

Annual Reporting for VA0088617

The permittee shall submit the annual report to the Department in accordance with the following schedule:

Reporting Period	Annual Report Due Date
April 1, 2015 through December 31, 2015	March 31, 2016
January 1, 2016 through December 31, 2016	March 31, 2017
January 1, 2017 through December 31, 2017	March 31, 2018
January 1, 2018 through December 31, 2018	March 31, 2019
January 1, 2019 through December 31, 2019	March 31, 2020
January 1, 2020 through March 31, 2020	March 31, 2021

Each annual report shall include the following background information:

The permittee and permit number of the program submitting the annual report;

Henrico County / VA0088617

Any modifications to the MS4 Program Plan as a result of the annual report;

None

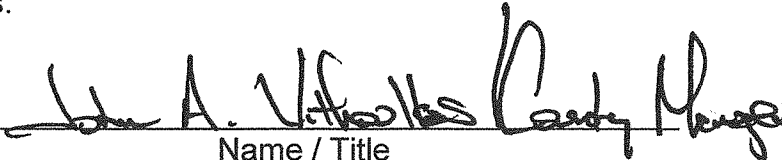
The reporting dates for which the annual report is being submitted; and

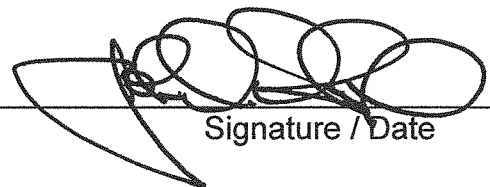
January 1, 2016 through December 31, 2016

Certification as per Part II.K.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware

that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."


Name / Title

 3/20/2017
Signature / Date

For a municipality, state, federal, or other public agency signature by either a principal executive officer or ranking elected official. For purposes of this subsection, a principal executive officer of a public agency includes:

- 1) The chief executive officer of the agency, or*
- 2) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.*

A summary of the implementation of each of the components established under Part I.B. and an evaluation of the effectiveness of each component. Additionally, the annual report shall include a summary of progress toward development of new MS4 Program components developed in accordance with the due dates as specified in the permit. The permittee should attempt to limit any component's narrative summary to no longer than two-pages plus any necessary tables and figures.

Part I.B.1 - Planning

A stormwater retrofit project summary that includes potential stormwater management projects to be completed during the term of the permit is posted on the County's website. The information Annual Report Supplement adequately addresses the permit requirements.

Part I.B.2.a - Construction Site Runoff and Post Construction Runoff from Areas of New Development and Development on Prior Developed Lands

The County implements an Erosion and Sediment Control Program and a Stormwater Management Program that have been determined to be consistent with state law and regulations. Implementation of the programs listed in this section will adequately address the permit concerns for this MS4 program element.

Part I.B.2.b - Retrofitting on Prior Developed Lands

The status of the retrofit projects listed in part I.B.1 that are being conducted during this permit term is provided in the Annual Report Supplement. The information included in the summary adequately addresses the permit requirements.

Part I.B.2.c - Roadways

The various Departments / Divisions that are responsible for maintaining roads, streets, and parking lots are aware of proper management goals / objectives. Inventories of County-maintained roads, streets and parking lots have also been developed as well as the stormwater treatment details required by the MS4 Permit. Implementation of the programs listed in this section will adequately address the permit concerns for this MS4 program element.

Part I.B.2.d - Pesticide, Herbicide, and Fertilizer Application

County-maintained lands have been evaluated to determine where nutrients are applied to more than one contiguous acre and the Departments / Divisions responsible for the County-maintained lands have been made aware of proper management goals / objectives. Summaries of the implementation details are included in the Annual Report Supplement as required by the MS4 Permit. Implementation of the programs listed in this section will adequately address the permit concerns for this MS4 program element.

Part I.B.2.e - Illicit Discharges and Improper Disposal

The County continues to implement programs to identify and eliminate illicit discharges. The County also has a program to inspect sanitary sewer system. Community cleanups, litter prevention and collection programs, and development design requirements are in place to reduce floatables. Summaries of the implementation details are included in the Annual Report Supplement as required by the MS4 Permit. Implementation of the programs listed in this section will adequately address the permit concerns for this MS4 program element.

Part I.B.2.f - Spill Prevention and Response

The County continues to implement programs to prevent, contain, and respond to spills that may discharge into the MS4. These programs involve cooperation with various Departments / Divisions. The results of the implementation of these programs are included in the Annual Report Supplement as required by the MS4 Permit. Implementation of the programs listed in this section will adequately address the permit concerns for this MS4 program element.

Part I.B.2.g - Industrial and High Risk Runoff

The County continues to implement a program to identify and control pollutants in stormwater discharges to the MS4 from industrial and high risk runoff facilities. Summaries of the implementation details are included in the Annual Report Supplement as required by the MS4 Permit. Implementation of the programs listed in this section will adequately address the permit concerns for this MS4 program element.

Part I.B.2.h - Stormwater Infrastructure Management

The County continues to implement programs to maintain the County's stormwater infrastructure and to update the accuracy and inventory of the storm sewer system. The Departments / Divisions responsible for County maintained lands are aware of the management goals / objectives and summaries of the implementation details are included in the Annual Report Supplement as required by the MS4 Permit. Implementation of the programs listed in this section will adequately address the permit concerns for this MS4 program element.

Part I.B.2.i - County Facilities

County-maintained facilities have been evaluated to determine which ones are High Priority Municipal Facilities and the Departments/Divisions responsible for County facilities are aware of proper management goals / objectives. Summaries of the implementation details are included in the Annual Report Supplement as required by the MS4 Permit. Implementation of the programs listed in this section will adequately address the permit concerns for this MS4 program element.

Part I.B.2.j - Public Education / Participation

The various Departments / Divisions in the County implement many public education programs with the goal of increasing the stormwater knowledge

of target audiences and changing behavior to result in pollutant reductions. Summaries of the program activities and the audiences reached are listed in the Annual Report Supplement as required by the MS4 Permit. Implementation of the programs listed in this section will adequately address the permit concerns for this MS4 program element.

Part I.B.2.k - Training

The various Departments / Divisions in the County conduct and makes available to County staff many training opportunities to address the topics required by the MS4 Permit. Summaries of the training opportunities and the number of staff attending are listed in the Annual Report Supplement as required by the MS4 Permit. Implementation of the programs listed in this section will adequately address the permit concerns for this MS4 program element.

Part I.B.2.l - Water Quality Screening Programs

The County implements both dry and wet weather screening programs in accordance with the requirements of the MS4 permit. Summaries of the implementation details are listed in the Annual Report Supplement as required by the MS4 Permit. Implementation of the programs listed in this section will adequately address the permit concerns for this MS4 program element.

