end of the fiscal year, the pollutant load reduction estimates are included in Part 2 of this report.

#### IV. Special Programmatic Conditions

##### Overview of Permit Conditions

*...this NPDES permit requires Charles County to assist with the implementation of the strategy designed to meet the nutrient reduction goals of the Lower Potomac River basin. Coordination between and among other jurisdictions is a major requirements and the identification of those appropriate jurisdictions will occur jointly with MDE. Additionally, deadlines, priorities, and scheduling to satisfy specific conditions will be determined in conjunction with MDE. In any case, progress toward meeting these conditions shall be reported to MDE.*

##### 2015 Status (July 1 – Dec 31, 2014)

##### *NPDES MS4 Permitted Jurisdiction Meetings*

The Maryland Department of the Environment historically hosted quarterly meetings for the NPDES MS4 permitted jurisdictions to provide a network for communication that solves permit issues. These meetings were held through Fiscal Year 2005. During Fiscal Year 2011 a monthly meeting schedule was held in preparation for the Department’s guidance document titled, “Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated.” The first draft came out in June 2011, followed by a final version in August 2014.

In Fiscal Year 2013, MDE hosted a GIS meeting to review a proposed geodatabase design. The phases to improve NPDES reporting and associated data submission process include: new database design, new database intake application and an internal MDE data management application. MDE released the new guidance March 2015 and a revised version in June 2015, “NPDES MS4 Geodatabase Design and User’s Guide, Version 1.1.” The County’s 2013 NPDES MS4 Annual Report contains a copy of the presentation and the draft NPDES Geodatabase Design VI.2.

##### *Maryland State Water Quality Advisory Committee (SWQAC)*

The County continues to maintain membership on this committee and the Watershed Restoration subcommittee. The committee continued to focus on the Chesapeake Bay TMDL, water re-use, and nutrient trading, among other issues.

*Maryland Municipal Stormwater Association (MAMSA)*

The County Joined MAMSA in Fiscal Year 2014 and has continued membership through Fiscal Year 2016. The committee is a collection of MS4 jurisdictions and private consultants that collaborate on current stormwater issues. Reissuing of MS4 permits was a topic of discussion as well as TMDL planning, WIP milestones, and stormwater program funding, among others.

*Patuxent River Commission (PRC)*

County staff continued to attend PRC meetings. In July 2014 the Charles County Commissioners adopted Resolution 2014-23 in support of the 2015 Patuxent River Policy Plan. A copy of this is included in the 2014 NPDES MS4 Annual Report.

*Port Tobacco River Watershed Restoration Action Strategy Grant (WRAS)*

The Charles County Commissioners applied for a Port Tobacco River Watershed Restoration Action Strategy (WRAS) Grant through the Maryland Department of the Environment (MDE), which was approved in the Fall of 2004 and continued through 2006. The main focus of the WRAS is to identify and prioritize water quality improvement opportunities to meet the Port Tobacco River Watershed nutrient TMDL and reduce bacteria levels to ranges that are safe for recreational uses in the River.

In the first year of the WRAS grant, the State agencies provided water quality analysis, a stream corridor assessment, a biological stream survey and a watershed characterization report.

Stakeholders which participated on the WRAS Steering Committee, include the Town of LaPlata, the College of Southern Maryland, the Charles County Chamber of Commerce, the Port Tobacco River Conservancy, the Charles County Health Department, the Charles Soil Conservation District, the Maryland Extension Service, and the Southern Maryland Resource Conservation and Development Office.

On June 20, 2006 the County Commissioners adopted the WRAS for implementation. In August 2008, the La Plata Town Council also adopted the WRAS for implementation. The full WRAS can be linked to from the County's new watershed planning webpage at:

<http://www.charlescountymd.gov/pgm/planning/watershed-planning>

To implement the WRAS, Charles County has been obtained grants and partnerships, including: USGS partnership agreement titled, “Surface-Water and Pore-Water Sampling in Port Tobacco River Watershed, Charles County, MD,” for the purpose of better identifying the contaminant source using wastewater compounds in FY2009 (Open File Report are on <http://pubs.usgs.gov/of/2010/1071/>); and National Fish and Wildlife Foundation Chesapeake Bay Stewardship Fund grant to engineer and permit the Port Tobacco Stream Restoration project in Fiscal Years 2014 - 2015. A discussion of this project is included in Section III.F.4 of Part 1 of this report.

Also, in Fiscal Year 2015 the County Capital Services Division continued to study options for connecting septic to sewer, which is one of the WRAS recommendations. This study was approved in the County’s Capital Improvement Program titled, Upper Port Tobacco River Watershed Sewer Connection Study to be funded in Fiscal Year 2014.

*Mattawoman Creek Monitoring Station*

In July 2014, the County began its twelfth year of a water quality monitoring project for the Mattawoman Creek with the U.S. Geological Survey. This project funds a monitoring station that was previously initiated and funded by the Maryland Department of the Environment in 2000. The purpose of this station is to develop a long term record of water quality data for determining trends in the watershed. The station is part of the Chesapeake Bay Programs’ Long Term Status and Trends Network. An advantage of this station is that USGS posts the data on their website for public access: <http://md.waterdata.usgs.gov>

In Summer/Fall of 2010 the USGS prepared a draft Scientific Investigations Report (SIR) to document the ten years of data. **USGS Scientific Investigations Report 2012–5265: Summary and Interpretation of Discrete and Continuous Water-Quality Monitoring Data, Mattawoman Creek, Charles County, Maryland, 2000–11**, was finalized in November 2012 and can be accessed at: <http://pubs.usgs.gov/sir/2012/5265/>.

Beginning in the Summer/Fall of 2012 monitoring continues in the same location, but with an emphasis on collecting integrated samples from the full cross-section of the creek. The purpose is to minimize the dominant influence of Old Woman’s Run over the Mattawoman Creek mainstem in the samples.

*Bay Restoration Fund Grant (BRF)*

From 2008 thru June 2015, there were 156 nitrogen-reducing septic units installed in Charles County under BRF grants from Maryland Department of the Environment, at a cost of \$1,974,693.

*Septic System Pump-out Reimbursement Program (Initiated in Fiscal Year 2015)*

While an individual septic pump-out receives a relatively low load reduction credit (5% of the load per pump-out), the County has the potential to gain credit for a large number of pump-outs. The Phase II WIP recommended the County study the feasibility of an ordinance requiring pump-outs. The County has decided instead of pursuing an ordinance requiring these pump-outs; to implement a shared cost reimbursement program to encourage homeowners to pump-out their systems every 3 to 5 years.

There are about 17,067 septic systems in Charles County. The WIP goal is to implement a septic pump-out program to pump-out 20% of the County's septic systems per year which amounts to 3,413 systems. When applying the 5.0 % load reduction credit on 20% of the County's total septic load of 161,746 lbs TN (delivered) annually would achieve a load reduction of 1,542 lbs TN (delivered) annually, or approximately 3% of the 51,759 lbs TN (delivered) load reduction target set for 2025.

This program not only is a recommendation to meet part of the nutrient load reduction target, it also encourages public participation. The program was launched at the beginning of Fiscal Year 2015 to aid in WIP goal attainment as well as impervious treatment credit toward the NPDES permit requirement. The estimate is an average of 12 acres of impervious treatment per year according to the 0.03 acre credit per pump-out and current allocated funding.

*Water Resources Element*

Charles County began work on the Water Resource Element, which is a part of the County's Comprehensive Plan, with the assistance of a consultant, Environmental Resources Management, Inc. A draft of the Water Resources Element was completed early in 2009. The Water Resources Element began the public adoption process in the Fall/Winter of 2010, and was adopted by the Charles County Commissioners on May 24, 2011. The full plan may be viewed on-line at:

<http://www.charlescounty.org/webdocs/pgm/publications/resourceinfrastructure/wre2006.pdf>

*Watershed Resources Registry (WRR)*

The Watershed Resources Registry (WRR) is a tool developed as part of a collaborative effort between Maryland state agencies (Environment, Natural Resources and Highways) and federal agencies (EPA, Fish and Wildlife Service, Army Corps of Engineers, National Marine Fisheries Service, Natural Resources Conservation Service, Federal Highway Administration).

The goal in developing the WRR is to identify suitable sites that meet multiple agency priorities and sites that meet multiple environmental goals (i.e. habitat protection and stormwater management). The development of the WRR signals a shift from issuing permits that limit impacts, to proactive preservation and restoration of our most valuable and threatened natural resources. It also serves as a publicly accessible tool in map format that shares the same data between permit applicants that the agency evaluating the application. The tool has been expanded from Prince George's and Charles County to the entire state of Maryland. The WRR is web-based and can be accessed at <http://watershedresourcesregistry.com/>

### *Phase II Watershed Implementation Plan (WIP)*

In February 2011, the Maryland state agencies held a Lower Western Shore Maryland Phase II Watershed Implementation Plan (WIP II) workshop. At this meeting the State designated liaison for the Charles County WIP II met with County representatives and a Team Leader for each County was identified. The purpose of the local WIP II team, is to develop local strategies to meet the local pollution targets for addressing the Chesapeake Bay Total Maximum Daily Load (TMDL) for nutrients. The local pollution targets were assigned to each jurisdiction by the State.

March 8, 2011, Dr. Rich Eskin, Maryland Department of the Environment, presented the background and process for the Phase II Watershed Implementation Plan to the Charles County Commissioners. The Charles County Commissioners supported staff in proceeding with an open meeting process to develop the County's Phase II WIP. The open meetings with County staff, environmental organizations, developer organizations, attorneys, state agencies, federal land holders, and the State liaison began in March 2011 and continued monthly through November 2011, which was the original deadline for localities to submit their Phase II WIPs to the State. Charles County submitted its Phase II WIP by the November 18, 2011 due date. This can be found in Appendix M of the County's 2012 NPDES Annual Report.

In August 2011 the County began work with LimnoTech, Inc. to analyze the County's currently planned projects to determine how far these projects advanced the County toward target loads. LimnoTech presented their findings to the County's Phase II WIP workgroup. During the analysis of the pipeline projects and further work on the development of alternate scenarios to bridge the remaining gap to reach the target, LimnoTech coordinated several staff meetings. In November 2012 LimnoTech is continuing their work towards identifying the lowest cost scenarios for the County to achieve the target loads. By February 2013, Charles County's Phase II Watershed Implementation Plan (WIP) Strategy was completed.

February 28, 2013 the Charles County Phase II workgroup was reconvened for a briefing on the proposed WIP Strategy and to solicit the workgroup's comments. April 30, 2013 the proposed WIP Strategy and 2-year milestones for 2014-2015 were presented to the County Commissioners, who adopted the 2-year milestones for implementation. On May 14 and September 23, 2013 the WIP Strategy and 2-year milestones were presented as educational briefings for the Charles County Board of Appeals and Planning Commission, respectively. County staff presented an update on the WIP progress with emphasis on planned Capital projects to the Planning Commission on July 21, 2014.

The final 2012 – 2013 report and the initial 2014-2015 milestones which included both programmatic and BMP 2- year milestones were both submitted January 2014. MDE's evaluation for the 2014-2015 milestones was received by the County in April 2014. These items are included in Appendix O of the 2014 NPDES MS4 Annual Report.

#### *WIP Ongoing Educational and Coordination Meetings*

County staff continued to participate in the State's WIP coordination webinars and meetings during the permit period. Following is a list of these meetings:

##### Quarterly Local Engagement Sessions:

Kick-off Webinar on November 28, 2013

Winter Webinar on February 26, 2013

Chesapeake Bay Program BMP Verification Framework on September 25, 2014

Chesapeake Bay Phase 6 Watershed Model Land-Use Development on April 28, 2015

Chesapeake Bay Phase 6 Watershed Model Land-Use Version 1 on October 26, 2015

##### Local WIP Technical Meeting Webinars:

Series #1 - January 25, 2013 (Bay Program Workgroups & Midpoint Assessment)

Series #2 - April 8, 2013 (Model Scales, Allocation Methods & BMP Verification)

Series #3 - July 8, 2013 (Chesapeake Bay Modeling)

Series #4 - June 11, 2014 (MDE's new TMDL Data Center)

##### WIP Regional Workshops:

College of Southern MD – May 7, 2013

College of Southern MD – November 4, 2013

College of Southern MD – November 5, 2014

*WIP Funding Workshops and Meetings*

Additionally County planning and fiscal staff participated in the following meetings regarding how to fund stormwater projects to achieve WIP pollution reduction targets:

- June 5, 2012 – “Stormwater Utility Workshop - What HB 987 Means for MS4 Permit Holders” held in Laurel, Maryland, by AECOM and Water Resource Associates, Inc.
- November 2, 2012 – “Stormwater Financing Strategies” workshop in Annapolis, Maryland, sponsored by Maryland Association of Counties, Chesapeake Bay Foundation, and Restore Capital.
- December 14, 2012 – “MS4 Phase I Forum on Funding” held in Landover, Maryland and sponsored by the Environmental Finance Center of the University of Maryland.
- August 1, 2013 – Met with representatives from the NatLab Team on *Crediting Conservation - Accounting for the Water Quality Value of Conserved Lands Under the Chesapeake Bay TMDL* by the Chesapeake Bay Commission, June 2013
- September 26, 2013 – “Green Infrastructure Driven Urban Stormwater Retrofits Workshop - Community Based Public Private Partnerships” in Annapolis, Maryland, sponsored by the U.S. Environmental Protection Agency, the Maryland Department of the Environment, and Maryland Environmental Service.

*Accounting for Growth*

County planning staff also participated in the following Accounting for Growth local workshops. Accounting for Growth is a component of Maryland’s strategy to continue to meet the goals of the Chesapeake Bay nutrient TMDL as new development occurs.

- September 13, 2012 – Growth Offset Meeting – presentation and panel discussion, La Plata, Maryland sponsored by the Maryland Departments of Environment and Agriculture, and the Harry R. Hughes Center for Agro-Ecology.
- August 29, 2013 – Maryland’s Proposed Accounting for Growth Progress Report webcast to review the recommendations of the Accounting for Growth Workgroup. Satellite location in La Plata, Maryland. Sponsored by the Maryland Departments of Environment and Agriculture, and the Harry R. Hughes Center for Agro-Ecology.

*Additional Local Activities Related to Water Quality Improvement Coordination by the Charles County Department of Planning and Growth Management:*

- July 22, 2014, staff participated in webcast: “Building Climate Resiliency with Green Infrastructure,” which highlighted Climate Interactive’s new Green Infrastructure Decision Support Tool, followed by a presentation on the New York City Green Infrastructure Program’s efforts to incorporate climate resiliency into system planning. This is part of the EPA 2014 Green Infrastructure Webcast Series.
- September 3, 2014, staff participated in webinar titled, “Green Infrastructure and Smart Growth” by the EPA 2014 Green Infrastructure Webcast Series.
- September 24, 2014, staff attended the Maryland Groundwater Symposium in Baltimore, Maryland sponsored by the Maryland Center for Environmental Training, College of Southern Maryland.
- November 21, 2014, staff attended the annual Maryland Water Monitoring Council Conference: Looking to the Past to Guide the Future, held in Linthicum, Maryland.



## PART 2

January 1, 2015 thru June 30, 2015

First Annual Report

Of the Charles County

Third Generation Permit

National Pollutant Discharge Elimination System

Municipal Separate Storm Sewer System

PERMIT NUMBER: MD0068365

STATE DISCHARGE NUMBER: 11-DP-3322



## II. Definitions

*Terms used in this permit are defined in relevant chapter of the Code of Federal Regulations (CFR) or the Code of Maryland Regulations (COMAR). Terms not defined in CFR or COMAR shall have the meanings attributed by common use unless the context in which they are used clearly requires a different meaning.*

## III. Water Quality

The permittee must manage, implement, and enforce a stormwater management program in accordance with the Clean Water Act (CWA) and corresponding National Pollutant Discharge Elimination System (NPDES) regulations, 40 CFR Part 122.

Compliance with conditions in Parts IV through VII of the permit shall constitute compliance with Subsection 402(p)(3)(B)(iii) of the CWA and adequate progress toward compliance with Maryland's receiving water quality standards and U.S. Environmental Protection Agency (EPA) approved stormwater waste load allocations (WLAs) for this permit term.

## IV.A. Permit Administration

### Overview of Permit Conditions

- 1. Charles County shall designate an individual to act as liaison with MDE for implementation of this permit. The County shall provide the coordinator's name, title, address, phone number, and e-mail address. Additionally the County shall submit in its annual reports to MDE and organizational chart detailing personnel and group responsible for major NPDES program tasks in this permit. MDE shall be notified of any changes in personnel or organization relative to NPDES tasks.*

### FY 2015 Status (Jan 1–June 30, 2015)

Listed below are the County's liaisons to MDE for permit implementation. The address is:

Charles County Planning Division  
200 Baltimore Street,  
P.O. Box 2150 (mailing address)  
La Plata, MD 20646.

Liasons:

Steven Ball, Planning Director  
301-645-0632 (P), [BallSt@charlescountymd.gov](mailto:BallSt@charlescountymd.gov)

Charles Rice, Manager of Environmental Programs  
301-645-0651 (P), [RiceC@charlescountymd.gov](mailto:RiceC@charlescountymd.gov)

Karen Wigger, Planner  
301-645-0683 (P), [WiggerK@charlescountymd.gov](mailto:WiggerK@charlescountymd.gov)

Rachel O’Shea, Planner  
301-396-5237 (P), [OSheaR@charlescountymd.gov](mailto:OSheaR@charlescountymd.gov)

Organizational Chart:

The NPDES program tasks in this permit are divided between two departments in Charles County: the Department of Planning and Growth Management (PGM) and the Department of Public Works (DPW). These departments coordinate with other departments, such as the County’s Attorney’s Office and the Department of Fiscal and Administrative Services, as necessary to implement the permit.

PGM’s responsibilities primarily include the stormwater and erosion and sediment control permitting programs, development of geographic information system (GIS), implementing the capital restoration projects, monitoring water quality, public outreach, and managing the illicit discharge elimination and detection program. DPW’s responsibilities include maintenance of County owned properties, maintenance of the public drainage system, the litter and floatables program, and public outreach.

Following is an organizational chart detailing personnel and divisions responsible for major NPDES program tasks in this permit.

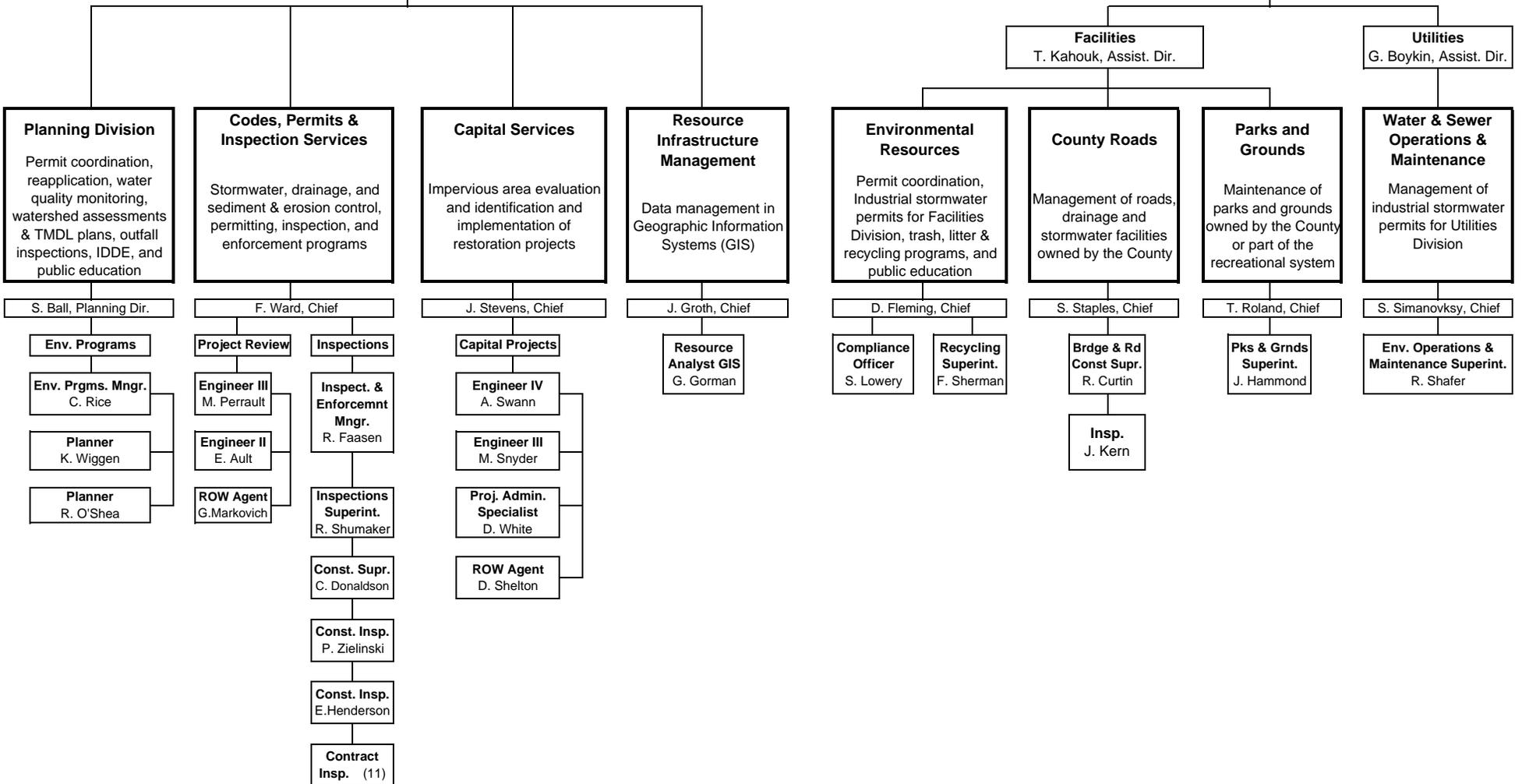
**CHARLES COUNTY, MD  
NPDES MS4 Organizational Chart**

**Charles County Commissioners**

M. Mallinoff, County Administrator

**Dept. of Planning & Growth Mngmnt.**  
P. Aluotto, Director

**Dept. of Pubic Works**  
W. Shreve, Director



**IV.B. Legal Authority**

Overview of Permit Conditions

*Charles County shall maintain adequate legal authority, in accordance with NPDES regulations 40 CFR 122.26(d)(2)(I), throughout the term of this permit. In the event that any provision of its legal authority is found to be invalid, the County shall make the necessary changes to maintain adequate legal authority.*

FY 2015 (Jan 1–June 30, 2015) Status

The County will maintain adequate legal authority throughout the term of this permit, and in the event that any provision of its legal authority is found to be invalid, the County will make the necessary changes to maintain adequate legal authority.

**IV.C. Source Identification**

Overview of Permit Conditions

*Sources of pollutants in stormwater runoff shall be identified and linked to specific water quality impacts on a watershed basis. Annual reporting of these data has been provided within the County’s Development District for the previous permit. Because identification of water quality impacts in impaired watersheds outside of the Development District is necessary, this reporting is expanded to the entire permit area to support ongoing efforts in watershed restoration plans. This information shall be compiled and updated annually. By the end of the permit, the County shall provide the following data for all watersheds within the permit area in geographic information system (GIS) format with associated tables as required in Part V. of this permit:*

1. *Storm drain system: infrastructure, major outfalls, inlets, and associated drainage areas;*
2. *Industrial and commercial sources: industrial and commercial land uses and sites that the County has determined have the potential to contribute significant pollutants;*
3. *Urban best management practices (BMPs): stormwater management facility data including outfall locations and delineated drainage areas;*
4. *Impervious surfaces: public and private land use delineated, controlled and uncontrolled impervious areas based on, at minimum, Maryland’s hierarchical eight-digit sub-basins;*
5. *Monitoring locations: locations established for chemical, biological, and physical monitoring of watershed restoration efforts and the 2000 Maryland Stormwater Design Manual; and*
6. *Water quality improvement projects: projects proposed, under construction, and completed with associated drainage areas delineated.*

FY 2015 Status (Jan 1–June 30, 2015)

In anticipation of MDE expanding the County’s NPDES MS4 Permit countywide, Charles County began compiling the above listed GIS data for areas outside of the Development District in Fiscal Year 2012. The expanded GIS data coverage has proven to be a significant resource to the County for public storm drain and stormwater facility maintenance, stormwater permitting reviews, environmental permitting reviews, stormwater facility maintenance inspections, and watershed restoration planning.

In an effort to provide the stormwater data on a platform that would be easily accessible by County maintenance providers, permit reviewers and inspectors in the office or in the field, a stormwater website has been established. As of this year, the website is hosted on a County server.

*Staff Training on the County's GIS Stormwater Data and Tools*

Staff training was conducted by Spatial Systems Associates, County GIS consultant, on the data provided and how to use the tools available on the County's stormwater website. This training was held on January 22, 2015 and attended by 16 staff from the Departments of the Planning and Growth Management and Public Works. The purpose of the training was to demonstrate the capabilities, increase number of users, and gain feedback on tool modifications to better meet user needs. Capabilities include:

- trace tool used to trace flow in a drainage system upstream for identifying potential sources of illicit discharges;
- project locator tool used to locate bmps by permit number;
- easement identifiers, used to view easements of record;
- micro-bmp tool used to view approved permits for micro-bmps;
- inspection tool used to identify status of stormwater bmp inspections; and
- bmp features tool, used to link bmps in GIS to information in the urban bmp database.

Two additional trainings are planned in the future: one on the geodatabase for those who enter the data, and the other on the stormwater website for users of the data.

*MDE's NPDES MS4 Geodatabase Design and User's Guide, March 2015*

Early in 2015, MDE released the *NPDES MS4 Geodatabase Design and User's Guide Versions 1.0 and 1.1*. Since it was released, staff has been studying the new geodatabase, and working with consultants to convert existing data into the new schema, developing sources of previously uncollected data, and establishing replica databases and data check-out systems for multiple user locations. These features allow multiple users, including the County and consultants, to have the latest information at all times.

For this annual report, the GIS data is primarily according to the MS4 permit Attachment A schema, with some data populating MDE's new *User's Guide* schema. The data is included on an attached CD.

Several discrepancies have come up, between the MS4 permit Attachment A schema and MDE's new *User's Guide* schema. Sometimes the requirements are in the MS4 permit and not in the Guide, and other times the requirements are in the Guide and not in the MS4 permit. For some of the requirements in the Guide but not in the permit, the necessity is implied by the permit, however this is not always the case. The following tables identify examples of various situations.

*Examples of MS4 Permit Requirements not Found in the User's Guide*

MS4 Permit Part IV.C.	MS4 Permit	Geodatabase Design and User's Guide
1. Storm Drain System	All infrastructure	Outfalls only
2. Industrial and Commercial Sources	Land use and sites that have potential to contribute significant pollutants	Not included
4. Impervious Surfaces (controlled and uncontrolled)	Identify by watershed	Identify by jurisdiction
5. Monitoring Locations	To include Land Use and BMP ranking	No ranking included
6. Water Quality Improvement Projects	Polygons	Points

*Examples of User's Guide Requirements not Found in the MS4 Permit*

Geodatabase Design and User's Guide	User's Guide	MS4 Permit
PermitInfo	Number of MS4 trained personnel	Not included
BMPPOI	Point of investigation for each bmp	Not included
RestBMP	Requires RCN, PE & Q pre & post	Not included
RestBMP	Includes conversion & redevelopment bmps, which is duplicative of BMP tables in both schemas	Urban BMP database includes a field for new or redevelopment
BMPInspections MAIN_DATE	Includes last date maintenance performed	Not included
QuarterlyGradingPmtInfo	Includes land use before grading	Not included

*Example of MS4 Attachment A and User's Guide Requirements not Found in the MS4 Permit*

Example of Items MS4 Permit does not Require	User's Guide	MS4 Permit Attach. A
Responsible Personnel Certification Information (The State provides an online certification course, and thus local jurisdictions are not required to provide certification classes, thus no MS4 permit requirement.)	RespPersonnelCertInfo	Table J. Responsible Personnel Certification Information

*Storm Drain System*

The 2015 GIS data includes approximately 33,500 linear features (pipe, culvert, open channel) to total 534 miles, of which 300 miles is asset. The GIS also includes over 37,000 structures and over 400 outfalls, of which 163 have been identified as major outfalls. In addition to mapping the drainage infrastructure, the associated drainage areas and easements were also collected. The easement data provides links to the recorded documents in Maryland Land Records.

*Industrial and Commercial Sources*

There doesn't appear to be a required format for this data identified in Attachment A of the County's permit or MDE's new Geodatabase Design Version 1.1. Charles County is required to survey industrial and commercial areas for discovering, documenting, and eliminating pollutant sources. The GIS data for the industrial and commercial areas, surveyed in 2014 and 2015 are attached on CD. A discussion of the survey findings is included in Part IV.D.3 of this report.

*Urban Best Management Practices (BMPs)*

The County continued to work through its digital and paper files to expand and improve the County's stormwater GIS coverage countywide. There were over 400 BMPs added to the Urban BMP database in Fiscal Year 2015. The Fiscal Year 2014 total was 1,514 BMPs. Additional efforts were made to complete the BMP entries, by updating all northing & easting bearings, classifying as new development, retrofit, or new restoration project, and modifying impervious data to include gravel parking areas. The BMP data also includes inspections information.

*Impervious Surfaces*

In 2013, the County first delineated impervious surface polygons based on 2011 aerial photographs. In Fiscal Year 2015, 11,586 gravel parking areas and dirt roads were added to the polygon data. Also in 2015, the County completed an impervious surface analysis of controlled acres based on era of stormwater management provided. Public and private land uses are delineated, as well as watershed information. A discussion of this analysis is included in Part IV.E.2.a. of this report.

*Monitoring Locations*

The chemical monitoring station locations were relocated this year, and thus the two new stations have been added to the data. A total of 25 stations are now included, some of which are no longer being used, but are maintained for historical purposes.

*Water Quality Improvement Projects*

An additional six water quality improvement projects, completed by the County's Capital Services Division, have been added to the data. As noted above the MS4 permit requires polygons for this data and the *User's Guide* requires points. So at this time the data is provided in both formats.

#### **IV.D. Management Programs**

##### Overview of Permit Conditions

*The following management programs shall be implemented in areas served by the County's MS4. These management programs are designed to control stormwater discharges to the maximum extent practicable (MEP) and are to be maintained for the term of the permit. Additionally, these programs are to be integrated with other permit requirements to promote a comprehensive adaptive approach toward solving water quality problems. The County shall modify these programs according to needed program improvements identified as a result of periodic evaluations by MDE.*

##### 1. Stormwater Management

*An acceptable stormwater program shall continue to be maintained in accordance with the Environment Article, Title 4, Subtitle 2, Annotated Code of Maryland. County activities shall include following items a-d.*

- a. *Stormwater Management activities to implement the latest version of the 2000 Maryland Stormwater Design Manual include:*
  - i. *Complying with the Stormwater Management Act of 2007 (Act) by implementing Environmental Site Design (ESD) to the MEP for new and redevelopment projects;*
  - ii. *Tracking the progress toward satisfying the requirements of the Act and identifying and reporting annually the problems and modifications necessary to implement ESD to the MEP; and*
  - iii. *Reporting annually the modifications that have or need to be made to all ordinances, regulations, and new development plan review and approval processes to comply with the requirements of the Act.*

##### FY 2015 Status (Jan 1–June 30, 2015)

Per the Maryland Stormwater Management Act of 2007, which requires use of environmental site design to the maximum extent practicable, the County adopted new stormwater regulations on July 13, 2010. These regulations went into effect on August 1, 2010. The Notice on the adoption of the Stormwater Management and Storm Drainage Ordinances, including Procedures on Requesting an Administrative Waiver, was included in the 2011 NPDES MS4 Annual Report. Since that time, no modifications have been made to these Ordinances.

The County continues to implement the stormwater management design policies, principles, methods, and practices found in the 2000 Maryland Stormwater Design Manual and COMAR 26.17.02.

In October 2014 MDE found the County’s stormwater program acceptable. A copy of the approval letter is in Appendix H.

- b. *Stormwater Management implementation information to be maintained on MDE’s database and submitted annually:*
  - i. *Number of Concept, Site Development, and Final Plans received. Plans that are re-submitted as a result of revision or in response to comments should not be considered as a separate project:*
  - ii. *Number of redevelopment projects received;*
  - iii. *Number of stormwater exemptions issued; and*
  - iv. *Number and type of waivers received and issued, including those for quantity control, quality control, or both. Multiple requests for waivers may be received for a single project and each should be counted separately whether part of the same project or plan. The total number of waivers requested and granted qualitative and quantitative control shall be documented.*

FY 2015 Status (Jan 1–June 30, 2015)

Since the County’s adoption of the stormwater management regulations (August 1, 2010) requiring environmental site design (ESD) to the maximum extent practicable (MEP), through Fiscal Year 2015, a total of 172 projects have submitted Concept SWM Plans, which is Step 1 of the regulation. During that same time period, 119 projects have also submitted Site SWM Plans, which is Step 2 of the regulation.

*Table 21: Stormwater Management Concept and Site Plans*

Fiscal Year	2011	2012	2013	2014	2015*	2015**
VSC (Step 1)	35	27	38	33	17	22
VSS (Step 2)	16	27	21	25	15	15

\* First half of Fiscal Year 2015. \*\* Fiscal Year 2015 from January 1 to June 30.

For the time period of January 1 to June 30 of FY 2015, the County received 14 Final Stormwater Management Plans (submitted with the Development Services Permit), which is the Step 3 of the regulation.

For the second half of FY 2015, the County received 1 redevelopment project under a Site SWM Plan application.

For the second half of Fiscal Year 2015, the County did not issue any stormwater exemptions.

For the second half of Fiscal Year 2015, the County received 1 waiver request for both quality and quantity, which was denied.

- c. *Stormwater Management construction inspection information is to be maintained according to COMAR 26.17.02 for all ESD treatment practices and structural stormwater management facilities including the number of inspections conducted and violation notices issued by Charles County.*

FY 2015 Status (Jan 1–June 30, 2015)

In accordance with COMAR 26.17.02.10 Construction Inspection and Enforcement, County personnel perform the various inspections, as outlined for the ESD treatment practices and structural stormwater management facilities. The County also reviews the as-built plans and certifications, including the submission of the Notice of Construction Completion Forms to the Charles County Soil Conservation District.

The County maintains the inspection reports, violation notices and associated documents within each project's individual Development Services Permit file.

- d. *Stormwater Management preventative maintenance inspections to be conducted according to COMAR 26.17.02, of all ESD treatment systems and structural stormwater management facilities at least on a triennial basis. Documentation identifying the ESD systems and structural stormwater management facilities inspected, the number of maintenance inspections, follow-up inspections, the enforcement actions used to ensure compliance, the maintenance inspection schedules, and any other relevant information shall be submitted in the County's annual reports.*

### FY 2015 Status (Jan 1–June 30, 2015)

The County continues in conducting preventative maintenance inspections of all stormwater management (SWM) devices on a triennial basis. During the first half of Fiscal Year 2015, 295 preventative maintenance inspections were performed. These inspections were comprised of 116 first and third year inspections, 171 compliance inspections, and 8 enforcement inspections. For the second half of Fiscal Year 2015, 497 preventative maintenance inspections were performed. These inspections were comprised of 113 first year inspections, 118 third year inspections, 241 compliance inspections, and 25 enforcement inspections.

Detailed inspection reports of each inspection are maintained within the project file folder. Two types of certified letters are typically sent to initiate compliance. No major structural problems were found.

During the first half of Fiscal Year 2015, 41 devices identified as unacceptable in Fiscal Year 2014 were brought into compliance and 16 devices identified as unacceptable in the years previous to Fiscal Year 2014 were brought into compliance.

During the second half of Fiscal Year 2015, 36 devices identified as unacceptable in Fiscal Year 2014 were brought into compliance and 40 devices identified as unacceptable in the years previous to Fiscal Year 2014 were brought into compliance.

A copy of the County’s database showing inspections during Fiscal Year 2015 is included in Appendix A. The entire digital inspection database is included in the Best Management Practice database on the attached CD.

Since 1990 the SWM Maintenance Inspections Inventory designates “S” for satisfactorily maintained SWM devices and “U” for unsatisfactorily maintained devices. We believe that the vast majority of the issues pertaining to a “U” rating of a SWM device do not affect the function of the SWM device and therefore are listed as “pass”. Beginning in Calendar Year 2012 a “Pass” has been entered in the BMP Status column to indicate that the device is “performing”, as a more descriptive designation so that one can easily determine if the function of the device is compromised by simply reviewing the database.

SWM devices that receive a "U" or "unsatisfactory" designation during a triennial maintenance inspection primarily fall into this category due to the lack of maintenance of the devices. The types of maintenance that is required usually includes, but not limited to the following: mowing, fence repair, removal of woody vegetation, in-flow & out-flow protection repair and minor erosion/stabilization. While these types of maintenance issues still require the structure(s) to be

classified as "unsatisfactory" it is the opinion of the Department of Planning and Growth Management (Department) that the pond or other SWM device performance is not substantially degraded in most cases.

The following table summarizes the information found in the Stormwater Inspection database. Facilities found acceptable and unacceptable for Fiscal Year 2015 are reported based on their status for the first half of Fiscal Year 2015, as well as the second half of Fiscal Year 2015. A total Fiscal Year 2015 column is also provided in the following table.

*Table 22: Summary of Stormwater Management Device Inspections Fiscal Year 2015*

Fiscal Year	2015*	2015**	2015
Total projects inspected	116	179	295
Total SWM devices inspected	259	449	708
Total inspections performed including re-inspections***	295	497	792
Acceptable SWM devices	164 (63%)	268 (60%)	432 (61%)
Unacceptable SWM devices	95 (37%)	181 (40%)	276 (39%)

\* Time period of July 1 to December 31, 2014.

\*\* Time period of January 1 to June 30, 2015.

\*\*\* Each project may contain more than one device. The number of inspections is higher than the number of devices, due to repeat inspections of the same device with some devices found acceptable after re-inspection.

2. Erosion and Sediment Control

*An acceptable erosion and sediment control program shall continue to be maintained and implemented in accordance with Environmental Article, Title 4, Subtitle 1, Annotated Code of Maryland. County activities shall include the following items A-D.*

- a. *Implementing program improvements identified in any MDE evaluation of the County's erosion and sediment control enforcement authority.*

FY 2015 Status (Jan 1–June 30, 2015)

In October and November 2007, MDE performed field reviews of active construction sites to evaluate the program. Significant improvements and progress had been made toward addressing violations that were noted at that time. Every two years since, MDE has evaluated Charles County’s program. MDE’s reviews include recommendations for continued improvements related to proper installation of erosion and sediment controls as well as on-site stabilization. Overall, these reviews showed continued progress by Charles County. The County’s erosion and sediment control program continues to be acceptable. MDE continues to grant sediment and erosion control enforcement authority. MDE granted continued delegation of authority through June, 30, 2016 and it is anticipated that MDE will be field reviewing the County’s program in the Fall of 2015.

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

FY 2015 (Jan 1–June 30, 2015) Status

As part of the County’s erosion and sediment control program, construction site operators are required to provide proof that they hold a valid Responsible Personnel Certification (Green Card) as required by MDE. The *County’s Grading & Sedimentation Control Ordinance* requires an Owner or Developer to provide a certification that the responsible personnel involved in the construction project have a Certificate of Training for sediment and erosion control at the beginning of the project.