Part I.B.2.m - Infrastructure Coordination

The Annual Infrastructure Coordination meeting between County and VDOT representatives occurred on October 27, 2016. During the meeting, all topics required by the MS4 Permit were discussed and the meeting summary is included in the Annual Report Supplement as required by the MS4 Permit.

A summary report of the monitoring programs listed under Part I.C

Summaries of the results of the monitoring programs listed under Part I.C are included in the Annual Report Supplement.

A summary of the implementation of each component listed under Part I.D.

The TMDL Action Plans required by Part I.D have been developed and are included with this Annual Report submittal.

The Specific Reporting Requirements identified in this state permit.

The Specific Reporting Requirements are addressed in the Annual Report Supplements included in the MS4 Program Plan.

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PART I.A.1
AUTHORIZED DISCHARGES

There are no Specific Reporting Requirements associated with this part of the MS4 Permit.

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PART I.A.2 PERMITTEE RESPONSIBILITIES

Each annual report shall include a current list of roles and responsibilities.

The roles and responsibilities for the appropriate Departments and Divisions have been established and are provided in the applicable part of the MS4 Program Plan. Given the extent of the tasks associated with the MS4 Permit and the numerous Departments and Divisions that have a role in implementing the requirements of the MS4 Permit, the roles and responsibilities have not been repeated here. Please refer to the MS4 Program Plan for the current list of roles and responsibilities.

Each annual report shall include a list of those circumstances of non-compliance outside of the permittee's control.

Circumstance of Non-Compliance Outside County's Control From January 1, 2016 through December 31, 2016	Date
None	

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PART I.A.3 LEGAL AUTHORITY

There are no Specific Reporting Requirements associated with this part of the MS4 Permit.

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PART I.A.4 MS4 PROGRAM RESOURCES

A copy of the fiscal year's budget including its proposed capital and operation and maintenance expenditures necessary to accomplish the activities required by this state permit shall be submitted with each annual report.

The County's Approved Budget for Fiscal Year 2016 - 2017 can be found at <http://henrico.us/pdfs/finance/ApprovedBudgetFY17.pdf>. Given the size of the document, the budget has not been included in this Annual Report Supplement.

	Approved Overall Budget	Approved Funding for MS4 Program Compliance	Source(s) of Funding
CAPITAL	\$107,423,784	\$2,948,442	Enterprise Fund / Bonds General Fund
OPERATION AND MAINTENANCE	\$320,832,750	\$5,455,393	General Fund Internal Service Fund Enterprise Fund

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PART I.A.5

PERMIT MAINTENANCE FEES

A statement regarding payment of the applicable MS4 permit maintenance fee, including check date and check number shall be included with each annual report. Note: Please do not include copies of checks or other bank records.

A check (check # 1170795, dated September 7, 2016) for the MS4 Permit Maintenance Fee (\$8,800.00) was submitted on September 7, 2016 to:

Treasurer of Virginia - DEQ
P. O. Box 1104
Richmond, VA 23218

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PART I.A.6 MS4 PROGRAM PLAN

Utilizing the last annual report prior to this state permit effective date as a baseline, the permittee's first annual report submitted under this state permit (Initial Report) shall include the necessary updates to describe implementation of this MS4 Program Plan and meet the conditions described in this section.

The current MS4 Program Plan can be found at <http://henrico.us/works/engineering-environmental-services/2015-ms4-permit-and-ms4-program-plan/>.

NOTE: For purposes of the next permit cycle, the fourth annual report submitted under this state permit will be considered the updated MS4 Program Plan to be reviewed as part of permit reissuance.

Noted.

HENRICO COUNTY MS4 PROGRAM PLAN

PART I.A.7 MS4 PROGRAM REVIEW AND UPDATES

All modifications and proposed modifications shall be reported in accordance with this section of the permit.

The current MS4 Program Plan can be found at <http://henrico.us/works/engineering-environmental-services/2015-ms4-permit-and-ms4-program-plan/>.

HENRICO COUNTY MS4 PROGRAM PLAN

PART I.B.1

PLANNING

The permittee shall provide a current web link to the analysis no later than 12 months after the effective date of this state permit with each annual report.

The stormwater management retrofit project summary can be found at <http://henrico.us/works/engineering-environmental-services/stormwater-retrofit-projects-summary/>.

HENRICO COUNTY MS4 PROGRAM PLAN

PART I.B.2.a

MS4 PROGRAM IMPLEMENTATION
CONSTRUCTION SITE RUNOFF AND POST CONSTRUCTION
RUNOFF FROM AREAS OF NEW DEVELOPMENT AND
DEVELOPMENT ON PRIOR DEVELOPED LANDS

Each annual report shall contain the number of regulated land disturbing activities approved and the total number of acres disturbed.

Number of Regulated Land Disturbing Activities Approved between January 1, 2016 and December 31, 2016	Total Number of Acres Disturbed
133	476.86

Each annual report shall contain the number of land disturbing activity inspections conducted and the number and type of each enforcement action taken.

ESC and SWM Inspection and Enforcement Actions conducted between January 1, 2016 December 31, 2016	Number of Actions
ESC Inspection - Complete	6,779
ESC Inspection - Follow-Up	324
PreConstruction Meeting	133
SWPPP - Complete	572
SWPPP - Follow-Up	129
Notice to Comply	82
Stop Work Order	6

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PART I.B.2.a

ANNUAL REPORT SUPPLEMENT

JANUARY 1, 2016 THROUGH DECEMBER 31, 2016

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Each annual report shall include a summary of actions taken by the permittee to implement Part I.B.2.a)1) through 3) of this state permit.

No actions such as ordinance revisions, additional staff, revised roles/responsibilities, etc. were taken between January 1, 2016 and December 31, 2016 to implement the local ESC and SWM programs.

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PART I.B.2.b

MS4 PROGRAM IMPLEMENTATION RETROFITTING ON PRIOR DEVELOPED LANDS

Each annual report shall include a status update for those projects for which implementation began during the reporting period.

Retrofit Projects for which Implementation* began between January 1, 2016 and December 31, 2016	
Woodman Park Energy Dissipator	
Land use being retrofitted	Urban
Retrofit performed	Sheet Flow to Conserved Open Space installation at two existing MS4 outfalls
Completion date	September 23, 2016
Anticipated completion date	2016
Total acreage retrofitted	38.99
Total impervious acreage	8.04
Total pervious acreage	7.39
Latitude / Longitude	37.6515 / -77.4867
Belmont Golf Course, Phase 1	
Land use being retrofitted	Urban
Retrofit performed	Streambank restoration of 895 feet of severely eroded streambank on Upham Brook
Completion date	
Anticipated completion date	2017
Total acreage retrofitted	10,665.91
Total impervious acreage	4,115.36
Total pervious acreage	4,791.90
Latitude / Longitude	37.6217 / -77.462

* For purposes of this reporting requirement, implementation means the construction or installation of the retrofit project.

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PART I.B.2.b

ANNUAL REPORT SUPPLEMENT

JANUARY 1, 2016 THROUGH DECEMBER 31, 2016

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PART I.B.2.c
MS4 PROGRAM IMPLEMENTATION
ROADWAYS

The permittee shall include a copy of the written protocols identified in Part I.B.2.c)(2) with the annual report due March 31, 2019.

Noted.

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PART I.B.2.d

MS4 PROGRAM IMPLEMENTATION PESTICIDE, HERBICIDE, AND FERTILIZER APPLICATION

Each annual report submitted after March 31, 2016 shall report on compliance with the turf and landscape nutrient management plan implementation schedule and include a list of the permittee's properties for which turf and landscape nutrient management plans have been implemented during the reporting year and the cumulative total of acreage under turf and landscape nutrient management plans.

MS4 Municipal Management Areas (MMMA's) on which Turf and Landscape Nutrient Management Plans were implemented between January 1, 2016 and December 31, 2016		
MMMA	MMMA Description (if applicable)	Acreage Covered
MMMA000105	Water Treatment Facility	1.33
TOTAL		1.33

Turf and Landscape Nutrient Management Compliance	
Total acres requiring coverage by a Turf and Landscape Nutrient Management Plan	274.55
Total acres managed by a Turf and Landscape Nutrient Management Plan	274.55
Percentage of identified acres requiring coverage by a Turf and Landscape Nutrient Management Plan that is covered by a Turf and Landscape Nutrient Management Plan	100

Each annual report shall include the number of acres managed under Integrated

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Pest Management Plans.

Acres managed under Integrated Pest Management Plans	64.503
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PART I.B.2.e

MS4 PROGRAM IMPLEMENTATION ILLICIT DISCHARGES AND IMPROPER DISPOSAL

Each annual report shall include a list of illicit discharges identified, the source, a description of follow-up activities and whether the illicit discharge has been eliminated.

Illicit Discharges Identified between January 1, 2016 and December 31, 2016		
IDDE00197		
Used motor oil and funnel on side of the road	<p>1/2/2016 Received notification via the online spill reporting form about grayish fluid that looks like used motor oil and a plastic funnel on the side of the road.</p> <p>1/4/2016 DPW staff made a site inspection and found a large funnel and oil pan discarded on the side of the road. While I was picking up the items a citizen came out and explained they were his fathers and wanted them back. DPW staff spoke to the individual about illicit discharges and how this is a violation of the County Code. He said they did not dump any oil in the area but had put the used oil in the empty containers.</p>	Illicit discharge eliminated
IDDE00198		
Discolored water standing in her yard	<p>1/6/2016 Received notification about orange water standing in their front yard. The water is standing directly above area where a gas replacement pipe is.</p> <p>1/7/2016 DPW staff made a site visit and found iron-oxidizing bacteria in a pool of water in their front yard. DPW staff wrote the homeowner an</p>	Illicit discharge eliminated

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PART I.B.2.e

ANNUAL REPORT SUPPLEMENT

JANUARY 1, 2016 THROUGH DECEMBER 31, 2016

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	<p>email explained what I saw and what iron-oxidizing bacteria was.</p> <p>1/8/2016 DPW staff received an email back from the homeowner stating they were worried it would kill her grass. DPW staff wrote her an email about advising her to contact the gas company who replaced the pipe to come out and put down dirt and reseed the area.</p>	
IDDE00199		
Tree fell into the roadway	<p>1/12/2016 Received notification via the online spill reporting form that a tree fell into the roadway during the storm.</p> <p>1/12/2016 DPW staff forwarded the information to the Road Department.</p>	Illicit discharge eliminated
IDDE00200		
Machinery leaking oil	<p>2/1/2016 Received notification via the online spill reporting form about a front-end loader parking in a parking lot that is leaking oil.</p> <p>2/1/2016 DPW staff made a site visit and notice an area of rainbow sheen in the parking lot below the front-end loader. It was determined this private parking lot drains to state waters therefore the information was forwarded to VDEQ to investigate.</p>	Illicit discharge eliminated
IDDE00201		
Water/debris in wetland	<p>2/4/2016 Received notification via the online spill reporting form about a constant flow of water/debris coming out of the ground in protected wetland area.</p> <p>2/5/2016 DPW staff made a site visit and discovered what appears to be an active sanitary sewer overflow out of a manhole. The location and pictures were forwarded to DPU to investigate.</p>	Illicit discharge eliminated
IDDE00202		
Discarded furniture and	2/5/2016 Received notification via the online spill reporting form about yard clipping and furniture	Illicit discharge

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yard debris	discarded in the front yard. 2/5/2016 DPW staff made a site visit and confirmed there was a pile of furniture was sitting in the front yard. This information was forwarded along to Community Maintenance Division.	eliminated
IDDE00203		
Grease bins overflowing	<p>2/8/2016 Received notification of grease bins behind the shopping center were leaking on the asphalt and getting into concrete ditch.</p> <p>2/8/2016 DPW staff investigated and found grease constantly leaking out of the bottom of the bins. The alley behind the shopping center has a layer of grease on it where vehicles have been driving through it. DPW staff made a site visit to restaurants in the shopping center to see who used it however they were not able to talk to anyone at either location.</p> <p>2/9/2016 DPW staff made another site visit and found out who the bin belonged to. DPW staff spoke to owner of the shopping center and was informed that grease bin company was scheduled to come out in 2 days to get the bin. DPW staff advised them they needed to put down absorbent material.</p> <p>2/12/2016 DPW staff made another site visit and found the leaking grease bins still there. Absorbent material had been put down underneath the bin and in the alley. Owner was not sure why the bin had not been picked up.</p> <p>2/17/2016 DPW staff received a phone call letting them know the grease bins had been picked up and they were going to work on getting the absorbent material up.</p> <p>2/26/2016 DPW staff made a site visit and</p>	Illicit discharge eliminated

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	confirmed the leaking grease bin was removed and absorbent material had been picked up.	
IDDE00204		
Trash and debris along roadway	<p>2/8/2016 Received notification via online spill reporting form about trash and debris along the road and on & off ramps.</p> <p>2/8/2016 DPW staff made a site visit and did not see excess of trash/debris along the road or in right of way. Staff contacted the individual who submitted the form and was informed she was concerned about the entire road in general; she was driving at the time so could not email me pictures of the area she was concerned about.</p> <p>2/9/2016 DPW staff called complainant to give her their email so she could send them pictures however she informed them she had reached out to their Supervisor and they were going to address it.</p>	Illicit discharge eliminated
IDDE00205		
Chair dumped on side of the road	<p>2/8/2016 Received notification via online spill reporting form about a chair that was dumped on the side of the road.</p> <p>2/9/2016 DPW staff made a site visit and determined the chair was dumped on a VDOT road therefore the information was forwarded to VDOT to address.</p>	Illicit discharge eliminated
IDDE00206		
Sediment laden water	<p>2/10/2016 Received notification from the Road Department about a sewage smell they discovered while cleaning out an inlet which was being clogged from sediment laden water leaving a nearby construction site. This location was also forwarded to DPU from the Road Department.</p> <p>2/10/2016 DPW staff made a site visit and confirmed there was sediment laden water flowing</p>	Illicit discharge eliminated