- c. *Program activity shall be recorded on MDE’s annual report database and submitted as required in Part V of the permit.*

FY 2015 (July 1, 2014–June 30, 2015) Status

As noted in the discussion of required data discrepancies under Part IV.C. Source Control, of Part 2 of this report, Part V of the permit requires Responsible Personnel Certification table, however the County does not provide this type of certification. An additional discrepancy is that the MS4 permit Attachment A, does not include the Erosion and Sediment Control table found in MDE’s new *NPDES MS4 Geodatabase Design and User’s Guide Version 1.1*. However, because the County provides this data to MDE during the biannual review of the erosion and sediment program for continued delegation, it is easily available for inclusion in this report and follows.

*Table 23: Erosion Sediment Control Table for Fiscal Year 2015 (July 1, 2014 thru June 30, 2015)*

Jurisdiction	CH
Contact	Frank W. Ward
Phone	301-638-0807
Fax	301-645-0607
Email	<a href="mailto:WardF@charlescountymd.gov">WardF@charlescountymd.gov</a>
Permits Issued	821
Permits Active	576
Disturbed Area Active	3,269
Other Issued	28
Other Active	77
Disturbed Area Active	4,274
Total Number Inspectors	8
Number Supervisors	3
Number of Inspections	8,287
Stop Work Orders	27
Number of Fines Collected	27
Amount Fines	\$11,232
Number Violations	27
Number Court Cases	0
Complaints Received	20
Reporting Year	2015
Permit Number	MD0068365

- d. Reporting quarterly, information regarding earth disturbances exceeding one acre or more. Quarters shall be based on calendar year and submittals shall be made within 30 days following each quarter.*

FY 2015 Status (Jan 1–June 30, 2015)

This information has been recorded and submitted quarterly to MDE. For the second half of Fiscal Year 2015, the County issued 20 permits disturbing one acre or more. These included 16 Development Services permits, and 4 single family dwelling permits. The Development Services permits included: 11 residential, 2 commercial, and 3 industrial sites. A list of these is found in Appendix E and in the attached geodatabase on CD.

3. Illicit Discharge Detection and Elimination

*An inspection and enforcement program shall be implemented to ensure that all discharges to and from the MS4 that are not composed entirely of stormwater are either permitted by MDE or eliminated. Activities include:*

- a. Field screening at least 100 outfalls annually. Each outfall having a discharge shall be sampled using a chemical test kit. Within one year of permit issuance, an alternative program may be submitted for MDE approval that methodically identifies, investigates, and eliminates illegal connections to the County's storm drain system;*
- b. Conducting annual visual surveys of commercial and industrial areas for discovering, documenting, and eliminating pollutant sources. Areas surveyed shall be reported annually.*
- c. Maintaining a program to address and, if necessary, respond to illegal discharges, dumping, and spills;*
- d. Using appropriate enforcement procedures for investigating and eliminating illicit discharges, illegal dumping, and spills. Significant discharges shall be reported to MDE for enforcement and/or permitting; and*
- e. Reporting discharge detection and elimination activities as specified in Part V. of the permit.*

FY 2015 Status (Jan 1–June 30, 2015)

*Illicit Connection Detection Field Screening*

During the Fiscal Year 2015 screening, 100 sites were sampled. This includes 21 draining industrial areas, 45 draining commercial areas, and 34 draining residential areas. Outfalls that were not sampled during the 2014 reporting year were selected for screening in 2015. A map of the sites sampled is included in Appendix H.

The screening was conducted in mid-May and mid-June of 2015. A two-person field crew visited each site following 72-hours of dry weather. The physical condition of each site was recorded on field sheets. If a dry-weather flow was present, a sample was taken and tested with a Hach chemical test kit. Tests were conducted for pH, detergents, chlorine, copper, phenols, temperature, ammonia nitrogen and nitrate nitrogen. When a chemical test was conducted, and the results showed a high concentration for any contaminant, the site was retested after 4 hours but within 24 hours to verify the results.

The results of the chemical test performed were compared with the accepted statewide averages described in *Dry Weather Flow and Illicit Discharges in Maryland Storm Drain Systems* (MDE, 1997). Using the statewide averages, the 1997 study provides a threshold for each constituent, based on watershed land use. The results from the chemical tests performed during the 2015-reporting year were compared with this threshold to determine which results are considered abnormal for each constituent, and to make recommendations as to which storm drain systems should be investigated further as having possible illicit connections. The thresholds listed were 0.4 ppm for chlorine, and 0.5 ppm for detergents. No state-approved threshold limits exist for nitrate and ammonia. Based on EPA and USGS documentation, values of 2.0 ppm for both constituents appear reasonable. This is consistent with the high outlying values found in previous screening efforts. Review of past data shows that typical pH values in Charles County fall outside the standard threshold range of 6.5 to 8.5. Therefore, for the 2015 reporting year, the following thresholds were used to determine if an upstream investigation was necessary:

- pH outside the range 5.5-8.5
- >0.5 ppm Detergents
- >0.4 ppm Chlorine
- >0.17 ppm Phenols
- >0.21 ppm Copper
- >2.0 ppm Nitrate
- >2.0 ppm Ammonia

When a confirmed high concentration of a contaminant was found, field crews followed the storm drain system upstream attempting to locate the source of the contamination. Additional tests at upstream structures were conducted as needed in an effort to track the contamination upstream to the source, especially where two systems converged.

All data collected during the illicit discharge screening was recorded in a database conforming to the MDE formatting requirements.

The results show that, of the 100 sites, 13 had observed flow. Of these, 7 had observed flow that was too small for a sample to be collected. Of the remaining 6 sites where flow was able to be collected, 3 had detergent present. None of the detergent concentrations were above the threshold limit during the first inspection. Two sites that have had high concentrations of detergents in the past also had evidence of detergents entering the storm drain system during this reporting year. Outfalls #159 was found to contain 0.20mg/L of detergent and nearby residents were informing the inspector of foul odors and poor water quality coming from the outfall pipe during the inspection. Outfall #26 which has been an ongoing investigation due to Speedy Clean Car Wash showed evidence this reporting year of wash water staining the pavement. No discharge was found entering the Speedy Clean Car Wash storm drain inlets during this inspection. Detailed reports and photographs for both outfalls can be found in Appendix H.

No concentrations of phenols or copper were detected at the sites where flow was able to be collected. Varying concentrations of ammonia and nitrate were found at some of the sites where flow was tested; however, concentrations were not above the threshold limits during each first inspection.

Metal corrosion was present at nine outfalls and one outfall had cracking and spalling concrete. Outfalls #120, #106, and #206 were all exhibiting structural problems and outfall damage. Outfall #120 was found to have significant sinkholes forming on top of a large storm drain pipe near the outfall. A detailed report can be found in Appendix H. Outfall #206 is severely corroded with most of the invert missing and Outfall #106 has severe embankment erosion and metal corrosion.

Severe erosion was only occurring at Outfalls #106. Algae were found at 33 outfalls, which indicate excessive nutrients in the water. All sites inspected had acceptable clarity and color. Except for Outfall #159, which had an oil and gas odor, all other sites inspected had acceptable odor.

Oil sheen and trash along with sediment and iron flocculent deposits were found at many sites. The priority outfalls are listed in the following table.

*Table 24: Field Screening Results for Priority Outfalls*

Outfall #	Problem
#26	Washwater staining at stormdrain inlets
#106	Embankment erosion, metal corrosion
#120	Sinkholes forming above the outfall pipe
#159	Detergent presence and foul odor/water quality complaints
#206	Metal corrosion, pipe invert missing

*Commercial and Industrial Visual Surveys*

During the fiscal year 2015 screening, portions of the development district containing large amounts of commercial and industrial land uses were selected for visual surveys. These areas included commercial and industrial land near the St. Charles Towne Center and Waldorf. The visual surveys were conducted in mid-June of 2015. A map of areas surveyed is in Appendix H.

Within the above areas, three businesses were documented as having practices or conditions that would produce pollution to nearby storm drain inlets or watersheds. Madrid Tires was found to be washing cars in their parking lot. The Marlton Shell automated car wash was found to be discharging wash water to a nearby storm drain inlet. And AMC Theatre was found to have dumpster and waste grease stains going to a nearby storm drain inlet. Detailed reports and photographs can be found in Appendix H.

Sites identified as contributing potential pollution during the visual commercial and industrial property survey are listed in the following table.

*Table 25: Visual Survey of Commercial and Industrial Results – Fiscal Year 2015*

Site Name	Problem
2245 Crain Highway	Oily seepage
Madrid Tires	Washing cars in parking lot
Marlton Shell	Automated car wash leaking to stormdrain
AMC Theatre	Dumpster/waste grease stains to stormdrain

*Enforcement Activities (Past or Current Permit Term)*

Part 1 of this report, Table 10, contains status on past permit enforcement activities. The enforcement activities for issues identified late in this permit term occurred in the Fiscal Year 2016 reporting period, so will be included in the County’s subsequent annual report.

On May 6, 2015, County staff responding to a complaint of oil leaking onto an adjacent property documented a small discharge occurring along a parking lot curb between two properties at 2245 Crain Highway. This discharge appeared oily at the time of inspection. A re-inspection was performed on June 19, 2015 in which no discharge was observed from the concrete curb area. No obvious sources of pollution were evident from this inspection. This case is identified on the above Table 25, and a detailed report can be found in the appendix.

*Table 26: Citizen Complaint of Suspected Illicit Discharge in Fiscal Year 2015*

Date Received	Description	County Tracking #	Action
5/6/2015	Leaking containers behind vacant auto business draining onto neighboring property (2245 Crain Highway)	RFA 150284	5/6/2015- County inspected per complaint 5/13/2015 – Compliance letter sent 5/26/2015- KCI investigated and found no evidence of illicit discharge (CASE CLOSED)

*Proposed Program Improvements*

The current draft NPDES MS4 discharge permit, Section E.3, requires expansion of the program countywide, as well as inclusion of routine surveys of commercial and industrial areas to identify and eliminate pollutant sources from upland areas. The Illicit Discharge Detection and Elimination (IDDE) program under the new permit has two primary focuses: field screening of storm drain outfalls, and routine visual survey of commercial and industrial watersheds. The overall goal of the program is to identify illegal activities, including dumping and illicit connections to storm drains, and unpermitted activities such as poor housekeeping, poor onsite controls, unauthorized storage of material, and unpermitted activities.

The County is currently expanding its storm drain infrastructure mapping countywide which will allow future IDDE efforts to focus on a watershed-based approach to screening outfalls and visually surveying commercial and industrial areas.

The County is currently in the process of reviewing its IDDE program for programmatic updates, revisions, and improvements. Key aspects include updating County Code applicable to Illicit Discharge with provisions for enforcement, updates to County SOP's, update a County responsible personnel organizational chart, and making recommendations for a consolidated data management/reporting system.

Another key area of updating the IDDE program is improving the outreach and education component. From numerous site visits with potential violators, it was discovered that often the case is lack of knowledge regarding the potential illicit discharges, good housekeeping practices, and the County's enforcement program. To help address this lack of knowledge an explanatory brochure was developed, and an educational video was procured. More information on the County's existing and proposed outreach efforts for IDDE can be found in Part IV.D.6 of Part 2 of this report.

4. Litter and Floatables

*Charles County is required to address problems associated with litter and floatables in waterways that adversely affect water quality. Charles County needs to evaluate current litter control problems associated with discharges from its storm drain system and develop and implement a public outreach and education program as needed on a watershed by watershed basis.*

- a. As part of Charles County’s watershed assessments under Part IV.E.1 of this permit, Charles County will identify all litter control programs and identify potential sources, ways of elimination, and opportunities for overall improvement.*
- b. Within one year of permit issuance, as part of the public education program described in Part IV.D.6, Charles County will develop and implement a public education and outreach program to reduce littering and increase recycling. This includes:
 
  - i. Educating the public on the importance of reducing, reusing, and recycling;*
  - ii. Disseminating information by using signs, articles, and other media outlets; and*
  - iii. Promoting educational programs in schools, businesses, community associations, etc.**
- c. Evaluating annually the effectiveness of the education program.*
- d. Submit annually, a report which details progress toward implementing the public education and outreach program. The report shall describe the status of public outreach efforts including resources (e.g., personnel and financial) expended and the effectiveness of all program components.*

FY 2015 Status (Jan 1–June 30, 2015)

As part of the watershed assessments, litter control and dumping issues have been identified along with potential sources and ways of elimination. To date, three of the County’s watersheds have been assessed. These include the Port Tobacco River, Mattawoman Creek, and Lower Patuxent River watersheds. This information can be found under Part IV.E.1 of Part 2 of this report.

The Charles County Department of Public Works, Environmental Resources Division, (DPW) has multiple litter control programs that are effective in combatting litter.

A County has a webpage devoted to the Litter Control Program, and runs litter prevention campaign videos titled, *Keep Charles County Beautiful*, on the County’s Cable TV channel.

The screenshot shows the Charles County Maryland website. At the top, there is a navigation bar with links for Home, Residents, Businesses, Tourism, Departments, Jobs, Publications, eServices, Maps, FAQs, ePay, and Transparent Govt. Below this is a search bar and social media icons for Facebook, Twitter, YouTube, and others. The main content area is titled 'Litter Control Program' and features a video player with the text 'Charles County Recycling Litter Prevention 2014'. To the left of the video is a sidebar menu with 'Department of Public Works' and 'Department Links'. To the right is a 'How Can We Help You?' section with dropdown menus and a 'Related Links' section listing various programs like Adopt-A-Road, Backyard Composting, and Recycling Centers. At the bottom right is a 'Contact Us' section with a phone number: 201.833.2500, 201.870.2778.

The litter control crews routinely patrol the litter hot-spots in the County, as well as respond to residents regarding complaints. The crews have removed 274 tons of litter from the roads.

The Adopt-A-Road program allows residents to volunteer to clean up their county roads. A sign is placed on the adopted road in recognition of the group/individual that adopted it. The program currently has 100 roads adopted and 125 cleanings have been reported.

The Potomac River Watershed Cleanup had 290 volunteers that removed 39.82 tons of debris/litter from various beaches along the watershed. There have also been 22 Community Cleanup Events that the County provides to neighborhoods that contain litter hot spots.

The County is also looking to add Adopt-A-Spot to our litter control volunteer opportunities. This will allow schools, businesses, and any other organized groups to adopt a “spot” or location that they wish to clear of litter. It is still in a planning stage, but it is one way the County will expand its litter control program and involve residents.

DPW has increased their efforts to educate the public on the importance of reducing, reusing, and recycling in numerous ways. In Fiscal Year 2015, DPW conducted or developed: thirty school visits, three television commercials, one radio advertisement, six newspaper ads, three brochures, mailed 60,000 residents handouts in their tax bill, and twenty news releases, all regarding the importance recycling and litter control. There were also two outreach events that covered secure paper shredding, rain barrel workshops, and composting workshops. The budget for all public outreach and education totaled \$55,000.00, including printing, marketing, community promotions, and rain barrels subsidy.



The effectiveness of the education programs that Charles County can be measured by our waste diversion rate of 56%, which is an increase over the last fiscal year.

Following is the County’s website for the Recycling Program.

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charlescountymd.gov » Public Works » Recycling

Department of Public Works

- ▶ La Plata Office (Facilities)
- ▶ Buildings and Trades
- ▶ Environmental Resources
- ▶ Landfill Operations
- ▶ Parks and Grounds
- ▶ Recycling
- ▶ Roads
- ▶ Mattawoman Office (Utilities)
- ▶ Water and Sewer Operations and Maintenance
- ▶ Technical Support

**Recycling Program**

CC Recycling - You've Got The Bin Long Fo...

**CHARLES COUNTY RECYCLES!**

Funded through Charles County's annual environmental service fee, our residential recycling program consists of four Recycling Centers and seven 24-Hour Used Motor Oil and Antifreeze Collection Sites. In addition to these facilities, Curbside Recycling Collection is provided to approximately 43,560 homes located in the more densely populated areas of the county with expansions occurring as often as possible. State mandated to recycle 35% of its waste stream, in 2014 Charles County achieved a 51% recycling rate and a 5% source reduction credit equaling a total waste diversion rate of 56%.

In those areas that receive curbside recycling service, single stream recycling materials are collected year-round on an every-other-week basis and yard waste materials are collected weekly by a separate truck, April through December. All materials must be placed curbside by 7:00 a.m. to ensure pick-up.

**How Can We Help You?**

Most Popular

How do I...?

**Related Links**

- ▶ Apartment and Condominium Recycling
- ▶ Backyard Composting
- ▶ Curbside Recycling
- ▶ Free Mulch
- ▶ Household Hazardous Waste
- ▶ Landfill
- ▶ Litter Control
- ▶ Piney Church Road Mulch Facility
- ▶ Recycling Centers
- ▶ Tag-A-Bag
- ▶ Used Motor Oil and Antifreeze Collection Sites

**Contact Us**

301-932-3599 301-870-2778  
301-932-5656  
7:30 a.m.-4:00 p.m. M-F

**Mailing Address:**  
1001 Radio Station Rd., La Plata, MD 20646

**Physical Address:**

5. Property Management and Maintenance

- a. *Charles County shall ensure that a Notice of Intent (NOI) has been submitted to MDE and a pollution prevention plan developed for each County-owned municipal facility requiring NPDES stormwater general permit coverage. The status of pollution prevention plan development and implementation for each County-owned municipal facility shall be reviewed, documented, and submitted to MDE annually.*
- b. *The County shall implement a program to reduce pollutants associated with maintenance activities at County-owned facilities including parks, roadways, and parking lots. The maintenance program shall include these or MDE-approved alternate activities:*
  - i. *Street sweeping;*
  - ii. *Inlet inspection and cleaning;*
  - iii. *Reducing the use of pesticides, herbicides, fertilizers, and other pollutants associated with vegetation management through increased use of integrated pest management;*
  - iv. *Reducing the use of winter weather deicing materials, equipment calibration, employee training, and effective decision-making; and*
  - v. *Ensuring that all County staff receives adequate training in pollution prevention and good housekeeping practices.*

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

FY 2015 Status (Jan 1–June 30, 2015)

A Notice of Intent has been submitted to MDE and a pollution prevention plan developed for each County-owned municipal facility requiring NPDES stormwater general permit coverage. Further information is included in Part 1 of this report.

The County implements the following programs to reduce pollutants associated with with maintenance activities at County-owned facilities including parks, roadways, and parking lots:

- i. In Fiscal Year 2015, the Roads Division (Roads) swept 182.14 miles of Charles County roadways, mostly within highest traffic and residential areas. Fiscal Year 2016 budget for street sweeping is \$50,000.00.

- ii. The weight of material removed from storm drain inlets cleanings is 10.5 tons in the second half of Fiscal Year 2015. The amount has decreased since many storm drain inlets did not require cleaning at the time of inspection. Fiscal Year 2016 budget for inlet cleaning is \$90,000.00.
- iii. Roads had a significant increase in the amount of herbicides used in roadway management, since staff became properly certified as Licensed Pesticide Applicators. In the second half of Fiscal Year 2015, 125 mixed gallons of herbicides has been applied. Roads does not apply any other chemicals or pollutants for roadway management.

The Parks and Grounds Division (Parks) is responsible for maintaining all parks, sport facilities, and lawn care surrounding government buildings within the County. In Fiscal Year 2015, Parks converted from a quick release to slow release fertilizer for all applications. Coated/slow release carrier minimized risk of fertilizer moving into ground and surface water through and less likelihood of runoff. Also, the use of slow release fertilizer has reduced the frequency of grass mowing.

Prior to 2015, Charles County was typically applying approximately 2.90 lbs. of nitrogen per acre/per year. This level has been reduced to 1.50 lbs/acre/year – a reduction of approximately 48%. Also, in the beginning of 2015, Parks no longer uses any fertilizers that contain phosphates. Lastly, Parks obtained a “Professional Fertilizer Business License” through the Maryland Department of Agriculture (License No. MDA-F 0910).

Staff goal was to reduce use of Glyphosate post emergent weed control by 30% during 2015. The effort has been to increase mechanical removal of weed growth and/or look for areas that could be allowed to grow-up naturally (and not require landscape attention). A new Standard Operating Procedure (SOP) has been developed to clearly define application procedures and to educate staff on proper use of these materials.