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	<p>through the storm sewer system but did not notice a sewage smell. A water sample was taken. DPW staff reached out to DPU to see what their investigation found – the sanitary lines in the area were working properly and not leaking in the MS4. E&S inspector for the construction site is going to be addressing the runoff issue.</p> <p>2/11/2016 Water sample came back negative for <i>E. coli</i>; determined water running through MS4 is stormwater/groundwater.</p>	
IDDE00207		
Yard drain is clogged	<p>2/23/2016 Received notification of a drain in a backyard that is clogged and causing flooding.</p> <p>2/26/2016 DPW staff made a site visit and saw a large pile of leaves/yard debris dumped near and around an end treatment. A letter will be sent to homes backing about to this area.</p> <p>3/1/2016 Educational letters were sent to 3 houses in regards to proper disposal of yard waste.</p>	Illicit discharge eliminated
IDDE00208		
Potential sewage leak	<p>2/23/2016 Received notification about potential sewage leaking onto homeowner's property and mud running off neighbor's property onto theirs.</p> <p>2/24/2016 DPW staff called complainant about their concerns. They were told their concerns in regards to the septic system had been forwarded to the Health Department to investigate since it did not appear it was getting into the County's MS4. The mud he referred to was related to an unvegetated area on his neighbor's property which they use for a vegetable garden during the summer. It was explained to homeowner that gardens are not subject E&S law and regulations. Complainant expressed interest in speaking to someone about the drainage therefore he was given a contact name</p>	Illicit discharge eliminated

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	and number for SWI supervisor.	
IDDE00209		
Improper dumping of yard debris	<p>3/2/2016 Received notification about a landscaper who is dumping yard debris into the storm sewer system</p> <p>3/3/2016 DPW staff made a site visit and noticed leaves and debris along the curb and gutter in the roadway. One of the inlets on the roadway was completely choked full with leaves. A letter will be sent to the homeowner in regards to the proper disposal of yard debris.</p> <p>3/7/2016 Letter was mailed to the homeowner in regards to proper disposal of yard debris and how dumping them in the storm sewer system was a violation of the County Code.</p> <p>3/17/2016 DPW staff received a voicemail from the homeowner who stated the young man had just started his landscaping business and did not know better. She stated she would have him clean out the leaves and ensure it would not happen again.</p> <p>3/21/2016 DPW staff called homeowner back to express appreciation of having landscaper removed the yard debris from the inlet.</p>	Illicit discharge eliminated
IDDE00210		
Leaking truck	<p>3/4/2016 Received notification of a leaking Freightliner; stated the driver was dumping automotive oil in the woods.</p> <p>3/4/2016 DPW staff made a site visit and noticed 2 almost full buckets underneath the truck catching the leak. There was some product on the road (most likely from overflowing or bouncing out of the bucket). DPW staff could find no evidence of drive dumping the buckets in the wooded area across the street or anywhere else. DPW staff reached out to</p>	Illicit discharge eliminated

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	<p>the Fire Marshall's office to see if they could run the plates to get owner information.</p> <p>3/7/2016 Fire Marshall's Office made a site visit and while there a mobile diesel mechanic showed up to work on the truck. The mechanic was able to call to the owner and have him respond to the scene. The owner of the truck met with the Zoning Inspector, Police Department Fire Marshall's Office and agreed to have the truck towed to unspecified location to the repairs completed.</p>	
IDDE00211		
Truck leaking oil	<p>3/13/2016 Received notification via online spill reporting form about a pickup truck that is or has been leaking oil.</p> <p>3/15/2016 DPW staff determined the roads in the neighborhood are privately owned and drain to state waters (never entering the County's MS4) therefore the information was passed along to VDEQ to investigate.</p>	Illicit discharge eliminated
IDDE00212		
Yard debris & trash	<p>3/17/2016 Received notification via online spill reporting form about yard debris and trash.</p> <p>3/17/2016 DPW staff emailed the complainant to get more information so their issues could be addressed appropriately. Her concerns are with a drainage ditch that runs beside her property always having trash and debris in it. The location and her concerns were forwarded to the Road Department to investigate.</p>	Illicit discharge eliminated
IDDE00213		
Concrete dumped into roadside ditch	<p>3/18/2016 Received notification of what appears to be concrete that has been dumped into an asphalt roadside ditch.</p> <p>3/18/2016 DPW staff made a site visit and spoke</p>	Illicit discharge eliminated

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	<p>with the manager of the shop. They were having a new sign put in and it appears the contractor they hired either had an overflow or dumped concrete buckets. The manager was going to talk to corporate and the company in regards to the discharge. There is nothing to clean up as the concrete is hardened however they were going to try.</p> <p>3/24/2016 DPW staff received a call from manager who let us know they cleaned up the concrete on the ground and added grass seed.</p>	
IDDE00214		
Failing septic system	<p>3/22/2016 Received notification from the Health Department about a home which has a failing septic system that is entering the roadside ditch.</p> <p>3/21/2016 DPW met the Health Department and confirmed sewage was flowing via a trench drain renters dug into the roadside ditch. There was no one home during this site visit therefore business cards were left at the front door.</p> <p>3/23/2016 After corresponding with the County Attorney's office, DPW sent a letter to the property owner and the current tenants.</p> <p>3/30/2016 Property owner called DPW staff in regards to the letter. The homeowner had been in the hospital and was under the assumption the tenants were fixing the septic system per previous conversations he had had with them. A meeting at the home was scheduled.</p> <p>3/31/2016 DPW staff, Health Department and property owner met at the home and discussed the issue. Property owner signed an agreement with the Health Department for them to come out and check the drain field to see if it is working properly and will</p>	Illicit discharge eliminated