To promote good stewardship and gain clearer understanding specific turf nutrient needs, all turf locations have received soil testing by an independent consultant. Recommendations are now being used to monitor and manage each individual park and government grounds location.

The Grounds Operation Manager has successfully become certified as a Professional Turfgrass Fertilizer Applicator (through the Maryland

Department of Agriculture’s Nutrient Management Program). Along with this newly certified staff, through a recent hire, Parks was able to increase our in-house Professional Turfgrass Fertilizer Applicator certifications from one staff member in 2014 to three in 2015.

During 2015, the Parks Grounds Operation Manager has been working directly with the Certified Pesticide Applicator to log-in a year’s worth of direction, tutorial and practical experience. This training (12 months) has made this manager eligible to become certified after successfully passing the exam.

Parks uses a combination of magnesium chloride and potassium chloride on pedestrian walkways. While Parks cannot eliminate the use of this product (due to public safety concerns), staff has been trained to reduce the amount used whenever possible. This included the following direction: shovel first prior to applying material, demonstration of appropriate application rates, during large winter events, and close lesser-used walkways.

- iv. Roads has reduced the salt tonnage used on roadways from 2500 tons to 1500 tons for Fiscal Year 2015, despite a 500 mile increase of roadway maintenance within the County. This is a result of improved procedures. Rather than spreading salt throughout the storm event, Roads waits until the storm is nearly done to increase its effectiveness and generates less runoff.

Salt spreaders are calibrated before and after their use to ensure they are working effectively. Staff is also trained on proper salt-spreading techniques and use before the beginning of each winter season. If needed, the staff is trained throughout the season, depending on the severity of winter weather.

- v. Per the Charles County Department of Public Work’s Stormwater Pollution Prevention Plan (SWPPP), all applicable staff is trained annually on, but not limited to: spill prevention and control, proper fueling procedures, general good housekeeping practices, waste recycling, and used oil management. A video is also used to portray the important of illicit discharge detection and elimination. A record of all employees who has attended is kept with the SWPPP. Any employee that does not attend the annual training is briefed by their Supervisor.

6. Public Education

*Charles County shall continue to implement a public education and outreach program to reduce stormwater pollutants. Outreach efforts may be integrated with other aspects of the County’s activities. These efforts are to be documented and summarized in each annual report. The County shall continue to implement a public outreach and education campaign with specific performance goals and deadlines to:*

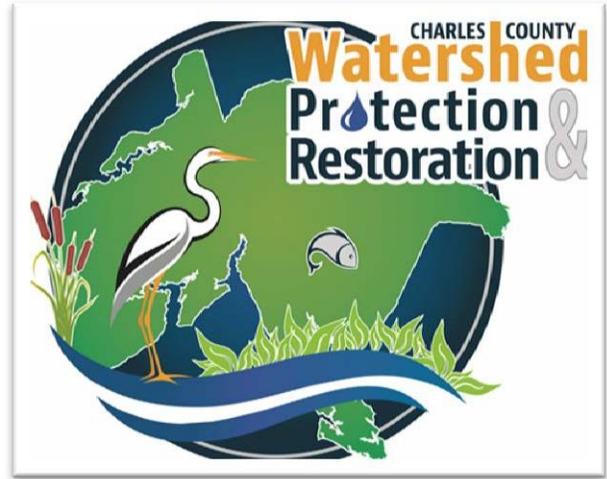
- A. Maintain a compliance hotline or similar mechanism for public reporting of water quality complaints, including suspected illicit discharges, illegal dumping, and spills.*
  
- B. Provide information to inform the general public about the benefits of:
 
  - i. Increasing water conservation;*
  - ii. Residential and community stormwater management implementation and facility maintenance;*
  - iii. Proper erosion and sediment control practices;*
  - iv. Increasing proper disposal of household hazardous waste;*
  - v. Improving lawn care and landscape management (e.g., the proper use of herbicides, pesticides, and fertilizers, ice control and snow removal, cash for clippers, etc.);*
  - vi. Residential car care and washing; and*
  - vii. Proper pet waste management.**
  
- C. Provide information regarding the following water quality issues to the regulated community when requested:
 
  - i. NPDES permitting requirements;*
  - ii. Pollution prevention plan development;*
  - iii. Proper housekeeping; and*
  - iv. Spill prevention and response.**

FY 2015 Status (Jan 1–June 30, 2015)

In the second half of Fiscal Year 2015 the County furthered the integration of outreach and education efforts with the other aspects of the County’s permit activities. Following is an outlined plan for this purpose. The County’s Departments of Public Works and Planning and Growth Management continued their efforts on the outreach initiatives, with support from outside agencies, such as University of Maryland. To support Watershed Protection and Restoration outreach, a program logo was developed and a restoration and outreach grant partnership formed with Chesapeake Bay Trust. Following is a discussion of these activities, and an outline plan of outreach topics, discussing goals and current progress for each.

*Charles County Watershed Protection and Restoration Program - Logo*

As a foundational step to build public recognition and cohesiveness of the County’s Watershed Protection and Restoration Program (WPRP), a logo was developed in the second half of Fiscal Year 2015. The County’s Medial Specialist developed the logo to be cohesive with the County’s brand.



Because the tasks of the County’s MS4 permit are distributed across two departments and several divisions, use of the logo will unify the various programs under the single goal, and increase clarification of program activities and outreach.

*Chesapeake Bay Trust Grant Partnership Program*

Charles County partnered with the Chesapeake Bay Trust in the second half of Fiscal Year 2015, to establish an *Outreach and Restoration Grant Program* as allowed by the County’s WPRP. This grant program encourages outreach and community engagement activities that increase stewardship ethic of natural resources and on-the-ground restoration activities that demonstrate restoration techniques and engage Charles County citizens in the restoration and protection of the Chesapeake Bay and its rivers.



County and Trust staff initiated conversations with non-profits in the County to explain the grants goals and objectives, and discuss MS4 outreach and restoration needs, and potential opportunities. The timing of the grant was a little early for Charles County, because the local watershed assessments, which identify potential needs and

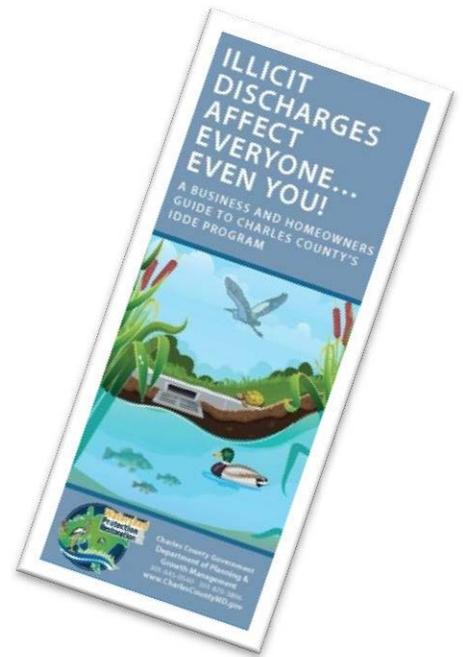
opportunities, were not available. However, by next year’s grant cycle, it is anticipated that non-profits will have had time to prepare, and will be an asset to the County’s outreach efforts, and implementation of TMDL restoration plans. Appendix I includes a copy of the Grant webpage and Request for Proposals.

A. *Public Reporting of Water Quality Complaints.* The County maintains a call-in number and an online reporting system for water quality complaints, including suspected illicit discharges, illegal dumping, and spills.

Using the new WPRP logo, an outreach tool was prepared primarily for the County’s use when visiting sites to investigate suspected illicit discharges. It was discovered early on in these types of investigations, that many businesses in the County were unaware of how their activities may affect the environment.

The brochure describes: the County’s Illicit Discharge Detection and Elimination Program; What is an Illicit Discharge; What is Illegal Dumping; Penalties; and Reporting.

The online reporting tool can be accessed from the Charles County homepage under “How Can We Help You?”





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### How Can We Help You?

## Report a Structure or Property Complaint

Please fill out the following form to submit your complaint. If you would like an e-mail confirmation or updates on the status of your complaint, please leave an e-mail address.

**Date**

Month

Day

**Email Address**

**Name**

**Type of Complaint (Choose all that apply) \***

- Abandoned Structure
- Junk Car
- Property Maintenance
- Illicit Discharge
- Site Drainage Problems
- Tall Grass
- Work Without Permits
- Other/Misc.

**Description of Complaint \***

Please provide a description of your complaint (e.g. the car is located on the left side of the house facing away from the street).

**Location of Complaint**

Please provide the address for the complaint location. If you do not have this, please provide the address that you do have that is closest to the complaint location.

**Street Address 1 (or Nearest Cross Street) \***

**Street Address 2**

**City \***

**Additional directions**

If address of the complaint house is not available and you have provided the closest address, please provide a description of the house (e.g. it is a white house with blue shutters and a black mailbox).

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[Department Contact](#)
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**OFFICIAL WEBSITE OF THE CHARLES COUNTY GOVERNMENT**  
 200 Baltimore Street | P.O. Box 2150 | La Plata, Maryland 20646  
[Mobile Site](#)

301-645-0550 | 301-870-3000 | MD Relay: 711 • 1-800-735-2258 (TDD)  
 Monday–Friday 8:00 a.m.–4:30 p.m.  
**Equal Opportunity County**

https://www.charlescountymd.gov/content/report-abandoned-structure-or-similar-complaint 1/

*Public Reporting of Water Quality Complaints, including suspected illicit discharges, illegal dumping, and spills.*

- i. *Common Issues* – Poor dumpster maintenance, outside storage of potentially hazardous materials, vehicle wash going to storm drains
- ii. *Audience*- Business owners, county inspectors and field personnel, and general public
- iii. *Goals*
  1. Increase knowledge of good housekeeping, potential impacts, laws, and reporting suspected cases
  2. Develop educational information for business owners and general public
  3. Develop training for county inspectors and field personnel
  4. Develop and implement a schedule of outreach methods
  5. Measure effectiveness of outreach methods
- iv. *Existing Resources*
  1. Online reporting tool for suspected illicit discharges
  2. *Excal Visual* video
  3. Illicit Discharge brochure
  4. Webpage
- v. *Steps*
  1. Continue use of informational handout, CCG Video, ads
  2. Develop and implement procedure and schedule for distributing information
    - a. Mailing to businesses
    - b. Site visits by outreach and inspection staff
    - c. Billboard campaign
    - d. Press Releases
  3. Add explanations and information to frame the on-line reporting tool.
  4. Improve coordination with other departments for this type of outreach.
  5. Develop partnerships with non-profits through the use of the Chesapeake Bay Trust Grant for Outreach and Restoration.
  6. Staff training to provide customer service regarding the reporting tools.



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  - ▶ Codes, Permits and Inspection Services (CPIS)
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## Illicit Discharge Detection and Elimination (IDDE) Program



**ILLCIT DISCHARGES AFFECT EVERYONE...EVEN YOU!**

**Definition of Illicit Discharge**

An illicit discharge is any discharge to a municipal separate storm sewer system that is not composed entirely of stormwater runoff except discharges from common residential outdoor uses, firefighting activities, or from any legally permitted discharge. In the event an activity is found to discharge sewage, industrial waste, or other waste into the storm sewer system, the County shall notify the person performing such activities, and shall order such activities be stopped or conducted in such a manner as to avoid the discharge of sewage, industrial wastes, or other wastes into the storm sewer system. The County's regulations regarding Illicit Discharge are located in the Storm Drainage Ordinance, Section 19.2.

**Charles County's IDDE Program**

The County conducts an annual random screening of stormdrain outfalls as well as a routine survey of commercial and industrial watersheds. The overall goal of the IDDE program is to identify illegal dumping activities, unauthorized storage of materials and illicit discharges. By identifying such activities and having specific reports for a violation, the County proceeds with efforts to remove such unpermitted discharges.

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*B. Providing information to the general public about benefits of items B.i-vii above.*

The County continues to maintain webpages and brochures on many of these items and coordinate with the University of Maryland Extension as appropriate. Following are individual descriptions.

*I. Water Conservation:*

*i. Common Issues* – Drinking water supplies decreasing, overwatering of lawns

*ii. Audience* – Home owners associations, businesses, landscaping companies, property managers, homeowners

*iii. Goals*

1. Increase awareness of water conservation practices

*iv. Existing Resources*

1. Brochure
2. Webpage

*v. Next Steps*

1. Review and update the existing brochure
2. Coordinate with overall outreach program





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### Water Conservation



As compared to the Western side of the Country, the East Coast has generally enjoyed an abundance of water and is accustomed to this, often overlooking the importance of conserving water. However, human populations continue to increase and so does the demand on water resources. Over the past 30 years, water consumption has increased by 70% and continues to grow. In Charles County, groundwater resources are further constrained by geology that limits the sustainability as demand continues to increase. Water conservation is important in order to ensure adequate water resources for the future. Continual water conservation practice can prevent or postpone the need for new water supply infrastructure. By reducing water demands, utilities can extend the life of existing infrastructure and pass the savings onto consumers.

**Ways to Conserve Water inside the Home (60% of household water use):**

- Check and/or repair leaking faucets.
- Replace old faucets with water efficient models.
- Plug the sink when hand washing or rinsing dishes.
- Install low flow toilets, and test toilets regularly for leaks.
- Replace old showerheads with efficient models.
- Take shorter showers.
- Turn off water when shaving or brushing teeth.
- Only run full loads of laundry.

**Ways to Conserve Water outside the Home (40% of household water use):**

- Use drip irrigation, soil soakers or efficient sprinkler systems for watering.
- Water the lawn only when ground is dry and not more than once per week.
- Water during the coolest part of the day, in the morning.
- Pull weeds to decrease competition for water.
- Increase mowing height by 2 – 3 inches.
- Limit grass areas and use trees, shrubs and plants that require less water.
- Use an automatic shut off nozzle on hoses.
- Collect rain water for reuse in the garden.
- Cover pools to prevent evaporation.

To learn more about where our drinking water comes from and why it is important to conserve our water resources please visit the U.S. Geological Survey's [website](#) on the coastal plain region's aquifer system.

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#### Related Links

- ▶ [FY16 Fees and Charges](#)

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*II. Residential and Community stormwater management and implementation of facility maintenance:*

- i. Common Issues* – High number of failed maintenance inspections, large number of BMPs on residential lots without homeowner knowledge, pervious paving in communities and on businesses without knowledge of proper care
- ii. Audience* – Home owners associations, businesses, property managers, homeowners

*iii. Goals*

- 1. Develop bmp information and educational opportunities for various audiences

*iv. Existing Resources*

- 1. Rain barrel workshops held twice annually in partnership with Department of Public Works and University of Maryland Extension
- 2. Chesapeake Bay Trust Grant for Outreach and Restoration Projects by Non-Profits
- 3. University of Maryland Extension Stormwater Management and Restoration Tracker (SMART) Tool
- 4. Webpage



*v. Next Steps*

- 1. Continue to develop and improve informational events and workshops, handouts, interactive website, CCGTV, ads, signage, etc.
- 2. Expand use of Chesapeake Bay Trust Grant for Outreach and Restoration Projects by local non-profits for this purpose



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## Community Stormwater Facility Inspection and Maintenance



Stormwater facilities absorb or slow stormwater runoff from urban impervious surfaces like roads, parking lots and rooftops. They also remove contaminants the runoff picks up from these surfaces, before being allowed to discharge into local streams. Stormwater facilities are vital infrastructure in the urban environment that helps to safeguard local waterways from flash flooding, erosion and pollutants.

The County is responsible for inspecting and ensuring maintenance of all public and private stormwater management facilities. It is important to everyone that these structures are maintained, so they function as intended providing stormwater management for parks, schools, residential neighborhoods and businesses. These inspections occur once every 3 years to determine a facility's condition and identify its need for maintenance.

Stormwater facilities over time can become clogged by trash, debris sediment and mud. The facilities can also develop structural cracks and leaks that require regular maintenance to prevent problems or structural failure. Once a facility fails, the costs of repairs are expensive and can result in property damage or other loss. By providing routine inspections and maintenance to keep stormwater facilities working can save money, property and protect public safety.

Valuable Stormwater Management Infrastructure Functions:

- Can reduce community flooding
- Can remove pollutants carried by stormwater runoff
- Helps to recharge groundwater supply
- Helps protect local stream banks from erosion
- Helps to protect public health

Charles County partnered with the [Chesapeake Stormwater Network](#) and the [Alliance for the Chesapeake Bay](#) to train inspectors on proper stormwater management inspection and maintenance protocols on September 17, 2015 from 8:30 am to 12:30 pm. [Click here to view training materials!](#)

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vi. *Proper erosion and sediment control practices:*

i. *Common Issues* – Poorly implemented sediment and erosion control on properties under construction causing sedimentation in streams

ii. *Audience* – Building contractors

iii. *Goals*

1. Reduce sedimentation into streams by improving implementation of sediment and erosion control practices on construction sites

iv. *Existing Resources*

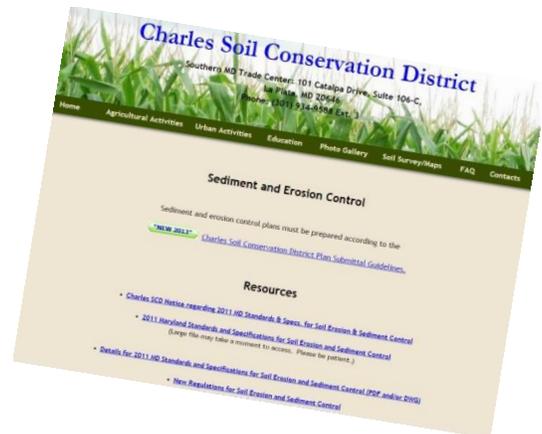
1. Charles County Sediment and Erosion Control Ordinance
2. Charles Soil Conservation District Website and Guidelines
3. Online Green Card Certification Course

<http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/SoilErosionandSedimentControl/Pages/programs/waterprograms/sedimentandstormwater/erosionsedimentcontrol/index.aspx>

4. Webpage

v. *Steps*

1. Continue to develop and improve informational events and workshops, handouts, interactive website, CCGTV, ads, signage, etc.
2. Expand use of Chesapeake Bay Trust Grant for Outreach and Restoration Projects by local non-profits for this purpose





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**Sediment and Erosion Control Practices**



MDE has given authority to Charles County to implement the State Sediment and Erosion Control Program. This program is required to be addressed for all new development within the County that either disturbs more than 5,000 square feet or involves moving 100 cubic yards of earth or more. Development that triggers the above requirement must submit design plans that outline the intended sediment and erosion control practices that will be utilized during construction.

The purpose of the sediment and erosion control program is to minimize the amount of sediment that leaves a construction site. There are many sediment control practices used for this purpose. These include:

- Silt Fence
- Super Silt Fence
- Sediment basins
- Sediment Traps
- Temporary Swales
- Earth Dikes
- Construction Entrances

As part of the sediment control program, the County is required to inspect each site to determine whether the practices are installed properly and in accordance with the approved sediment control design plans.

For more information click below to find the County's Grading and Sediment Control Ordinance:

- [Grading and Sediment Control Ordinance 2006 \(posted 8/6/2015\)](#)
- [Grading and Sediment Control Ordinance 2013 \(posted 8/6/2015\)](#)

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vii. *Increasing proper disposal of household hazardous waste:*

i. *Common Issues* – Hazardous waste and prescription medications are sometimes disposed of incorrectly causing potential harm to the environment, streams, and illicit discharges into the storm drain system

ii. *Audience* – Homeowners

iii. *Goals* – Increase awareness of proper disposal of household hazardous waste and medications to reduce the potential harm caused by doing otherwise

iv. *Existing Resources*

1. Household hazardous waste days established on a monthly basis
2. Going Green in Charles County Brochure
3. Charles County Sheriff Station’s Medication Take-Back Program for prescription drug drop-off
4. Webpage

i. *Next Steps*

1. Continue to develop and improve events, workshops, handouts, interactive website, CCGTV, ads, signage, etc.
2. Include household hazardous waste in illicit discharge program efforts





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## Proper Disposal of Household Hazardous Waste



Many products found in homes contain chemicals that can be potentially harmful to both people and the environment. These products are considered hazardous and include such things as oven cleaners, paint removers, insecticides, solvents, drain cleaners etc. It is important for homeowners and businesses to dispose of the products properly so they do not contaminate the environment. If toxic or hazardous wastes are disposed of with regular garbage, they could destroy landfill liners and compromise the disposal area. Properly disposing of household hazardous wastes ensures that contamination through leaks and spills does not occur.