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	be working with them to get the issue resolved. Property had C&W Hanover pump out the system which will eliminate the illicit discharge of sewage until the system can get fixed. They are also going to put down lime in the yard and roadside ditch. Health Department is going to be handling it from here unless the sewage starts to flow again.	
IDDE00215		
Dumping of yard debris	<p>3/23/2016 Received notification via online spill reporting form about neighbor who is dumping yard debris in easement/drainage ditch which is causing flooding.</p> <p>3/24/2016 DPW staff called the complainant to let them know their concerns had been forwarded to the Standing Water Initiative (SWI) group.</p>	Illicit discharge eliminated
IDDE00216		
Dumped container of asphalt sealer	<p>3/30/2016 Received notification from the Road Department about a large container of what appears to be asphalt sealer and a small amount that spilled out onto the grass.</p> <p>3/30/2016 DPW staff talked to the Road Department who agreed to pick up the container and bring it back to their yard for disposal.</p>	Illicit discharge eliminated
IDDE00217		
Dumping of wash water	<p>4/5/2016 Received notification about a mobile pet grooming van who possibility dumped materials into the storm sewer inlet.</p> <p>4/5/2016 DPW staff made a site visit and found soapy water in an inlet.</p> <p>4/6/2016 DPW staff called and spoke with owner of the mobile pet grooming company. They stated they were unaware they were not allowed to dump their wash water in the inlet since she thought it was the same as people washing their cars in the roadway.</p>	Illicit discharge eliminated

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	She was advised her and her employees in the future needed to dump their wash water in a grassy or gravel area – she was receptive of this and said she would do this going forward.	
IDDE00218		
Potential sewage leak	<p>4/1/2016 Received notification from Richmond DPU about a potential sanitary impact to our MS4; this was based on water sample results they received (the test was taken back on 2/8/2016).</p> <p>4/6/2016 DPW staff made a site visit and checked all the MS4 structures that drain to the end treatment where Richmond DPU took their water sample. A line of structures was found with flowing water and an odor. The flowing water was traced back to an apartment complex.</p> <p>4/27/2016 After spending several weeks investigating, DPW and DPU, a letter was sent to the management company for the Townhomes in regards to the potential sewage issue.</p> <p>6/6/2016 DPW staff never heard from the management company in regards to the letter sent therefore they made a site visit to the office however it was closed for the day. They were able to talk to a maintenance worker for the complex and they stated they would talk to the office manager and have them call us. It was determined the letter was sent to the wrong company.</p> <p>8/1/2016 DPW staff made another site inspection and found water flowing, no odor was detected. DPW staff spoke with the property manager who had not received any of our correspondence as she was just hired.</p> <p>This was sent back to DPU to check their lines again since the storm sewer system runs parallel to the sanitary system in 2 places.</p>	Illicit discharge eliminated

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	<p>8/8/2016 DPU let DPW know they had tested their sanitary line and did not find a leak. They stated they would test the water line for leaks once the rains subsided.</p> <p>8/17/2016 <i>E. coli</i> test was conducted and only 3 colony forming units were counted. Based on this information it is not believed that the running water is sewage.</p> <p>8/18/2016 DPW spoke with DPU who determined the water line was not leaking.</p>	
IDDE00219		
Coolant release from a truck	<p>4/18/2016 Received notification from DEQ about a Republic Services truck that had a broken axel which resulted in a release of ~30 gallons of coolant.</p> <p>4/18/2016 DPW staff made a site visit and by the time they arrived the cleanup contractors (Shamrock Environmental & First Call Environmental) were on site. The spill occurred in a private parking lot and it was determined very little if any product made it into the storm sewer inlets in the parking lot. This spill did not enter the County's MS4. Clean up was in the process as I was leaving.</p> <p>4/19/2016 DPW staff made a site visit and determined all absorbent material had been cleaned up and no free product remained.</p>	Illicit discharge eliminated
IDDE00220		
Sewage overflow	<p>4/18/2016 Received notification about a private apartment complex which was having an overflow. DPU checked the County system and it was flowing without any issues.</p> <p>4/19/2016 DPW staff called apartment complex and spoke with an individual in the main office who not</p>	Illicit discharge eliminated

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	<p>aware of the overflow, he said he would forward the information on to the maintenance workers to look into. DPW staff received a call back letting them know the apartment complex did not find any manholes overflowing. DPW staff made a site visit and confirmed the overflow had stopped.</p>	
IDDE00221		
Sheen in roadway	<p>4/22/2016 Received notification via online spill reporting form about a colorful sheen in the roadway throughout the neighborhood, mostly in front of mailboxes.</p> <p>4/22/2016 DPW staff made a site visit and found a small amount of sheen on the roadway. It had been raining that day therefore there the leaked material most likely washed away. There was nothing to clean up. DPW staff called the U.S. postal service to make them aware of the situation and to check the mail truck on this route to make sure it was not leaking.</p>	Illicit discharge eliminated
IDDE00222		
Private sanitary overflow	<p>4/26/2016 Received notification of a private sanitary overflow.</p> <p>4/26/2016 DPW staff made a site visit and discovered sanitary getting into the County's MS4. DPW staff made a visit to the front office and spoke with the maintenance supervisor who informed us that they had already contacted a plumbing company.</p> <p>4/27/2016 DPW staff received a phone call from the maintenance supervisor who said they had flushed the sanitary lines and the plumbing company would be coming back out to camera the lines. Maintenance supervisor called back on the same day to let us know the manholes were backing up again so they had called the plumbing company back out. Later this day they were able to find</p>	Illicit discharge eliminated

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	<p>where the problem was originated.</p> <p>4/28/2016 DPW staff received a phone call from the maintenance supervisor who let us know the sanitary lines were flushed again and they noticed a large white (grease) blob break free during the process. They still plan to camera the lines to make sure everything is moving freely. DPW staff suggested they send out a letter to apartment complex residents about the do's and don'ts of what can and should go down the sinks and toilets.</p>	
IDDE00223		
Improper disposal of yard waste	<p>4/27/2016 Received notification via online spill reporting form about a resident who was sweeping their yard waste into the storm drain in front of their home.</p> <p>4/27/2016 DPW staff made a site visit and found no yard debris or grass clippings in the inlet. No Illicit discharge was discovered.</p>	Illicit discharge eliminated
IDDE00224		
Improper disposal of yard waste	<p>4/27/2016 Received notification via online spill reporting form about an individual who was using a leaf blower to blow trash into the storm drain.</p> <p>4/27/2016 DPW staff made a site visit and found minimal amount of road litter (leaves, pollen) in the shelf of the inlet but nothing in the inlet itself. The location was forwarded to VDOT since it was a state road.</p>	Illicit discharge eliminated
IDDE00225		
White foam in creek	<p>4/27/2016 Received notification about a bright white foam in the creek that runs throughout the neighborhood.</p> <p>4/27/2016 DPW staff forwarded this information to VDEQ. VDEQ went out and investigated and determined the discharge originated in the County's</p>	Illicit discharge eliminated

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	MS4 however he was not able to determine where it came from. It was determined no negative impact to the creek.	
IDDE00226		
Improper dumping of yard debris	<p>4/26/2016 Received notification via online spill reporting form about several neighbors who are using a County vacant parcel as a dumping ground for their yard debris/waste.</p> <p>4/29/2016 DPW staff forwarded this to the Road Department as they who are listed as owners of the parcel to address the issue. The information was also forwarded to Traffic to determine if “no dumping” signs were appropriate for this location.</p>	Illicit discharge eliminated
IDDE00227		
Water standing in roadside ditch	<p>4/29/2016 Received notification via online spill reporting form about rain water standing in the roadside ditch.</p> <p>5/2/2016 DPW staff forwarded this location to Standing Water Initiative (SWI) to look at and forward to the Road Department if necessary.</p>	Illicit discharge eliminated
IDDE00228		
Hose running into inlet	<p>5/10/2016 Received notification of a hose that is running into an inlet that is discharging discolored water that was discovered during routine MS4 inspections. There is construction work occurring.</p> <p>5/10/2016 DPW staff made a site visit and found discolored water discharging directly into an inlet through a hose. DPW staff were able to get a company name and phone number of a work van. DPW staff called and spoke with the contractor who said they were only discharging water through the pipe however he was made aware that was not the case since discolored water was being discharged. The contractor said he would call his employees to get them to disconnect the hose from the inlet.</p>	Illicit discharge eliminated

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	5/11/2016 DPW staff made a site visit and made note that the hose was no longer running into the storm sewer inlet and there was no evidence of any further discharge.	
IDDE00229		
Unknown pipe	<p>5/12/2016 Received notification of a metal corrugated pipe that is coming from a pool, there was nothing being discharged from it at the time, during a routine MS4 inspection.</p> <p>5/18/2016 DPW staff made a site visit after multiple days of rain and found nothing flowing out of the pipe therefore it is assumed it is not connected to pool drains. DPW staff emailed the President of the pool to see if had some answers to what the pipe drains.</p> <p>6/6/2016 DPW staff had not received a response from previous email therefore the email was forwarded to the grounds crew to see if they would respond. Another site visit was made and nothing was flowing out of the pipe.</p> <p>6/22/2016 DPW staff received a phone call from one of the board members of the Community Center. It was explained that at one time the pipe was connected to the roof gutters and some drains around the pool deck however they had just done some work and put in new piping and during that work this pipe was abandoned.</p>	Illicit discharge eliminated
IDDE00230		
Erosion and sinkholes around inlet	<p>5/31/2016 Received notification of erosion and sinkholes around inlets found during routine MS4 inspections. It was noted there was a slight sewage smell as well.</p> <p>5/31/2016 DPW staff forwarded the location of the inlets to the Road Department to address the</p>	Illicit discharge eliminated

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	<p>sinkholes.</p> <p>6/3/2016 DPW staff made a site visit and did not notice any usual smells however did notice the sink holes appeared to be in line with a sanitary main. Will forward to DPU to investigate.</p> <p>6/6/2016 DPW forwarded this location and information to DPU to investigate.</p>	
IDDE00231		
Dumpster leaking	<p>5/24/2016 Received notification from DPU about a dumpster leaking.</p> <p>5/24/2016 DPW staff made a site visit and found the dumpsters to be in good working order with nothing leaking from them. There was a small amount of liquid in the parking lot however no one of it made it to the inlets (private).</p>	Illicit discharge eliminated
IDDE00232		
Trash and debris along roadway	<p>6/10/2016 Received notification via online spill form in regards to a few concerns: debris along the roadway, potholes in the roadway, disabled truck, signage in the right-of-way.</p> <p>6/23/2016 DPW staff forwarded the issues to VDOT since they were pertaining to a state road.</p>	Illicit discharge eliminated
IDDE00233		
Tree in roadway	<p>6/17/2016 Received notification via online spill form about a tree being down in the roadway.</p> <p>6/17/2016 DPW staff forwarded the location to the Road Department to remove.</p>	Illicit discharge eliminated
IDDE00234		
Potential sewage in ditch	<p>6/21/2016 Received notification in regards to sewage being in the roadside ditch.</p> <p>6/21/2016 DPW staff reached out to Standing Water Initiative (SWI) as they have history with this</p>	Illicit discharge eliminated

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	homeowner. After speaking with SWI employee it was determined this is not a sewage issue but a water meter issue where the tenants have bypassed the water meter to get water for free. DPU confirmed there is no sewage flowing into the roadside ditch and that they are handling it.	
IDDE00235		
Mineral oil leak	<p>6/27/2016 Received notification of a mineral oil spill that occurred when a power line came down in their neighbor's yard during a storm. The oil is killing his grass and he would like it cleaned up.</p> <p>6/27/2016 DPW staff explained to the complainant that this was a private property issue, since the oil was not reaching our MS4, and that he should reach out to Dominion Power in regards to the oil spill.</p> <p>DPW staff forwarded the information along to Dominion Power to investigate.</p>	Illicit discharge eliminated
IDDE00236		
Dry weather flow	<p>7/8/2016 Received notification of dry weather flow that was found during routine MS4 inspections. There was not enough water to get a chlorine sample.</p> <p>7/8/2016 DPW staff made a site visit and was able to get a water sample that was negative for chlorine. No illicit discharge.</p>	Illicit discharge eliminated
IDDE00237		
Dumping of grass clippings	<p>7/8/2016 Received notification of a homeowner who is dumping grass clippings into the inlet in front of their property.</p> <p>7/8/2016 DPW staff made a site visit and did not see grass clippings in the inlet however it was choked full of gravel and other debris; this inlet was forwarded to the Road Department to get cleaned out. There were some grass clippings along the</p>	Illicit discharge eliminated

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	<p>curb and gutter that could get washed down the storm sewer system during a rain event.</p> <p>7/11/2016 An educational mailing was sent to 3 homes in regards to proper disposal of yard waste/debris.</p>	
IDDE00238		
Algae flowing into inlet	<p>7/14/2016 Received notification from the Road Department about what appears to algae in a parking lot that is flowing into an inlet.</p> <p>7/14/2016 DPW staff made a site visit and determine there was a water leak from a sprinkler system resulting in algal growth. Irrigation is an allowable discharge therefore no illicit discharge present.</p>	Illicit discharge eliminated
IDDE00239		
Septic system failing	<p>7/14/2016 Received notification from the Health Department about a septic system that was failing and effluent was going into the roadside ditch.</p> <p>7/14/2016 DPW staff made a site visit and confirmed sewage was leaking down the driveway and entering the roadway. While out there one of the tenants came home and he acknowledged they knew about the leak and they were not sure what to do about it. They were advised they needed to have it pumped down immediately to stop the flow until the system could get fixed.</p> <p>7/15/2016 DPW staff received a phone call from the homeowner who explained she had hired someone to come pump out the system but they were not coming for a few days. It was expressed to the homeowner this was not acceptable and they needed to get someone out there sooner to stop the flow- the system got pumped out on this date. The homeowner was also advised to contact the Health Department to fill out a system repair form.</p>	Illicit discharge eliminated