When use of hazardous household products is unavoidable, be sure not to flush them down the drain. Household drains lead to either a septic system or wastewater treatment plants which do not have the adequate capability to remove hazardous chemicals from wastewater. Toxic chemicals disrupt microbial processes in septic tanks and treatment plants, reducing their effectiveness. Toxins from hazardous products pass through the treatment process and can contaminate water resources. Hazardous products should never be poured down a storm sewer drain which is transported untreated into nearby waterways.

Common Household hazardous products:

- Products labeled as toxic, flammable, or corrosive
- Cleaning products: oven cleaner, floor wax, furniture polish, drain cleaner, spot remover
- Car products: motor oil, battery acid, gasoline, car wax, engine cleaner, antifreeze, degreaser, radiator flush, rust preventative
- Home Improvement: paints, preservatives, strippers, cleaners, solvents

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- viii. *Improving lawn care and landscape management (e.g. proper use of herbicides, pesticides, and fertilizers, ice control and snow removal, cash for clippers, etc.):*
  - i. *Common Issues* – areas of erosion on lawns, improper use of herbicides, pesticides, fertilizers, and ice control materials, underutilization of conservation landscaping
  - ii. *Audience* – Home owners associations, businesses, landscaping companies, property managers, homeowners
  - iii. *Goals*
    - 1. Improve lawn care and landscape management practices
  - iv. *Existing Resources*
    - 1. Composting workshops held twice annually
    - 2. Home composting brochure
    - 3. Partnership (2009-2013) with University of University of Maryland Extension and MRWLawns, Inc. to conduct lawn maintenance workshops for homeowners twice annually
    - 4. Webpages
  - v. *Steps*
    - 1. Develop partnerships with organizations that have expertise in lawn care and landscape management to determine future actions
    - 2. Expand use of Chesapeake Bay Trust Grant for Outreach and Restoration Projects by local non-profits for this purpose





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## Lawn Care and Landscape Management



- **How to responsibly fertilize:**
  - Over-applying fertilizers is not good for plants or the environment
  - Have your soil tested to determine what fertilizer and how much is needed if at all.
  - For Lawns and gardens, soils should be tested every 3 years.
  - Use a certified professional or be sure to follow the label directions for proper application.
  - Keep fertilizer at least 15 feet away from streams and clean up any fertilizer that land on impervious services.
  - Leave grass clipping on the lawn as a free slow-release fertilizer
  - Make your own fertilizer, try composting.
  - Visit the [UMD Extension website below](#) for a seasonal fertilizer recommendation schedule.
- **Pesticide Alternatives - Integrated Pest Management (IPM):**
  - Preventive Measures-
    - Use native plants that are resistant to pests and diseases in your landscape.
    - Use plants that flower or fruit at different times of year
    - Rotate vegetables to cut down on disease and insects
    - Plant a mix of flowers, herbs and vegetables together to attract pollinators and beneficial insects.
    - Place bird and bat houses in the landscape
  - Beneficial Insects -
    - encourage beneficial insects to your yard by planting attracting flower, and
    - avoid using insecticides
  - Physical Controls -
    - remove weeds and insects by hand,
    - remove diseased plants, weeds and plant litter regularly
    - use protective tubes or sleeves around young vegetables or flowers, and
    - wash pests away with water instead of pesticide spray.
  - Apply pesticide only where needed and not blanket the spray over an area.

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ix. *Residential car care and washing:*

i. *Common Issues* – detergents and other pollutants, such as vehicle fluids, and oils, being washed directly into streams and affecting aquatic life

ii. *Audience* – Home Owners Associations, homeowners

iii. *Goals*

1. Increase awareness of proper residential car care and washing, and identify opportunities to implement programs to improve owner practices

iv. *Existing Resources*

1. Webpage

v. *Steps*

1. Continue to develop and improve events, workshops, handouts, interactive website, CCGTV, ads, signage, etc.

2. Include residential car care in illicit discharge program efforts

3. Expand use of Chesapeake Bay Trust Grant for Outreach and Restoration Projects by local non-profits for this purpose



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## Proper Car Care and Washing



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Car washing and care to reduce stormwater pollution:

Car wash waste water contains many pollutants, such as heavy metals, fine dust and dirt, soaps and cleaners that can pollute nearby streams if it's not treated or infiltrated.

- Use a commercial car wash that recycles its water and sends it to a WWTP for treatment.
- When washing at home, wash your car on pervious surfaces where the water can infiltrate into the ground instead of running off impervious driveways and streets.
- Check for leaks and fix them immediately, use drip pans to prevent leaks from contaminating stormwater runoff.
- Never pour vehicle waste into storm drains; store and dispose of vehicle waste properly. Dumping used motor oil into storm drains is illegal. Heavy metals and other toxins contaminate the soil and water sources posing a health hazard to people and the environment. Used motor oil is the single largest source of oil pollution. Recycle your used motor oil.
- Keep your car tuned up, smooth running cars burn less fuel and regular tune-ups also reduce the amount of pollutes in the car's exhaust.
- Use alternatives sources of transportation than your car, carpool, take the bus, bike or walk to your destination.
- Salt pollutes waterways and groundwater; it also can kill grass and trees, as well as corroding metals. Shovel driveways and sidewalks before the snow gets packed down and icy instead of using salt. Use sand for traction where needed and sweep the sand up after the snow melts to keep it out of stormwater drains and steams.

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x. *Proper pet waste management:*

i. *Common Issues* – High bacteria counts in streams, human health risks, poor property appearance, impact on drinking water through lawn sprinkler systems

ii. *Audience* – Home owners associations, pet owners, business owners, property managers

iii. *Goals*

1. Increase awareness of pet waste management and identify opportunities to implement programs to improve pet waste management

iv. *Existing Resources*

1. County dog parks, and general County parks
2. Dogfest at County Fairgrounds
3. Brochure
4. Webpage



v. *Steps*

1. Continue to develop and improve outreach activities
2. Expand use of Chesapeake Bay Trust Grant for Outreach and Restoration Projects by local non-profits for this purpose



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## Proper Pet Waste Management



10/10/2015

10/10/2015

Pet waste is not good fertilizer for the grass; it is a health risk to people and animals. The bacteria in pet waste is often washed down storm drains polluting waterways.

- When walking bring plastic bags with you, to dispose of your pets waste in the trash.
- When at home also pick up after your pet and dispose waste in the garbage.
- Flushing pet waste is the best disposal method because then it is treated through a sewage treatment plant or septic.
- Keep a supply of bags at hand or reuse old bags; you can also use a pooper scooper, or a yard doggie digester system for disposal.
- Encourage other pet owners to collect their pet's waste so it will not wash into storm drains and streams.
- Many communities and County parks have posted signs and have installed pet waste disposal stations to encourage owners to pick up after their pets.
- Pet waste management results in cleaner neighborhoods, improved aesthetics and better water quality.

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### Related Links

- ▶ American Planning Association
- ▶ FY16 Fees and Charges
- ▶ Maryland Department of Natural Resources
- ▶ Maryland Department of Planning
- ▶ Maryland Department of the Environment
- ▶ Planning Commission Board Docs
- ▶ Southern Maryland Agricultural Development Commission
- ▶ State of Maryland's Green Website
- ▶ Town of La Plata
- ▶ US Green Building Council
- ▶ Urban Land Institute

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### Contact Us

301-645-0540   301-870-3896  
8:00 a.m.-4:30 p.m. M-F

**Mailing Address:**  
P.O. Box 2150, La Plata, MD 20646

**Physical Address**  
200 Baltimore St., La Plata, MD 20646

- C. *Provide information regarding the following water quality issues to the regulated community when requested:*
- i. *NPDES permitting requirements*
  - ii. *Pollution prevention plan development*
  - iii. *Proper housekeeping*
  - iv. *Spill prevention and response*

FY 2015 Status (Jan 1–June 30, 2015)

The County provides the following information when requested regarding NPDES permitting requirements, pollution prevention plan development, proper housekeeping and spill prevention and response:

Maryland Wastewater permits Program

<http://www.mde.state.md.us/programs/Water/wwp/Pages/index.aspx>

Maryland Water Permit Applications

[http://www.mde.state.md.us/programs/Permits/WaterManagementPermits/WaterDischargePermitApplications/Pages/Permits/WaterManagementPermits/water\\_permits/index.aspx](http://www.mde.state.md.us/programs/Permits/WaterManagementPermits/WaterDischargePermitApplications/Pages/Permits/WaterManagementPermits/water_permits/index.aspx)

Maryland NPDES Industrial & General Surface Water Discharge Permits

<http://www.mde.state.md.us/programs/Water/wwp/Pages/IndustrialSurfaceDischargePermits.aspx>

Maryland Guidance for Developing Your Storm Water Pollution Prevention Plan

[http://www.mde.maryland.gov/programs/Permits/WaterManagementPermits/WaterDischargePermitApplications/Documents/Marina%20GP/10MA\\_SWPPP\\_guidance.pdf](http://www.mde.maryland.gov/programs/Permits/WaterManagementPermits/WaterDischargePermitApplications/Documents/Marina%20GP/10MA_SWPPP_guidance.pdf)

Maryland Stormwater Pollution Prevention Guidance

<http://www.mde.maryland.gov/programs/Permits/WaterManagementPermits/WaterDischargePermitApplications/Documents/GDP%20Stormwater/MD%20Stormwater%20Hotspots.pdf>

Maryland Pollution Prevention

<http://mde.maryland.gov/programs/researchcenter/factsheets/crossmediafactsheets/pages/researchcenter/factsheets/departmental/index.aspx>

Maryland Spill Response - Toll Free Number (866) 633-4686

<http://mde.maryland.gov/aboutmde/ContactUs/EmergencyNumbers/Pages/ContactUs/emernumbers/index.aspx>

**IV.E. Restoration Plans and Total Maximum Daily Loads**

Overview of Permit Conditions

1. Watershed Assessments

- a. *By the end of the permit term, Charles County shall complete detailed watershed assessments for the entire County. Watershed assessments conducted during previous permit cycles may be used to comply with the requirement provided the assessments include all of the items listed in Part IV.E.1.b. below. Assessments shall be performed at an appropriate watershed scale (e.g., Maryland’s hierarchical eight- or twelve-digit sub-basins) and be based on MDE’s TMDL analysis or equivalent and comparable County water quality analysis;*
  
- b. *Watershed assessments by the County shall:*
  - i. *Determine current water quality conditions;*
  - ii. *Include the results of a visual watershed inspection;*
  - iii. *Identify and rank water quality problems;*
  - iv. *Prioritize all structural and nonstructural water quality improvement projects; and*
  - v. *Specify pollutant load reduction benchmarks and deadlines that demonstrate progress toward meeting all applicable stormwater WLAs.*

FY 2015 Status (Jan 1–June 30, 2015)

Charles County contracted KCI Technologies, Inc. to complete watershed assessments for each of the County’s watersheds. Watershed assessments were initiated in the summer of 2014, just prior to the County’s new permit term which began in December, 2014. A watershed, or groups of watersheds, will be assessed each year according to the following schedule in Table 27.

The Port Tobacco River was selected as a pilot watershed because it provided a variety of development types, including older and new development. Mattawoman Creek and Patuxent River Lower both have local approved SW-WLAs therefore they were selected for the second round of assessments in order to complete the work prior to development of the County’s Bay and local SW-WLA restoration plans.

*Table 27: Watershed Assessment Anticipated Completion Schedule*

<b>Anticipated Dates of Plan Development</b>	<b>Included Watersheds</b>	<b>Status as of October 2015</b>
Summer 2014 to Summer 2015	Port Tobacco River	Complete
Spring 2015 to Fall 2015	Mattawoman Creek Patuxent River Lower	In-Progress
Spring 2016 to Fall 2016	Gilbert Swamp Zekiah Swamp Wicomico River	Not initiated
Spring 2017 to Fall 2017	Potomac River Upper Tidal Potomac River Middle Tidal Potomac River Lower Tidal Nanjemoy Creek	Not initiated

The following summarizes the methods and findings of the assessments.

### **Port Tobacco River Watershed Assessment**

The Port Tobacco Watershed Assessment was completed in September of 2015. The complete report is included in this annual report as Appendix J. The goal of the assessment was to meet the County’s permit requirements under Section III.E.1.b. The assessment documented the current conditions of the watershed, identified issues, and identified and prioritized water quality improvements. The assessment included anticipated implementation costs and calculated the pollutant loading reduction and impervious surface treatment that would be expected from implementation of the recommended projects and programs.

The assessment included the following field and desktop assessments.

- Neighborhood Source Assessment
- Hotspot Site Investigations
- Nutrient Synoptic Sampling
- Stream Corridor Assessment

Results of the desktop and field watershed assessments were compiled and the results were analyzed to determine appropriate restoration measures. Structural and non-structural practices and programs suggested included:

- Stream restoration
- Shoreline erosion control

- Stormwater BMPs (swales, step pool stormwater conveyance, bioretention, wet pond)
- Reforestation
- Environmental site design
- Street sweeping
- Inlet cleaning
- Trash clean-up
- Homeowner practices (rain barrels, rain gardens, downspout disconnect)

Cost estimates and anticipated load reductions for each project were calculated. These are summarized in the following table.

*Table 28: Cost Estimate and Load Reduction by Project Type in Port Tobacco River Watershed*

Project Type	Total Initial Cost	Total Cost Over 20 Years	Quantity	Load Reduction (lbs/year)		
				TN	TP	TSS
Stream Restoration	\$12,106,005	\$15,450,641	18,769 LF	1,407.7	1,483.2	327,180.0
Shoreline Erosion Control	\$753,920	\$753,920	2,432 LF	182.4	165.4	333,184.0
Stormwater Management BMPs*	\$6,820,541	\$8,657,261	28 projects	6,373.2	688.3	192,436.6
Reforestation	\$904,478	\$1,567,954	6 sites	310.1	19.6	2,862.0
Street Sweeping	\$564	\$11,273	4.6 miles	12.3	4.9	1,478.4
Inlet Cleaning	\$2,990	\$59,800	115 inlets	53.3	21.3	6,394.8
Trash Cleanups	\$7,000	\$7,000	7 sites	N/A	N/A	N/A
Homeowner Practices	\$2,129,216	\$2,129,216	N/A	161.4	34.3	N/A
Septic Practices**	\$71,500	\$689,000	133 sites	0.0	0.0	0.0
<b>Total</b>	<b>\$22,796,214</b>	<b>\$29,326,065</b>	<b>N/A</b>	<b>8,500.40</b>	<b>2,417.00</b>	<b>863,535.80</b>

\*Includes sites identified by Vista Design, Inc. in *Port Tobacco River Watershed NPDES: MS4 Retrofit Study* (2015).

\*\*No credit given to septic practices for Urban MS4 source sector

Lastly, projects were prioritized for implementation by scoring each project on a series of metrics including project benefits, project constraints, and project costs. Each project was ranked based on the total score and a final prioritization was determined to aid the County’s planning process of project implementation.

As a requirement of the NPDES MS4 Discharge Permit issued by MDE to Charles County on December 26, 2014, the County must treat 20% of remaining baseline untreated impervious acres by 2019. The following table shows the impervious treatment achieved by planned strategies described above, which will count towards this goal.

*Table 29: Port Tobacco River Impervious Accounting*

<b>Port Tobacco Impervious Accounting</b>	
Port Tobacco Impervious Estimate*	1,030.8 acres
Impervious Treated	384.7 acres
Impervious Treated Percent	37%
Impervious Untreated	646.1 acres
Impervious Untreated Percent	63%
<b>Port Tobacco Potential Impervious Treatment</b>	
Operational Practices	7.5 acres
Septic Pump Outs	3.9 acres
Septic Upgrades	0.5 acres
Homeowner Practices	81.4 acres
Structural Practices	374.4 acres
Vista Retrofit Projects	196.2 acres
<b>Total Potential Impervious Treatment</b>	<b>663.8 acres</b>
<b>Port Tobacco Summary of Projected Progress</b>	
Impervious Untreated	646.1 acres
Total Potential Impervious Treatment	663.8 acres
<b>Percent of Untreated Impervious Treated (Port Tobacco Only)</b>	<b>103%</b>

\*Impervious acres include County and private lands outside the Town of LaPlata, and is based on 2011 aerial photos.

### **Mattawoman Creek and Lower Patuxent River Watersheds Assessment**

The Mattawoman Creek and Lower Patuxent River Watersheds Assessment is currently in progress, as of June 2015, and is anticipated to be completed in November 2015. The methods described above for the Port Tobacco Watershed assessment were used for both Mattawoman Creek and Lower Patuxent River Watershed assessments.

Field and desktop assessments were performed similar to Port Tobacco assessments. The neighborhood source assessment and hotspot site investigations occurred on March 19 and 20, 2015. A total of 10 neighborhoods were assessed in the Mattawoman Creek Watershed and 4 neighborhoods were assessed in the Lower Patuxent River Watershed. Twenty-one potential hotspots were visited in the Mattawoman Creek Watershed and one potential hotspot site in the Lower Patuxent River Watershed. Nutrient synoptic sampling occurred between April 22 and 29, 2015 and 51 sites were visited in the Mattawoman Creek Watershed and 14 sites were visited in the Lower Patuxent River Watershed. Finally, the stream corridor assessment occurred between April 21 and 24, 2015 and the field crews walked 6.3 miles of streams in the Mattawoman Creek Watershed and 1.5 miles of streams in the Lower Patuxent River Watershed. During the stream corridor assessment, the field team collected information on channel alteration, erosion, exposed utility pipes, drainage pipe outfalls, fish barriers, inadequate buffers, construction in or near the stream, trash dumping, and recorded any unusual conditions.

The desktop and field assessments resulted in the identification of restoration projects. Additionally, potential projects identified during other previous assessments in the Mattawoman Creek and Lower Patuxent River Watersheds have been included to develop a full list of potential projects and the associated load reductions. Cost estimates, load reductions calculations, and final project prioritization are currently underway.

There are local TMDLs assigned to Charles County for both the Mattawoman Creek and Lower Patuxent River. Mattawoman Creek has TMDLs in place for nitrogen and phosphorus and Indian Creek has a TMDL in place for bacteria under the Lower Patuxent River TMDL. Pollutant load treatment of the proposed projects will be calculated and assessed to determine if the target reductions will be met.

Overview of Permit Conditions

2. Restoration Plans

- a. *Within one year of permit issuance, Charles County shall submit an impervious surface area assessment consistent with the methods described in the MDE document “Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated, Guidance for National Pollutant Discharge Elimination System Stormwater Permits” (MDE, June 2011 or subsequent versions). Upon approval by MDE, this impervious surface area assessment shall serve as the baseline for the restoration efforts required for this permit.*

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

FY 2015 Status (Jan 1–June 30, 2015)

In May 2013, Vista Design, Inc. was contracted by the Charles County Department of Planning and Growth Management to map all developed parcels within the County, establish each development’s level of water quality treatment based on its approval date, and complete an Impervious Surface Area Assessment utilizing impervious surface mapping provided by others. Following is a table showing the Stormwater Era Designations. Vista Design continued this work during the reporting period ending June 30, 2015.

The County maintains that 20% impervious restoration countywide is beyond the maximum extent practicable (MEP), and that there is compelling justification (as previously submitted to MDE) to limit restoration efforts to the County’s Development District. MEP is the legal compliance standard for MS4s established by the Clean Water Act. The County hereby submits this document with an express reservation of our right to an MS4 permit that imposes no more than an MEP level of effort.

*Table 30: Stormwater Era Designations*

<b>Era</b>	<b>Development Built Date</b>	<b>Brief Description</b>
ERA 0	N/A	Undeveloped, protected and non-jurisdictional areas, such as State and Federal lands
ERA 1	Prior to 1985	No-statewide stormwater requirements in place, in some rare cases stormwater with water quality benefits was installed; this ERA includes residential development in rural areas prior to 2005
ERA 2	1985 to 2002	BMPs built according to the 1982 stormwater management code, which required new developments to treat the first ½” of runoff from impervious surfaces
ERA 3	Post 2002	BMPs built according to the 2000 Maryland Stormwater Design Manual, which required new developments to treat the first 1” of runoff from impervious surfaces; this ERA includes residential development in rural areas after 2004
ERA 4	Post 2009	BMPs built according to the County’s 2010 Stormwater Management Code, which requires Environmental Site Design to the Maximum Extent Practicable for new developments
ERA 5	N/A	Holding category for any parcels needing further review
ERA 6	N/A	Rooftop Disconnect Credit Areas, divided into four categories: ¼”, ½”, ¾”, and 1” level of treatment

2. Restoration Plans

- b. *Within one year of permit issuance, Charles County shall submit to MDE for approval a restoration plan for each stormwater WLA approved by EPA prior to the effective date of the permit. The County shall submit restoration plans for subsequent TMDL WLAs within one year of EPA approval. Upon approval by MDE, these restoration plans will be enforceable under this permit. As part of the restoration plans, Charles County shall:*
  - i. *Include the final date for meeting applicable WLAs and a detailed schedule for implementing all structural and nonstructural water quality projects, enhanced stormwater management programs, and alternative stormwater control initiatives necessary for meeting applicable WLAs;*
  - ii. *Provide detailed cost estimates for individual projects, programs, controls, and plan implementation;*
  - iii. *Evaluate and track the implementation of restoration plans through monitoring or modeling to document progress toward meeting established benchmarks, deadlines, and stormwater WLAs; and*
  - iv. *Develop an ongoing, iterative process that continuously implements structural and nonstructural restoration projects, program enhancements, new and additional programs, and alternative BMPs where EPA approved TMDL stormwater WLAs are not being met according to the benchmarks and deadlines established as part of the County's watershed assessments.*

FY 2015 (Jan 1–June 30, 2015) Status

Charles County continues to object to this permit requirement for several reasons as previously submitted to MDE. On September 29, 2015, the Circuit Court for Charles County issued an order extending the due date of this permit condition until June 30, 2016.

On June 10, 2015, MDE officially responded to the County regarding verification of stormwater WLA's that the County should address in restoration plans.

3. Public Participation

*Charles County shall provide continual outreach to the public regarding the development of its watershed assessments and restoration plans. Additionally, the County shall allow for public participation in the TMDL process, solicit input, and incorporate any relevant ideas and program improvements that can aid in achieving TMDLs and water quality standards. Charles County shall provide:*

- a. Notice in a local newspaper and the County’s website outlining how the public may obtain information on the development of watershed assessments and stormwater watershed restoration plans and opportunities for comment;*
- b. Procedures for providing copies of watershed assessments and stormwater watershed restoration plans to interested parties upon request;*
- c. A minimum 30 day comment period before finalizing watershed assessments and stormwater watershed restoration plans; and*
- d. A summary in each annual report of how the County addressed or will address any material comment received from the public.*

FY 2015 Status (Jan 1–June 30, 2015)

In September 2015, the County’s first draft watershed assessment for Port Tobacco River was completed. Two additional draft watershed assessments are underway. These will be the first items to include public participation, which will be included in the next permit reporting period.

4. TMDL Compliance

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

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

- b. A comparison of the net change in pollutant load reductions detailed above with the established benchmarks, deadlines, and applicable stormwater WLA's; and*
- c. Itemized costs for completed projects, programs, and initiatives to meet established pollutant reduction benchmarks and deadlines;*
- d. Cost estimates for completing all projects, programs, and alternatives necessary for meeting applicable stormwater WLAs; and*
- e. A description of a plan for implementing additional watershed restoration actions that can be enforced when benchmarks, deadlines, and applicable stormwater WLAs are not being met or when projected funding is inadequate.*

FY 2015 Status (Jan 1–June 30, 2015)

Charles County does not yet have any restoration plans for which to provide the above described analysis. As noted above, restoration plans are not due until June 30, 2016.

**IV.F. Assessment of Controls**

Overview of Permit Conditions

1. Watershed Restoration Assessment

*The County shall continue monitoring in the Mattawoman Creek watershed, or select and submit for MDE’s approval a new watershed restoration project for monitoring. Monitoring activities shall occur where the cumulative effects of watershed restoration activities can be assessed. One outfall and an associated in-stream station, or other locations based on study design approved by MDE, shall be monitored. The minimum criteria for chemical, biological, and physical monitoring are as follows:*

a. Chemical Monitoring:

- i. Eight (8) storm events shall be monitored per year at each monitoring location with at least two occurring per quarter. Quarters shall be based on calendar year. If extended dry weather periods occur, baseflow samples shall be taken at least once per month at the monitoring stations if flow is observed;*
- ii. Discrete samples of stormwater flow shall be collected at the monitoring stations using automated or manual sampling methods. Measurements of pH and water temperatures shall be taken;*
- iii. At least three (3) samples determined to be representative of each storm event shall be submitted to a laboratory for analysis according to methods listed under 40 CFR Part 136 and event mean concentrations (EMC) shall be calculated for:*

<i>Biochemical Oxygen Demand (BOD<sub>5</sub>)</i>	<i>Total Lead</i>
<i>Total Kjeldahl Nitrogen (TKN)</i>	<i>Total Copper</i>
<i>Nitrate plus Nitrite</i>	<i>Total Zinc</i>
<i>Total Suspended Solids</i>	<i>Total Phosphorus</i>
<i>Total Petroleum Hydrocarbons (TPH)</i>	<i>Hardness</i>
<i>E. coli or enterococcus</i>	

- iv. Continuous flow measurements shall be recorded at the in-stream monitoring station or other practical locations based on the approved study design. Data collected shall be used to estimate annual and seasonal pollutant loads and reductions, and for the calibration of watershed assessment models. Pollutant load estimates shall be reported according to any EPA approved TMDL with a stormwater WLA.*

FY 2015 Status (Jan 1–June 30, 2015)

The current chemical monitoring program was established at the Acton-Hamilton site in spring of 2015. Two instream stations on a tributary to Piney Run within the Acton Hamilton watershed were established in April 2015. Site AH001 is located just downstream of a large culvert near the intersection of US 301 and Business Park Road. Site AH002 is located just upstream of the culvert under Hamilton Road and just below the existing in-stream Acton-Hamilton Geomorphic Study Reach along Timberbrook Drive.

The location of each station was selected based on its proximity to future water quality improvements within the Acton-Hamilton watershed. The sites were established prior to construction of the water quality projects to develop a pre-retrofit baseline for pollutant inflow to the receiving channel.

An In-Situ level logger and staff plate were installed at each station on June 18, 2015. Prior to installation, flow depth was measured at a surveyed cross-section at each station to determine the discharge from a rating table.

Three storms were sampled at the Acton-Hamilton sites during the 2014-2015 reporting year. Storm event samples were collected on April 25, 2015, June 2, 2015, and June 18, 2015. A baseflow sample was collected at both sites on April 24, 2015.

*Table 31: Number of Samples for Chemical Monitoring at the Acton-Hamilton Stations*

		Wet Weather Sample		Baseflow Sample	
Year	Month	AH001	AH002	AH001	AH002
2015	April	1	1	1	1
	June	2	2		

The monitoring protocol consisted of three discrete samples, representative of the rising limb, peak, and falling limb of the storm hydrograph for each storm event, collected at each monitoring station. All samples were collected manually so that fecal coliform and TPH could also be analyzed. Based on the County’s draft NPDES permit, collected samples during this reporting year were not analyzed for Cadmium, Phenols, Oil and Grease, and Fecal Coliform. Hardness and E-coli were added to the list of parameters analyzed due to the County’s draft NPDES permit. Martel Laboratories in Towson, Maryland performed the laboratory analysis for each event.

The combined Acton-Hamilton results from the chemical monitoring for the current reporting year are contained in Appendix K and included on the CD in the NPDES database.

*Acton- Hamilton Event Mean Concentrations*

Using the available flow data and laboratory results for each discrete sample collected at the sites, event mean concentrations (EMCs) were computed for each constituent. EMCs were weighted based on the volume of flow for each limb of the storm. Depths were recorded during sample events for both instream stations. The chemical concentrations were multiplied by the flow volume, summed and divided by the total flow volume to compute a weighted average for each storm event.

If a parameter was not detected in the laboratory analysis, a value of zero was used for the low end of the possible range, and the detection limit was used for the high end of the range. The flow-weighted EMCs for each storm were then averaged to determine the average EMC for each parameter at each site. Average flow-weighted EMCs by calendar year for the Acton-Hamilton sites (AH001 and AH002) are provided in Tables 32 and 33.

*Acton-Hamilton Discussion*

The results of the laboratory analysis (both individual samples and EMCs) were reviewed for the storm events during the permit period. Findings are summarized below:

AH001 – Upstream Site

- A first flush effect was observed for the sampling station. Concentrations were typically higher for rising limb samples than for the peak.
- The 4/25/2015 storm event had elevated concentrations of TPH.
- The 6/2/2015 storm event had elevated concentrations of TSS.
- The 6/18/2015 storm event had elevated concentrations of BOD, TSS, Copper, Lead, Zinc, and TPH.

AH002 – Downstream Site

- A first flush effect was not as pronounced for this sampling station due to concentrations for peak samples being at or higher than rising limb sample concentrations.
- The 6/2/2015 storm event had elevated concentrations of TSS and Zinc.

Federal and State acute and chronic criteria are presented in Table 34. The laboratory data are compared, where possible, to these criteria to assess the extent of possible pollution within this watershed. Criteria are used to protect against both short-term and long-term effects. Numeric criteria are important where the cause of toxicity is known or for protection against pollutants with potential human health impacts or bioaccumulation potential. Narrative criteria can be the basis for limiting toxicity in discharges where a specific pollutant can be identified as contributing to the toxicity.

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*Table 32: Annual Average Flow-Weighted EMC and Number of Events Sampled, AH001*

Year	TKN	NO <sub>x</sub>	TP	TSS	BOD	Pb	Cu	Zn	TPH	E-coli	Hardness
	Mg/L Event	Mg/L Event	Mg/L Event	Mg/L Event	Mg/L Event	Mg/L Event	Mg/L Event	Mg/L Event	Mg/L Event	Mg/L Event	Mg/L Event
2015	1.10 3	0.68 3	0.26 3	112 3	5.7 3	0.004 3	0.005 3	0.061 3	3.6 3	9237 3	31307 3
NURP	2.35	0.960	0.47	140.0	11.0	0.180	0.050	0.180			

*Table 33: Annual Average Flow-Weighted EMC and Number of Events Sampled, AH002*

Year	TKN	NO <sub>x</sub>	TP	TSS	BOD	Pb	Cu	Zn	TPH	E-coli	Hardness
	Mg/L Event	Mg/L Event	Mg/L Event	Mg/L Event	Mg/L Event	Mg/L Event	Mg/L Event	Mg/L Event	Mg/L Event	Mg/L Event	Mg/L Event
2015	1.08 3	0.68 3	0.26 3	112 3	5.7 3	0.004 3	0.005 3	0.061 3	3.6 3	9273 3	38837 3
NURP	2.35	0.960	0.47	140.0	11.0	0.180	0.050	0.180			

*Table 34: State and Federal Water Quality Criteria Available for Parameters Sampled at Acton-Hamilton*

<b>Parameter (mg/L ,except as noted)</b>	<b>Chronic</b>	<b>Acute</b>	<b>Reference</b>
Metals (µg/L):			
Lead	2.5	65	COMAR 26.08.02.03-2
Copper	9	13	COMAR 26.08.02.03-2
Zinc	120	120	COMAR 26.08.02.03-2
Total P	0.10	1972 305(a) Report to Congress (EPA 440/9-74-001)	
BOD5	7	Quality Criteria for Water, EPA 1986	
Nitrate	10	Quality Criteria for Water, EPA 1986	
TSS	500	1972 305(a) Report to Congress (EPA 440/9-74-001)	
TKN	None	---	
TPH	None	---	
E. Coli(1) (MPN/100ml)	235	COMAR 26.08.02.03-3	
Hardness	None	---	

(1): Used most restrictive standard as a conservative approach: frequent full body contact recreation criterion.

Criteria do not exist for all parameters measured at the monitoring stations. In addition, a clear cause and effect relationship between water quality and ecological condition is difficult to determine. However, these comparisons can be used as general indicators of water quality impairment. Both State and Federal criteria are based on ambient stream conditions. Chronic criteria consider the maximum levels at which aquatic life can survive if continuously subjected to a pollutant concentration. Acute criteria reflect the maximum level at which an aquatic organism can survive if periodically subjected to a pollutant concentration. Since storm events represent a periodic condition, wet-weather samples are compared only to acute criterion.

The results of the laboratory analysis (both individual samples and EMCs) for the 2014-2015 reporting year were compared to the values reported in Table 34 as well as the Nationwide Urban Runoff Project (NURP) values reported in Tables 32 and 33. Findings are summarized below:

AH001 – Upstream Site

- All individual samples and average EMC’s for NOx, TSS, and Lead were below reported criteria values.
- Copper and Zinc average annual EMC values were both just below reported criteria values; however, acute criteria for copper were exceeded during the 6/2/15 rising limb sample and 6/18/15 rising and peak limb sample. Acute criteria for zinc were exceeded during the 6/18/15 rising and peak limb sample.

- The average annual EMC and a majority of individual samples for Total Phosphorus and BOD were above reported criteria values. The average annual EMC and all individual samples for E-coli were above reported criteria values.
- All the average EMCs for the sampling period were below literature values from the Nationwide Urban Runoff Project (NURP) taken in the early 1980s except for BOD.

AH002 – Downstream Site

- All individual samples and average EMC's for Lead, NOx, and TSS were below reported criteria values.
- Copper and Zinc average annual EMC values were both below reported criteria values; however, acute criteria for copper and zinc were exceeded during the 6/2/15 peak limb sample.
- The average annual EMC and a majority of individual samples for BOD were below reported criteria values.
- The average annual EMC and a majority of individual samples for Total Phosphorus were above reported criteria values. The average annual EMC and most of the individual samples for E-coli were above reported criteria values.
- All the average EMCs for the sampling period were below literature values from the Nationwide Urban Runoff Project (NURP) taken in the early 1980s.

*Acton-Hamilton Comparison between AH001 and AH002*

Since the collection of storm samples started during this reporting year, analyses of trends over time for either station are limited. At this time, samples are to reflect the conditions present within the Acton-Hamilton watershed before water quality projects are implemented. Once the water quality projects have been implemented, analysis of storm will determine if these projects are significantly reducing sampled pollutants within the watershed.

For the 2014-2015 reporting year, site AH001 was found to have higher average EMC's for BOD, Lead, Copper, Zinc, TPH, and E-coli than Site AH002. Site AH002 was found to have higher average EMC's for NOx, Total Phosphorus, and TSS than Site AH001. This may be partly explained by the spatial location of each station. The upstream monitoring site (AH001) is located just below a large commercial area of along US 301 that would be expected to produce heavy metals and hydrocarbons associated with vehicles. The downstream monitoring site (AH002) is surrounded by residential neighborhoods and the drainage area to this site is much larger than the upstream site, which may be producing a dilution effect.

- b. Biological Monitoring:
  - i. *Benthic macroinvertebrate samples shall be gathered each Spring between the outfall and in-stream stations or other practical locations based on an approved study design; and*
  - ii. *The County shall use the EPA Rapid Bioassessment Protocols (RBP), Maryland Biological Stream Survey (MBSS), or other similar method approved by MDE.*
  
- c. Physical Monitoring:
  - i. *A geomorphologic stream assessment shall be conducted between the outfall and in-stream monitoring locations or in a reasonable area based on the approved study design. This assessment shall include an annual comparison of permanently monumented stream channel cross-sections and the stream profile;*
  - ii. *A stream habitat assessment shall be conducted using techniques defined by the EPA’s RBP, MBSS, or other similar method approved by MDE; and*
  - iii. *A hydrologic and/or hydraulic model shall be used (e.g., TR-20, HEC-2, HEC-RAS, HSPF, SWMM, etc.) in the fourth year of the permit to analyze the effects of rainfall; discharge rates; stage; and, if necessary, continuous flow on channel geometry.*
  
- d. Annual Data Submittal: *The County shall describe in detail its monitoring activities for the previous year and include the following:*
  - i. *EMCs submitted on MDE’s long-term monitoring database as specified in Part V below;*
  - ii. *Chemical, biological, and physical monitoring results and a combined analysis for the approved monitoring locations; and*
  - iii. *Any requests and accompanying justifications for proposed modifications to the monitoring program.*

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*Biological and Physical Stream Assessments*

Beginning in the Fall of 2005, a study site has been monitored for biological and physical condition on a tributary to Mattawoman Creek. This section summarizes data collected by KCI and Coastal Resources in the Spring of 2015. The study site is located in northern Charles County between Berry Road and Acton Lane just off Timberbrook Lane. This site was previously identified as part of Charles County’s Watershed Restoration Plan and was termed Acton-

Hamilton based on the two major roads in the area. The Acton-Hamilton site was ranked as the fifth highest priority for restoration and was therefore selected for further investigation. The Acton-Hamilton long-term site was monitored to establish baseline values in the Fall of 2005 (geomorphic assessment) and the Spring of 2006 (bioassessment). Table 35 lists the field assessment dates including the baseline assessments.

*Table 35: Field Assessment Dates*

Year	Geomorphic Assessment	Biological Assessment
2005-2006	December 14, 2005	April 17, 2006
2006-2007	January 11, 2007	May 4, 2007
2007-2008	December 12, 2007	April 17, 2008
2008-2009	December 15, 2008	April 29, 2009
2009-2010	December 1, 2009	March 08, 2010
2011	April 26, 2011	April 26, 2011
2012	-	April 27, 2012
2013	March 8, 2013	March 8, 2013
2014	April 16, 2014	April 16, 2014
2015	March 16, 2015	March 16, 2015

The geomorphic assessment includes cross-sections, longitudinal profiles, and particle size analysis. Spring bioassessment monitoring involves the collection of water quality data, sampling, and analysis of the benthic macroinvertebrate community, assessment of physical and habitat features and photo-documentation of site conditions at monitoring stations on the study reach. The full report is included in Appendix L.

*Geomorphic Assessment*

The channel substrate along the assessment reach is dominated by medium and coarse gravels. There are two cross-sections located within the 360-foot profile. Cross-section 1 has been slowly increasing in area between the baseline and the 2015 (year 11) assessments, and deepened at the base of the left bank between 2014 and 2015. Cross-section 2 shows that erosion and about a half foot of downcutting has occurred between 2011 and 2013, with slight scour evident along the right side of the channel in 2014. Cross-section 2 continued to downcut in 2015. Tables 36 and 37 below summarize the cross-section, profile, and pebble count data for baseline and subsequent monitoring efforts. Changes in bankfull areas for the two cross-sections are primarily due to erosion and aggradation associated with typical stream processes. Full results, including graphical depictions of the profile and cross-sections and pebble count data, are included in Appendix L. In general, the substrate is highly mobile with point bar formations, areas of

channel aggradation and some finer sedimentation in the pools. The channel geometry remains consistent with previous years, with the exception of a lowered grade downstream of station 1+77 that was first evident in 2013. The stream appears to experience overbank flow in the flood-prone zone regularly.