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	<p>7/18/2016 DPW staff made a site visit and confirmed there was no longer sewage leaking into the roadway.</p> <p>7/19/2016 DPW received a copy of the receipt from the pump out.</p> <p>7/22/2016 DPW staff received notification from the Health Department that they system was leaking again. DPW staff called the homeowner to discuss the situation and she stated she was unaware it was leaking again however while on the phone with me she arrived home and confirmed it was. She was made aware she needed to have the system pumped down again and that it would be advised to cut down on the usage of the system until the necessary repairs could be made (scheduled for 7/25/2016).</p> <p>7/28/2016 DPW staff made a site visit and noticed the system was not leaking. DPW contacted the Health Department who confirmed the work had been completed on the septic system.</p>	
IDDE00240		
Leachate overflow	<p>7/15/2016 Received notification from DPU about a leachate overflow from a landfill.</p> <p>7/15/2016 DPW staff made a site visit and Fire, Police, and landfill staff were on site. The overflow had stopped by the time we arrived at the site and numerous dams were created to stop the flow of leachate from reached the nearby stream. DPU was able to get to find the blockage and get the system moving freely again. Leachate was standing in the roadside ditch and First Call Environmental was on the way to perform necessary clean up. VDEQ was also made aware of the overflow and on their way to the site.</p>	Illicit discharge eliminated

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	<p>7/17/2016 DPW staff received an email from landfill employee letting them know that First Call Environmental had removed all the impacted soil and replaced it with clean soil and applied seed and erosion blanket to disturbed area.</p> <p>7/18/2016 DPW staff made a site visit and confirmed all impacted areas were cleaned up.</p>	
IDDE00241		
Discolored water	<p>7/15/2016 Received notification about discolored water flowing through a stream.</p> <p>7/15/2016 DPW staff made a site visit and discovered white/chalky color water coming out of the roadway culvert. VDEQ was called and informed of this discharge since it impacts state waters. DPW staff checked the inlets and manholes in the area and all were dry. There is a box culvert that runs down the road and is a separate system. There was a dumpster near this box culvert that had a dumpster with a dust/powder and discarded bags in the area and might be the source of the discolored water. DPW staff spoke with owner of this company about cleaning up the dumpster area. No confirmed source of the discolored water was found.</p> <p>7/18/2016 DPW staff made a site visit and determined the creek was no longer discolored.</p> <p>7/22/2016 DPW staff put a camera in the box culvert to check for any illegal connections however none were found. While they were in the area they walked around the area again and found an inlet in a private parking lot that had white residual leading to it. DPW staff spoke with an employee of the company who said paint wash water might have been dumped in the area. It was determined this</p>	Illicit discharge eliminated

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	was the possible source of the discolored water. Employee was talked to about the proper way to dispose of wash water in the future – said they would make sure to talk to all employees and contractors to make sure it does not happen again.	
IDDE00242		
Discharging pool water	<p>7/23/2016 Received notification about a resident who is discharging their pool water onto their neighbor's property.</p> <p>7/25/2016 DPW staff made a site visit and there was no longer running water. A letter was sent to homeowner discharging the pool water explaining his 2 options for this.</p> <p>7/27/2016 DPW staff received a phone call from a resident and they discussed the drainage problems and she was made aware of what the letter that was sent said.</p> <p>7/28/2016 DPW staff received a phone call from the homeowner with the pool apologizing for the issue and stated it would not happen again.</p>	Illicit discharge eliminated
IDDE00243		
Possible water leak	<p>7/26/2016 Received notification from the Road Department about a possible spill.</p> <p>7/26/2016 DPW staff made a site visit and determined there was not a spill but what appeared to be a possible water leak. DPW forwarded this information to DPU to investigate.</p>	Illicit discharge eliminated
IDDE00244		
Illegal dumping	8/8/2016 Received notification about possible illegal dumping into the MS4 on a County site. There are pictures that show an employee dumping the contents of a shop sweeper into a drop inlet. DPW and Central Auto Maintenance (CAM) responded to this. CAM removed the trap from the inlet and a	Illicit discharge eliminated

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	<p>petroleum sheen was recovered from the inlet using booms and pads. A citrus cleaning smell was noted. Two booms were placed downgradient of the inlet to capture any remaining product – booms were removed and properly disposed of. Risk Management was made aware of the dumping and they will be working with CAM to discuss any further steps that need to be taken.</p> <p>CAM stated the dumped the wash water in the inlet thinking it was connected to an oil/water separator and sanitary. They agreed not to dump into this inlet again.</p>	
IDDE00245		
White powder flowing in parking lot	<p>8/8/2016 While DPW staff was driving through county facility they discovered a white powdery substance running across the pavement from the covered dump truck parking area on DPU's property. Pictures and information about this was sent to DPU to investigate.</p> <p>8/9/2016 DPW received any email started the white powdery substance was absorbent material that they put down to clean up a spill. Rain came into the covered area when the absorbent was put down resulting in the runoff. DPU is going to finish cleaning up the area.</p>	Illicit discharge eliminated
IDDE00246		
Discharging into a storm drain	<p>8/9/2016 Received notification that a contractor was pumping into the storm drain.</p> <p>8/9/2016 DPW staff spoke with the contractor onsite. They are doing utility work and pumping clean water from pit for water line work. This is not a violation.</p>	Illicit discharge eliminated
IDDE00247		
Vehicle washing	8/25/2016 Received notification about large trucks being power washed.	Illicit discharge eliminated

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	<p>8/25/2016 DPW staff made a site visit and saw evidence of a vehicle wash area in the back parking lot of the building. DPW checked DEQ's permit list and they do not have a permit. Based on this information, they were sent a letter informing them they must immediately cease allowing wash water to enter the MS4.</p> <p>8/29/2016 DPW staff received a phone call from respondent of the letter letting us know they had ceased vehicle washing at this location and are using a carpool account.</p>	
IDDE00248		
Vehicle washing	<p>8/25/2016 DPW staff witnessed vehicle washing occurring in a covered area behind the building. This area does not appear to drain to sanitary. They do not have a permit for this activity. A letter was sent to them informing them they needed to cease allowing wash water to enter the MS4.</p> <p>8/29/2016 DPW staff received a phone call requesting a meeting to discuss the issue.</p> <p>8/30/2016 DPW staff met with employee who showed the covered area (where the washing was occurring) connects to an oil water separator which goes to the sanitary sewer. Therefore, it is acceptable for them to wash in this location.</p>	Illicit discharge eliminated
IDDE00249		
Vehicle washing	<p>8/25/2016 DPW staff witnessed vehicle washing occurring in a covered area behind the building. This area does not appear to drain to sanitary. They do not have a permit for this activity. A letter was sent to them informing them they needed to cease allowing wash water to enter the MS4.</p> <p>9/1/2016 Car company has stopped washing cars and have ordered a vapor machine which will steam the cars with no runoff and if the cars are dirty they</p>	Illicit discharge eliminated