*Instream Water Quality and Bioassessment*

Table 38 summarizes the water quality, habitat, and bioassessment data. Instream water quality was measured during the bioassessment conducted in the Spring of 2015. All regulated parameters fell within acceptable *COMAR* ranges. The physical habitat assessment rated the habitat for both fish and benthic macroinvertebrates at the mid to lower range of sub-optimal. The banks were moderately stable (sub-optimal) with sub-optimal to marginal vegetative protection. The left bank had sub-optimal riparian vegetative zone width while the width of the right bank was marginal. The PHI rating has consistently remained “Partially Degraded” since the baseline monitoring, but the BIBI generally decreased until 2014, when it was slightly improved to 2.7 with a rating of “Poor.” In 2015, the BIBI score increased to 3.00, or “Fair.” Excessive algae were noted during the 2007-2010 monitoring events, and present again in 2015.

*Table 36: Bankfull Channel Dimensions – Cross Section 1*

Parameter	2005 0+48.5	2006 0+49.7	2007 0+49	2008 0+50	2009 0+51	2011 0+46	2013 0+46	2014 0+47	2015 0+46.5
Top of Bank Cross section Area (ft <sup>2</sup> )	49.2	53.1	54.0	55.1	53.9	54.5	52.3	52.2	55.1
Bankfull Cross section Area (ft <sup>2</sup> )	24.1	23.5	24.3	23.8	26.2	28.1	28.4	28.4	31.2
Top of Bank Width (ft)	32.3	34.7	34.8	34.9	32.4	33.5	30.5	28.3	28.5
Bankfull Width (ft)	20.9	22.3	21.6	19.7	20.8	20.1	22.1	22.2	22.3
Mean Depth (ft)	1.2	1.1	1.1	1.2	1.3	1.4	1.3	1.3	1.4
Width-depth Ratio	18.2	21.1	19.2	16.3	16.5	14.3	17.1	17.4	15.9
Velocity (ft/s) at Bankfull	3.8	3.5	3.0	3.2	3.3	3.8	3.8	3.8	3.9
Discharge Rate (cfs) at Bankfull	92.5	82.9	73.0	76.1	85.9	107.2	106.9	107.4	121.5
Entrenchment Ratio	2.4	1.8	2.3	2.5	2.6	2.5	2.3	2.2	2.2
D50 Particle Size (mm)	14	16	18	19	23	20	17	19	18
D84 Particle Size (mm)	28	33	29	30	39	44	25	40	41
Threshold Grain Size at Bankfull (mm)	15	15	10	12	14	18	17	19	19
Channel Slope (%)	0.49	0.49	0.31	0.34	0.4	0.47	0.48	0.54	0.49

*Table 37: Bankfull Channel Dimensions – Cross Section 2*

Parameter	2005 3+14	2006 3+12	2007 3+14	2008 3+21	2009 3+15	2011 3+09	2013 3+09	2014 3+05	2015 3+05
Top of Bank Cross section Area (ft <sup>2</sup> )	28.6	27.1	27.6	29.6	29.8	32.5	32.6	35.5	35.4
Bankfull Cross section Area (ft <sup>2</sup> )	18.5	17.0	18.1	18.2	18.1	18.9	23.1	23.9	26.6
Top of Bank Width (ft)	19.5	19.6	19.5	19.7	19.9	21.8	19.4	19.2	19.6
Bankfull Width (ft)	15.0	14.7	14.8	14.3	15	14.9	14.3	14.5	14.5
Mean Depth (ft)	1.2	1.2	1.2	1.3	1.2	1.3	1.6	1.7	1.8
Width-depth Ratio	12.2	12.6	12.0	11.3	12.5	11.8	8.9	8.8	7.9
Velocity (ft/s) at Bankfull	4.0	3.6	3.1	3.3	3.1	3.3	4.2	4.0	4.5
Discharge Rate (cfs) at Bankfull	73.3	61.4	57.1	59.2	55.2	61.8	97.0	96.8	119.1
Entrenchment Ratio	2.7	2.4	3.0	3.1	2.2	2.3	2.5	2.5	2.5
D50 Particle Size (mm)	14	16	18	19	23	20	17	19	18
D84 Particle Size (mm)	28	33	29	30	39	44	25	40	41
Threshold Grain Size at Bankfull (mm)	17	16	11	11	13	17	20	21	24
Channel Slope (%)	0.49	0.49	0.31	0.50	0.4	0.47	0.47	0.47	0.49

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*Table 38: Acton-Hamilton Instream Water Quality and Habitat Assessment Data*

Year/Time	Instream Water Quality						Habitat and Biological Assessment	
	pH	DO (mg/L)	Temp (°C)	Conductivity µS/cm	TDS (mg/L)	Turbidity (NTUs)	PHI	BIBI
Spring 2006 11:00AM	7.04	9.09	13.19	214.2	137.0	14.9	74 (partially degraded)	3.6 (Fair)
Spring 2007 8:30AM	7.13	3.62	13.20	214.0	139.0	4.3	74 (partially degraded)	2.7 (Poor)
Spring 2008 7:00PM	6.85	11.17	15.79	186.0	121.3	2.6	71 (partially degraded)	3.0 (Fair)
Spring 2009 11:00AM	6.73	6.97	16.33	236.9	n/a	3.49	78 (partially degraded)	2.7 (Poor)
Spring 2010 8:30AM	7.76	13.52	4.50	395.7	n/a	4.16	72 (partially degraded)	2.7 (Poor)
Spring 2011 8:30AM	6.19	8.82	18.27	174.3	n/a	8.62	73 (partially degraded)	2.4 (Poor)
Spring 2012 8:30AM	6.23	8.75	12.17	171.5	n/a	6.62	74 (partially degraded)	2.1 (Poor)
Spring 2013 8:00AM	6.57	13.13	4.17	185.3	n/a	12.70	77 (partially degraded)	1.9 (Very Poor)
Spring 2014 7:00AM	7.19	10.52	8.50	304.5	n/a	22.40	77 (partially degraded)	2.7 (Poor)
Spring 2015 8:30 AM	6.60	11.90	5.33	587.0	n/a	10.13	76 (partially degraded)	3.0 (Fair)
COMAR Limits	6.5 - 8.5	> 5.0	< 32.0	n/a	n/a	< 150	n/a	n/a

2. Stormwater Management Assessment

*The County shall continue monitoring Piney branch watershed, or select and submit for MDE's approval a new watershed restoration project for determining the effectiveness of stormwater management practices for stream channel protection. Physical stream monitoring protocols shall include:*

- a. An annual stream profile and survey of permanently monumented cross-sections in the unnamed tributary to Piney Branch to evaluate channel stability;*
- b. A comparison of the annual stream profile and survey of the permanently monumented cross-sections with baseline conditions for assessing areas of aggradation and degradation; and*
- c. A hydrologic and/or hydraulic model shall be used (e.g., TR-20, HEC-RAS, HSPF, SWMM, etc.) in the fourth year of the permit to analyze the effects of rainfall; discharge rates; stage; and, if necessary, continuous flow on channel geometry.*

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*Maryland Stormwater Manual Effectiveness Study*

Since 2003, the County has been conducting stream monitoring on the tributary to Piney Branch to evaluate the effectiveness of stormwater management designed under the *2000 Maryland Stormwater Design Manual* regulations to adequately provide channel protection. This section summarizes the results of this monitoring. The full report can be found in Appendix M.

The tributary to Piney Branch study area lies between Berry Road and Middletown Road and is part of watershed 021401110785. The drainage area was historically in agricultural and forest use. The study area is located within the County's Development District and has been developing over the course of the project with the addition of North Point High School, William A Diggs Elementary School, and the residential developments of Windsor Mill, Avalon, and The Preserve at Middletown Woods.

In the fall of 2003, at the time of the first site visits and survey, the North Point site construction was well underway with full clearing and installation of temporary storm water management (SWM) facilities. By spring of 2004 clearing and grading were complete at the Windsor Mill site and all four temporary SWM facilities were in place, three of which were in the study area. In fall of 2004, the Windsor Mill site had roadways in place and the ponds had risers installed. At the Avalon site temporary SWM ponds were in place and functioning properly. By the spring of 2005, little had changed at the Windsor Mill site and homes were beginning to be built at the

Avalon site. Construction of North Point High School was complete in 2005. By 2006, the William A. Diggs Elementary School was also complete. Site visits in late 2006 and early 2007 did not show major changes in the study area from the previous year. In 2008 and 2009 houses continue to be added to the western portion of the Avalon development. By 2013, more homes were added to Phase II of the Avalon community and many homes have been constructed south of Avalon Phase I. Just outside of the study area, construction has continued at the Avalon West community with many new homes built since 2009. In 2014 additional homes were under construction on existing lots in Avalon. In early 2015, several new streets were under construction as part of The Preserve at Middletown Woods, located off of the southern side of Frankfurt Drive within the drainage area.

The most recent assessment was conducted on March 17-19, 2015. The assessment includes survey of a longitudinal profile of the stream thalweg. The profile is conducted to locate and quantify the length and sequence of various instream features such as riffles, pools and glides. The profile surveyed in the Fall of 2003 represents the baseline conditions. The 2003 survey was conducted before stormwater runoff from upstream sites was generated and is considered pre-construction. The survey is repeated yearly and is compared to previous assessments for changes in stream morphology such as thalweg degradation or aggradation. Visual inspection and site photographs are also compared for changes in stability, planform, dominant substrate particle size and signs of excessive sedimentation.

There are two separate sections of longitudinal profile surveyed which include cross-sections surveyed at locations along each profile. Repeat cross-section surveys are compared to 2003 baseline conditions for changes in channel morphology. A permanent stream gauge which was installed in May of 2004 at the Transducer cross-section, but was found vandalized in 2013 and no gauge data had been recorded since March 2010.

### **Profile 1 – Station 0+00 to 26+35**

Profile 1, between station 0+00 and the confluence with Profile 2 is in a confined stream valley with relatively steep valley walls. The valley has a well-developed floodplain that varies from approximately 100 to 150 feet wide while the channel meanders within the valley. Several active beaver dams and their associated ponds, as well as many relic dams, were located between station 0+00 and 26+35 in 2015. This portion of Profile 1 now receives stormwater runoff from both Windsor Mill and Avalon. Based on current site designs the majority of Avalon runoff flow into the segment with Profile 2 and then into Profile 1 at the confluence at station 25+34.

#### *Cross-section 1*

Cross-section 1 is located at station 5+08 with the channel adjacent to the valley wall. In 2008 and 2009 the cross-sectional area decreased due to aggradation across most of the channel bed. However in 2009 the thalweg appears to be shifting slightly away from the right side of the channel. In 2013 the survey showed more aggradation, particularly on the left side of the channel. The increase in aggradation may be due to the increased beaver activity in the vicinity

of cross-section 1. A beaver dam had been built through the cross-section in 2014, significantly decreasing the cross-sectional area and diverting some of the stream flow around the left end pin and flooding a wider portion of the valley. The same condition remained in 2015, with an additional beaver dam built approximately 10 feet downstream of cross-section 1.

#### *Cross-section 2*

Cross-section 2 is located on a generally stable reach with very good floodplain connectivity. By the fall of 2009 the cross-sectional area increased by 40% over baseline conditions, following an increasing trend since the initial survey. In 2013 and 2014, the area decreased and slight aggradation occurred on the right side of the channel. Minor degradation of the bed and the measurement of undercut banks caused the cross-sectional area to increase slightly from 2014 to 2015. The cross-sectional area has increased by 34 percent since the baseline monitoring. The longitudinal profile does not show considerable downcutting in the reach containing cross-section 2 and the gauge cross-section, suggesting that the increases in cross-sectional areas may be due to local changes in the location of bed features.

#### *Cross-section gauge*

The section is located at station 16+15 on Profile 1, just upstream of cross-section 2. In February 2009 the cross-sectional area increased from that measured in 2007 due to degradation in the channel. The banks had undercutting that was not observed in previous years. Overall, the cross-sectional area has been increasing slowly since the baseline survey, with the exception of 2014, when the area decreased slightly. The cross-sectional area has increased by 47 percent since the initial survey. The longitudinal profile does not show considerable downcutting in the reach containing cross-section 2 and the gauge cross-section, suggesting that the increases in cross-sectional areas may be due to local changes in the location of bed features. A series of rating curves was developed for the stream gauge section to determine the discharge per a given height as measured by the stream gauge. In 2010, the discharge at the gauge for the time period between February 2009 and March 2010 was calculated. No gauge data was collected after March 2010.

### **Profile 1 – Station 26+35 to 45+08**

Profile 1 between the confluence with Profile 2 and approximate station 37+00 is characterized by steep side slopes to the southwest but little relief on the northeast terrace. The reach from station 37+00 to the upstream end at station 45+08 is not in a confined valley and the topography levels out even further upstream of the profile where a forested wetland currently exists. This reach includes a Maryland State Highway Administration (MSHA) right-of-way (ROW) and areas already cleared for sewer line and general access. The 2015 survey data show the slope has remained consistent since 2006. In 2015, no active beaver dams were observed in this reach, but many relic dams remain. This portion of Profile 1 receives flow from Windsor Mill and flow from the eastern half of Avalon.

*Cross-section 4*

Cross-section 4 is located at station 38+65, within the MSHA property, but downstream of the utility ROW. This reach is stable and surrounded by dense riparian vegetation dominated by shrubs in all surveys. The cross-sectional areas for 2013 and 2014 were lower than previous years, possibly due to the debris jam located downstream of the cross-section, contributing to aggradation of the stream channel. Downcutting of the bed had occurred in 2015, resulting in an increase in cross-sectional area (a total increase of 12 percent since the initial survey, but a 23 percent increase since 2014). No visual changes were noted during the 2015 survey to explain the change in cross-sectional area. Because the next cross-section upstream (cross-section 5) did not experience downcutting, the changes in cross-section 4 may be related to the two Windsor Mill ponds from which it receives flow.

*Cross-section 5*

Cross-section 5 is located at station 44+20 upstream of the ROW crossing. The water depth and the cross-sectional area in 2015 have remained consistent throughout the monitoring period. Cross-section 5 receives flow from the one most upstream pond in Windsor Mill.

**Profile 2 – Station 0+00 to 4+50**

The channel on Profile 2 is in a valley with 100-foot wide floodplain. The area upstream of Profile 2 is a very densely vegetated forested wetland. No beaver dams were located on this reach, however debris blockages were observed throughout the reach in 2015. Profile 2 receives the majority of flow from the Avalon community although it did not appear that any had been received prior to the 2005 survey. The reach also receives flow from William A. Diggs Elementary School.

*Cross-section 3*

Cross-section 3 is located at station 2+35 on Profile 2, approximately halfway up the measured reach. This section had a large tree uproot on the right bank between 2010 and 2013, causing the cross-sectional area to increase substantially, and the wetted width to increase from 3.8 feet to 10.7 feet and the water depth to decrease from 1.4 feet to 0.84 feet. There was some accumulation of sediment on the channel bed in the 2014 survey that was absent in 2015.

**SUBWATERSHED ANALYSIS**

Subwatersheds were delineated within the study area watershed to analyze the changes in impervious areas and land use condition that have occurred during the study period that are potentially affecting the receiving channels and the main stream channel. Impervious area in all of the subwatersheds has increased since 2004 due to the development that has occurred throughout the headwaters of the watershed. The largest increases were observed in subshed 1 and 2. Subshed 1 had 0.7% impervious in 2004 and 21.9% in 2015. Subshed 2 had no impervious surface in 2004 but had 20.9% impervious in 2014, and remained the same in 2015.

Overall, the entire watershed drainage area, which is represented by subshed 4, saw a marked increase in imperviousness since 2004 jumping from 1.1% to 13.5% in 2015. Land use within the study area subwatersheds currently consists of forest, residential, and institutional. In 2015, residential land use continued to replace forest in subshed 1 with the addition of several streets in The Preserve at Middletown Woods, a new development at the southwestern side of the Avalon community.

**NORTH POINT HIGH SCHOOL POND OUTFALL**

In 2011, KCI was directed to conduct a survey of an eroded outfall channel draining a stormwater management pond at the North Point High School within the Tributary to Piney Branch watershed. Monuments were established and the initial survey was completed April 26, 2011 and surveyed for a second time on March 18, 2013. The channel was resurveyed on April 16, 2014, and most recently on March 17, 2015.

**Profile – North Point High School Pond Outfall**

The geomorphic survey begins at the pond outfall and extends just over 400 linear feet downstream. Riprap covers the channel and banks until station 0+34 and the engineered trapezoidal channel extends to approximately station 2+80 where the flow enters the forest and transitions to a natural channel. The channel profile from station 0+00 to about 2+80 is very stable and the slope has remained relatively unchanged from 2011 to 2015. The slope steepens significantly after the engineered channel ends, where a series of headcuts have formed and extend for approximately 40 feet. The initial headcut has continued to migrate upstream since monitoring began, moving approximately nine feet upstream from 2014 to 2015. Downstream from the final headcut at station 3+19, the stream becomes more stable and less incised, and meets the main channel approximately 75 feet downstream from the end of the survey at station 4+10. From the initial headcut (station 2+71 in 2015) to the end of the survey at station 4+10, the slope was 7.8% in 2011 and 6.5% in 2015. Four cross-sections were surveyed at representative locations along the profile and rebar monuments were installed on both banks of each cross-section.

*Cross Section 1 – North Point High School Pond Outfall*

Cross section 1, station 0+11, characterizes the reach from the outfall to approximately station 0+40. This section has steep (45% side slopes), 12-foot high banks with rip rap on the banks and channel bottom. Willows (*Salix* sp.) are dense in the channel. This segment of the channel is very stable.

*Cross Section 2 – North Point High School Pond Outfall*

Cross section 2, station 1+18, characterizes the reach from station 0+40 to approximately 2+00. This section has dense willows in the channel as well, but the banks are slightly less steep (35% side slopes) with shallower 9-foot banks. This segment of the channel is also very stable.

*Cross Section 3 – North Point High School Pond Outfall*

Cross section 3, station 2+36, characterizes the reach from station 2+00 to the end of the engineered channel at station 2+80. Willows are much less dense in this section, allowing cattails to be the dominant vegetation. Both banks are much lower (3.5 feet) and had a more gradual slope (22% side slope) than the two upstream cross sections. This cross section is also very stable. Minor deposition of sediment has formed an inset floodplain for the narrow (approximately one foot wide) low-flow channel that was observed in 2014 and 2015.

*Cross Section 4 – North Point High School Pond Outfall*

Cross section 4 characterizes the reach from station 2+80 to the end of the survey at 4+11. This section begins at the edge of a canopied forest below the engineered channel and then transitions into a low gradient wetland. This section has a series of about one foot headcuts. In 2011, a 1.5 foot headcut with moderately severe bank erosion was located just upstream of cross-section 4. The headcut had migrated upstream by approximately 50 feet by 2013. This cross section is much less stable and will be monitored closely in future surveys for further erosion.

**SUMMARY**

The tributary to Piney Branch channel cross-sections and profiles indicate a relatively stable channel, with minor changes in cross-sectional area from 2003 to 2015. The greatest changes in cross-section were noted at cross-section 1, which experienced a 95% decrease in area due to a beaver dam built directly through the cross-section. The cross-sectional area for cross-section 3 increased by 3.8 square feet or 59% since 2003, but this is associated with the uprooted tree on the right bank between 2009 and 2013. Cross-section 2 and the gauge cross-section also had increases in area (34 and 47 percent, respectively) when compared to 2003 measurements, but did not change considerably from 2014 to 2015. These sections are located on a relatively confined channel, the most likely position in the watershed for incision to occur and they receive flow from most all of the upstream development. Debris jams and beaver activity can cause local aggradation on the bed depending on how long they are present. Cross-sections 4 and 5 have not changed significantly since the initial survey in 2003.

The North Point High School pond outfall channel remains very stable until station 2+71, where the first in a series of headcuts continues to migrate upstream. In 2011, a 1.5 foot headcut had formed at station 3+68. Just two years later, the headcut had migrated 51 feet upstream.

Downstream from this headcut the stream becomes more stable and less incised, and meets the main channel approximately 75 feet downstream from the end of the survey at station 4+10. Cross-sections 1 and 2 remain very stable and no changes were visible. Cross section 3 had minor accumulation of sediment due to vegetation in the channel. Cross section 4 is located below the series of headcuts and has experienced severe bank erosion and some downcutting between the initial survey in 2011 and the second survey in 2013. Some additional erosion was observed on the right bank in the 2014 and 2015 surveys. This cross-section will be monitored closely in future surveys.

As stated in 2014, it is still recommended that remedial action is taken to stabilize the outfall channel. The uppermost headcut migrated upstream approximately nine feet between the 2014 and 2015 surveys. Due to the sudden slope change at the end of the engineered channel and start of the natural channel, the severe headcut will likely continue to migrate upstream, degrading the channel, and causing sedimentation downstream.

Between 2003 and 2015, cross-sectional areas at cross-sections 2, the gage, and 4 increased by 34, 47, and 12 percent, respectively. Cross-section 2 and at the gage are located on Profile 1 downstream from the confluence with Profile 2, receiving drainage from William A. Diggs Elementary School and Avalon and Windsor Mill developments. Due to beaver ponds and dams, it is difficult to tell if downcutting is occurring downstream of cross-section 2. However, these increases in cross-sectional area on Profile 1 between the pond outfall channel and Profile 2 show that this area is responding to hydrologic changes by downcutting. However, it is possible that the apparent downcutting is due to shifting bed features rather than reach-wide downcutting. There are frequent debris blockages but no active beaver dams located in that reach. Cross-section 4 is located upstream of the confluence with Profile 2, and receives flow from two Windsor Mill stormwater ponds (Ponds 5 and 6). Cross-section 5, the most upstream cross section which receives flow from one Windsor Mill stormwater pond, has not changed in cross-sectional area since 2003. No visual evidence of downcutting was observed in the area of cross-section 4, but it is possible that Windsor Mill Ponds 5 and 6 are the cause of the lowered bed elevation. The area where cross-section 4 is located has many beaver-hewn logs and sticks in the channel from past dams, which create small debris jams and backwatered conditions where fine sediments are deposited. The observed downcutting in 2015 may be localized due to the shifting of one or more debris jams and the resulting washout of fine sediments on the bed.

**IX.G. Program Funding**

Overview of Permit Conditions

1. *Annually, Charles County shall submit a fiscal analysis of the capital, operation, and maintenance expenditures necessary to comply with all conditions of this permit.*
2. *Charles County shall maintain adequate program funding to comply with all conditions of this permit.*

2015 Status:

*Funding Sources*

Since the County’s first generation NPDES MS4 permit was issued in 1997, the County has had dedicated enterprise funding to ensure permit compliance. The two original enterprise funds include the Environmental Service Fund, and the Inspection and Review Fund. Later in 2013, the Watershed Protection and Restoration Fund was adopted. Revenues to support the enterprise funds are from the Environmental Service Fee, Lot Recordation Fee, Inspection and Review Fees, Stormwater Remediation Fee, and most recently a small subsidy from the General Fund. The adopted Fiscal Year 2015 and 2016 Enterprise Funds are in Appendix G. Following is an historical account of the enterprise funds and their revenues sources.

1. Environmental Service Fund (ESF): In July 1997, the County implemented a \$2.00 increase to its existing annual ESF fee for all improved properties county-wide, including those in the towns, and allocated the increase to the NPDES MS4 permit budget. The table below shows the rate of this allocation from 1998 thru 2013, at which time the Watershed Protection and Restoration Fund (WPRF) became the NPDES MS4 permit’s primary budget source. However, a portion of the ESF continues to be allocated for litter control outreach, and septic programs.

<b>Fiscal Year</b>	<b>1998-2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
ESF NPDES MS4 Allocated Fee	\$2	\$4	\$5	\$6	\$8	\$12	\$14	\$0	\$0	\$0

Also in July 1997 the County implemented an NPDES lot recordation fee of \$81.25 per lot, for all new lots recorded in the Development District. Due to the variation in the number of lots recorded per year the amount collected fluctuates annually. Rates are shown in the following table for 1998 thru 2013, at which time the fee was deposited into the WPRF.

<b>Fiscal Year</b>	<b>1998-2000</b>	<b>2001-2004</b>	<b>2005-2008</b>	<b>2009-2012</b>	<b>2013</b>
Lot Recordation Fee	\$81.25	\$84.50	\$87	\$117	\$121

2. Inspection and Review Fund: To meet the NPDES MS4 permit conditions which require the County to maintain acceptable stormwater management and erosion and sediment control programs for new development in accordance with the Annotated Code of Maryland, the County maintains an Inspection and Review Fund. Operating revenues for this fund are generated primarily by service charges for engineering plan reviews, site plan reviews, grading inspection, erosion and sediment control inspections, storm drain and stormwater inspections. Fees have been adjusted over time to cover the cost of providing these services. Funding from this account is for salary and fringe of full time and contractual positions.

Fiscal Year	2016
<b>Review Fees</b>	
Stormwater Management for Residential Building Permits	\$50
Nonstructural Stormwater Management Practice	\$14/credit
Concept Stormwater Management Review Fee	\$122/hour
Site Stormwater Management Review Fee (Minimum, plus hourly rate)	\$515 + \$137/hour
Stormwater Drainage Plan Review based on Construction Value	Up to \$3,500
Stormwater Management Plan Review based on Construction Value	Up to \$4,799
Revisions to Approved Plans by Stormwater Management	\$141/hour
<b>Waiver Fees</b>	
Stormwater Management Administrative Waiver Fee	\$419
Stormwater Management Waiver Review Fee	\$453 + \$91 per study point over 2
Stormwater Management Fee-In-Lieu-Of	\$1.35/sq.ft. disturbed
<b>Inspection Fees</b>	
Stormwater Management Inspection for Building Permits	\$150
Stormwater Drainage Inspection	4.77% of Construction \$380 Min.
Stormwater Management Inspection	4.77% of Construction \$380 Min.
<b>Erosion and Sediment Control</b>	
Erosion and Sediment for New Single Family Residential Permit	\$31
Erosion and Sediment Control Plan	\$31 + \$83/acre
Erosion and Sediment Control Inspection Fee	\$459/acre (\$455 min.)

\*More information can be found on the Charles County Government All FY16 Fees & Charges table.

3. Watershed Protection and Restoration Fund (WPRF): In June 2013, Charles County adopted Chapter 275 of the Charles County Code, establishing the Watershed Protection and Restoration Program and associated Stormwater Remediation Fee. The WPRF may be used for: capital improvements for stormwater management, including stream and wetland restoration projects; operation and maintenance of stormwater management systems and facilities; public education and outreach related stormwater management or stream and wetland restoration; stormwater management planning, including mapping and assessment of impervious surfaces, as well as related monitoring, inspection, and enforcement activities; reasonable costs necessary to administer to fund; and grants to nonprofit organizations for watershed restoration projects. A full discussion of the adoption process and legislation is included in the 2013 NPDES MS4 Annual Report.

The Stormwater Remediation Fee is a flat rate charged to all improved properties countywide, except in the Town of La Plata which assesses their own fees, and otherwise exempt properties. Property owners may obtain a 50% fee credit by demonstrating the use of onsite stormwater practices such as rain gardens, pervious paving and other options. The following table shows the rate since adoption. Credits and exemptions are reported annually.

Fiscal Year	2014	2015	2016
Stormwater Remediation Fee	\$43	\$43	\$35

The third generation NPDES MS4 permit coverage was expanded countywide, however the lot recordation fee continues to apply only to new lots recorded in the Development District, because this continues to be the County’s urban area.

Fiscal Year	2014	2015	2016
Lot Recordation Fee	\$121	\$127	\$131

In June 2015, the County approved a \$550,000 subsidy from General Fund in order to reduce the fee from \$43 to \$35

Fiscal Year	2016
General Fund Transfer	\$550,000

*NPDES MS4 Permit Funding for Fiscal Years 2007 thru 2013*

Table 39 contains revenue and expenses of the NPDES MS4 permit program for Fiscal Years 2007 thru 2013 to primarily support the County Department of Planning and Growth Management. An account of years prior to 2007 can be found in previous NPDES MS4 annual reports.

*Table 39: ESF NPDES MS4 Permit Funding - Fiscal Years 2007 thru 2013*

Fiscal Year	2007	2008	2009	2010	2011	2012	2013
<b>Adopted Budget:</b>	163,800	263,600	305,400	361,500	458,300	698,400	998,200
<b>Revenue:</b>							
Env. Service Fee	88,989	181,787	230,212	278,528	375,789	613,290	727,671
Lot Recordation Fee	84,748	54,246	33,705	35,928	80,847	83,187	76,956
Total	173,738	236,033	263,917	314,456	456,636	696,477	804,627
<b>Expenditures:</b>							
Salary & Fringe	0	0	0	0*	49,560	102,358	267,352
Operating	149,906	109,246	184,198	180,315	167,183	143,604	291,817
Debt Service	25,666	109,463	120,633	182,855	217,865	262,258	327,851
Adjustment						(109)	
Total	175,571	218,709	304,831	363,170	434,608	508,112	887,019
Operating Inc/Loss	(1,834)	17,324	(40,914)	(48,714)	22,028	188,366	(82,393)
<b>Fund Balance:</b>							
Beginning:	155,765	153,932	171,255	130,341	205,752	227,781	416,146
Ending:	<b>153,932</b>	<b>171,255</b>	<b>130,341</b>	<b>81,627</b>	<b>227,781</b>	<b>416,146</b>	<b>333,754</b>

\*Salary & Fringe from general ESF.

Consultant expenses from the operating budget include KCI Technologies, Inc.(NPDES consultant), LimnoTech (Watershed Implementation Plan consultant), AquaLaw (legal consultant), Spatial Systems Associates, Inc. (GIS consultant), and the County’s partnership agreement with USGS to perform water quality monitoring of the Mattawoman Creek.

*Table 40: ESF NPDES MS4 Permit Positions*

Department-Division	Position	Fiscal Year 2010	Fiscal Year 2011	Fiscal Year 2012	Fiscal Year 2013
PGM- CPIS	Engineer I-IV	0	0	0	1.00
PGM- CPIS	Administrative I-III	0	0	0	0.30
PGM- Planning	Planner I-III	0.50	0.50	0.50	0.80
PGM-RIM	Resource Manager	0	0	0.50	0.50

*NPDES MS4 Permit Funding for Fiscal Years 2014 thru 2016*

As mentioned above, beginning in Fiscal Year 2014, the NPDES MS4 program is primarily funded by the WPRF. The WPRF supports applicable expenditures from County Departments including: Planning and Growth Management, Public Works, County Attorney’s Office, and Fiscal and Administrative Services. Table 41 summarizes the WPRF budget to date.

*Table 41: WPRF NPDES MS4 Permit Funding - Fiscal Years 2014 thru 2016*

Fiscal Year	<b>2014 Audited</b>	<b>2015 Audited</b>	<b>2016</b>
<b>Budget:</b>	2,133,000	2,168,800	2,475,700
<b>Revenue:</b>			
Stormwater Remediation Fee	2,097,368	2,124,017	1,794,700
Lot Recordation Fee	53,272	61,323	50,700
Miscellaneous	7,282	7,186	5,300
General Fund Transfer	0	0	550,000
Total Operating Revenues	2,158,061	2,192,526	2,400,700
<b>Expenditures:</b>			
Salary & Fringe	186,641	309,630	307,600
Operating	690,947	924,665	1,243,400
Capital Project Transfer	182,000	60,000	35,000
Debt Service	531,067	568,957	889,700
Total Expenditures	1,588,654	1,863,252	2,475,700
<b>Operating Gain/(Loss)</b>	567,406	329,274	(75,000)
<b>Fund Balance:</b>			
Beginning	0	902,890	1,232,164
Reserve carryover from ESF Fund	335,484	0	0
<b>Ending Fund Balance</b>	<b>902,890</b>	<b>1,232,164</b>	<b>1,157,164</b>

*Table 42: WPRF NPDES MS4 Permit Positions*

Department-Division	Position	Fiscal Year 2014	Fiscal Year 2015	Fiscal Year 2016
PGM- CPIS	Engineer I-IV	0.5	0.5	0.5
PGM- CPIS	Contractual Inspector	1.0	1.5	1.5
PGM- Planning	Planner IV	0.0	0.3	0.3
PGM- Planning	Planner I-III	1.8	1.8	1.8
DPW- Environmental	Environmental Compliance Officer	1.0	1.0	1.0

A small percentage of the Environmental Service Fund is allocated to support the County’s Septic Pump-Out Reimbursement Program implemented by the Department of Planning and Growth Management. This is because, a septic pumping is considered an alternative urban best management practice in MDE’s 2014, *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated Guidance for NPDES Permits*, and awarded 0.03 acres towards the impervious surface restoration goal. The County’s program reimburses up to \$187.50 per septic pump-out, which at the maximum rate would be \$6,250/acre restored.

*Table 43: ESF Budget for Septic Improvement Programs – Fiscal Years 2014 thru 2016*

Fiscal Year	2014	2015	2016
Septic Pump-Out Reimbursement Budget	100,000	97,100	100,000
Expenditures	2,895*	98,755.25	TBD

\*This funding was used for research & discovery in establishing baseline knowledge of septic maintenance within the County.

A portion of the Environmental Service Fund is allocated to support the County’s Education and Outreach Program to reduce litter entering the environment, which became a condition of the current MS4 permit, under Part IV.D.4. The litter control and recycling outreach efforts increase recycling and educate the public on the importance of reducing, reusing, and recycling.

*Table 44: ESF Budget for Education & Outreach – Fiscal Years 2014 thru 2016*

Fiscal Year	2014 Actual	2015 Actual	2016 Estimated
Education and Outreach Budget	198,300	159,000	173,700
Education and Outreach Expenditures	157,644	162,254	173,700

*Table 45: ESF Positions Dedicated towards Education and Outreach*

Department-Division	Position	Fiscal Year 2014	Fiscal Year 2015	Fiscal Year 2016
DPW- Environmental	Recycling/Litter Control Superintendent	1.0	1.0	1.0
DPW- Environmental	Recycling Manager	0.25	0.25	0.25
DPW- Environmental	Recycling Supervisor	0.25	0.25	0.25

*Capital Improvement Projects Budgets*

Compliance with the Watershed Restoration condition of the NPDES MS4 permit is primarily through the County’s Capital Improvements Program (CIP) budget. The CIP budget is funded by 30-years bonds. Payments on the bonds come from the ESF and WPRF, and are noted as ‘Debt Service’ on Tables 39 and 41.

CIP funding was originally approved to begin in Fiscal Year 2003 at the rate of \$200,000 per year for a five year period totaling \$1 million, and was to cover permit retrofit requirements of the County’s first NPDES MS4 permit. Shortly after this approval, the County was issued a second generation NPDES MS4 permit which increased the retrofit requirements and identified the requirements as ‘Watershed Restoration.’ In November 2004 the County Commissioners reviewed and supported the Charles County Watershed Restoration Study and the projects needed to meet the second generation permit conditions. Subsequently, the County Commissioners increased the Fiscal Years 2006 - 2011 CIP budget to \$7.69 and the Fiscal Years 2010 – 2014 budget to \$12.04 million to implement the proposed projects.

In February 2004 the County began issuing bonds for the NPDES Retrofits Projects (CIP) budget. In March 2007 construction was initiated on the County's first watershed restoration projects, which is reflected by the increased expenditures shown in the Table 46. All of the projects are listed in Table 47 below.

*Table 46: NPDES Capital Improvements Program Expenditures through Fiscal Year 2015*

<b>BONDS ISSUED TO DATE</b>	<b>Issued</b>	<b>Spent</b>	<b>Balance</b>
2004 Public Improvement Bond	40,000	40,000	0
2006 Public Improvement Bond	100,000	100,000	0
2007 Public Improvement Bond	1,000,000	1,000,000	0
2008 Public Improvement Bond	400,000	400,000	0
2009 Public Improvement Bond	471,800	471,800	0
2010 Public Improvement Bond	500,000	500,000	0
2011 Public Improvement Bond	1,400,000	1,400,000	0
2012 Public Improvement Bond	700,000	700,000	0
2013 Public Improvement Bond	1,700,000	1,700,000	0
2014 Public Improvement Bond	3,000,000	2,058,583	941,417
<b>TOTAL</b>	<b>9,311,800</b>	<b>8,370,383</b>	<b>941,417</b>

*Table 47: Fiscal Year 2015 Capital Improvement Program for NPDES Retrofits*

<b>CIP for NPDES Retrofits</b>	<b>Budget</b>	<b>Spent</b>	<b>Balance</b>
Carrington (8014)	1,867,230	1,867,219	complete
Pinefield (8023)	1,219,630	1,071,264	148,366
Acton/Hamilton (8024)	325,720	316,264	9,456
Bryan's Road (8025)	2,009,810	1,865,960	143,850
NPDES Study (8028)	24,740	24,738	complete
Fox Run (8030)	1,091,710	839,337	252,373
Lancaster (8031)	85,360	72,997	complete
Northwood (8032)	28,830	28,830	complete
Ryon Woods (8033)	122,540	121,716	complete
White Plains Retrofits (8034)	688,750	168,029	520,721
NPDES Mapping (8035)	753,800	595,446	158,354
GIS Mapping (8036)	455,540	455,398	complete
Pinefield Temi Drive (8037)	641,800	124,490	517,310
Holly Tree Lane Stream Restoration (8038)	61,300	59,960	1,340
Stavors Road (8039)	292,500	25,446	267,054
Acton Lane (8040)	318,300	272,651	45,649
Cobb Island Drainage Study (8043)	60,000	11,084	48,916
White Plains Improvements (8045)	536,700	0	536,700
Potomac Heights (8046)	839,550	131,824	707,726
Master Drainage Plan (8047)	182,000	25,279	156,721
Feasibility & Concept Design (8048)	1,537,000	611,807	925,193
Port Tobacco (8049)	34,500	7,652	26,848
Tanglewood (8050)	67,500	59,314	8,186
Charles County Plaza (8051)	74,000	58,730	15,270
Tenth District (8052)	105,600	4,249	101,351
Swann Point WWTP Shoreline Stabilization (8053)	1,146,500	40,178	1,106,322
TBD (8019)	11,457,790	18,298	11,439,492
<b>TOTAL</b>	<b>25,492,000</b>	<b>8,878,163</b>	<b>16,600,498</b>

*Table 48: Capital Improvements Program Appropriation per Fiscal Year*

CIP Appropriation per Year		CIP Appropriation per Year	
FY03	214,000	FY10	2,409,000
FY04	220,000	FY11	2,409,000
FY05	224,000	FY12	1,505,000
FY06	72,000	FY13	5,657,000
FY07	778,000	FY14	5,290,000
FY08	1,452,000	FY15	3,135,000
FY09	2,127,000	FY16	11,514,000

*Fiscal Analysis of Permit Conditions*

The adopted Fiscal Year 2015 Enterprise Funds, which support the following permit conditions are in Appendix G. In summary, the cost for permit implementation in Fiscal Year 2015 follows:

*Table 49: Fiscal Year 2015 NPDES MS4 Permit Expenses per Permit Condition*

Permit Condition	Cost
Legal Authority	47,488
Source Identification	202,760
Stormwater Management	367,950
Erosion and Sediment Control	258,815
Illicit Detection and Elimination	55,014
Trash Elimination Education and Outreach	162,254
Property Management	120,220
Inlet Cleaning	72,182
Street Sweeping	48,750
Road Maintenance - Other	257,015
Public Education	179,321
Watershed Assessment	141,592
Watershed Restoration Planning & Implementation	604,627
Chemical Monitoring Assessment	79,996
Biological Monitoring and Assessment	24,368
Physical Stream Assessment	10,479
Design Manual Monitoring	10,647
TMDL Assessments	33,931
<b>Total Cost</b>	<b>2,677,409</b>