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	will take them to a professional wash. In six months' time oil water separator, will be installed and this will drain to the sanitary sewer and they will resume car washing onsite.	
IDDE00250		
Dumping of wash water	<p>8/25/2016 Received notification of a company that is taken water from a fire hydrant and rinsing out their equipment.</p> <p>8/25/2016 DPW staff made a site inspection and did not witness this activity. A letter was sent to the owner informing them that allowing wash water to enter the MS4 must cease immediately.</p>	Illicit discharge eliminated
IDDE00251		
White substance in ditch	<p>9/6/2016 Received notification of a white substance in a roadside ditch.</p> <p>9/6/2016 DPW staff made a site visit and discovered the substance was bacterial sheen. No illicit discharge found.</p>	Illicit discharge eliminated
IDDE00252		
Oil spill	<p>9/12/2016 Received notification about a large oil spill in the roadway.</p> <p>9/12/2016 DPW staff made a site inspection and found an unknown amount of oil on several streets in the area. DEQ also responded and suggested Fire be called. Fire responded and used oil dry on the large spot. DPW used oil dry on the smaller spots. Fire does not clean up absorbent material therefore First Call Environmental was contracted to finish the clean-up and dispose of used absorbent materials.</p>	Illicit discharge eliminated
IDDE00253		
Oil on the roadway	9/22/2016 Received notification about a truck that is parking and leaking hydraulic oil and motor oil on the roadway and it is harming the asphalt.	Illicit discharge eliminated

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	<p>9/22/2016 DPW staff made a site visit and used absorbent pads to get up the petroleum sheen on the pavement. DPW spoke with Road Department who agreed to remove contaminated pavement. A boom was also placed at the curb outfall which will remain in place until this work can be completed.</p> <p>10/17/2016 DPW staff made a site visit and made note the pavement was replaced where needed. The boom was removed and disposed of properly.</p>	
IDDE00254		
Potential water leak	<p>9/22/2016 Received notification of a possible water leak.</p> <p>9/22/2016 DPW staff investigated and contacted DPU to forward the information along for them to investigate.</p> <p>9/23/2016 DPU informed DPW the leak was an irrigation leak on private property. DPW staff called the management company for the property who said they would shut off the irrigation until the leak could be fixed. Received a phone call back from the management company who stated they had found the leak and turned the water off at this point. DPW staff made a site visit and confirmed it was no longer leaking.</p>	Illicit discharge eliminated
IDDE00255		
Trees and brush dumped	<p>8/9/2016 Received notification via online spill reporting from about large pile of trees and brush at the end of roadway.</p> <p>8/9/2016 DPW staff forwarded the information/location to the Road Department to look at for clean-up.</p>	Illicit discharge eliminated
IDDE00256		
Discarded sofa in the	9/22/2016 Received notification via online spill reporting form about a sofa discarded in the front	Illicit discharge

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front yard	yard. 9/22/2016 DPW staff forwarded this information to Community Maintenance to investigate.	eliminated
IDDE00257		
Improper dumping	10/3/2016 Received notification about a resident who dumps everything (dog waste, trash, yard debris) into the storm drain. 10/3/2016 DPW staff made a site visit and did not find anything in the storm drain system. No illicit discharge found.	Illicit discharge eliminated
IDDE00258		
Tanker truck leaking	10/4/2016 Received notification in regards to two tanker trucks that are parking on the road causing a site issue and appears one of the tankers is leaking. 10/4/2016 DPW staff made a site visit and noticed a small drip coming from one of the pipes that connects to the tanker however there was no smell associated with it and appears to be water condensation. 10/10/2016 Tanker trucks are gone and there is no staining or free product on the roadway.	Illicit discharge eliminated
IDDE00259		
Muddy water	10/4/2016 Received notification via online spill reporting form about muddy water flowing underneath silt fence, from a construction site, and entering the MS4. 10/4/2016 DPW staff forwarded the concern to E&S division to investigate and make sure all necessary E&S controls are in place and working properly.	Illicit discharge eliminated
IDDE00260		
Dumping grass clippings	10/6/2016 Received notification that a landscaper was dumping grass clippings in the storm sewer.	Illicit discharge eliminated

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	<p>10/6/2016 DPW staff made a site visit and confirmed there were grass clippings in the storm sewer system.</p> <p>10/7/2016 DPW staff spoke with the landscape company who was very appreciative of the phone call as they said that dumping grass clippings and/or yard waste into the storm sewer system is not something they allow. The company stated they would be talking to their employees about this and make sure they know not to do this in the future.</p>	
IDDE00261		
Rainbow sheen in ditch	<p>10/11/2016 Received notification about a sump pump that is discharging to the roadside ditch and the water has an orange tint and rainbow sheen in present. This was found during routine MS4 inspections.</p> <p>10/12/2016 DPW staff made a site inspection and determined the discolored water and sheen was from iron oxidizing bacteria. No illicit discharge found.</p>	Illicit discharge eliminated
IDDE00262		
Oil and gas in inlet	<p>10/17/2016 Received notification about an inlet that has oil and gas in it. This was found during routine MS4 inspections.</p> <p>10/17/2016 DPW staff made a site visit and confirmed a large pool of oil has been dumped. DPW staff spoke with the manager of the gas station who was not aware of who dumped there. He was informed since it was in their parking lot it was the responsibility of the owner to clean up the oil from the inlet. DPW staff was given the contact number of owners; owner was contacted and made aware of the situation. A meeting is scheduled to show owner the inlet in question.</p> <p>10/19/2016 DPW staff met with the owner on site. Owner immediately contacted the company they</p>	Illicit discharge eliminated

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	have a contract with for clean-up's and they are scheduled to be on site in a few hours to clean the inlet. The owner of the property contacted DPW staff to let them know the clean-up company was on site. DPW staff made a site visit during clean up. They were able to remove all the oil from the inlet.	
IDDE00263		
House is getting flooded	<p>10/20/2016 Received notification from the Health Department in regards to a homeowner whose yard and house are getting flooded by their neighbor. Health Department thinks it might be a blocked end treatment.</p> <p>10/20/2016 DPW staff met the Health Department and homeowner on site and discovered the water was coming from a well pump that is running continuously and has been for the last few weeks. There is no illicit discharge and the Health Department is going to handle it from here.</p>	Illicit discharge eliminated
IDDE00264		
Sewage smell in inlet	<p>10/26/2016 Received notification from the Road Department about an inlet that has a sewage smell to it. Road Department also forwarded the concern to DPU.</p> <p>10/26/2016 DPW staff called DPU to see what the status of their end of the investigation was. DPU said the vac truck was on the way to the location to get what appears to be a blockage out of the line and see if that eliminated the issue.</p> <p>10/27/2016 DPU confirmed there was a blockage in the main line which has been fixed and sanitary is flowing normally. This has resolved the sewage smell in the inlet.</p>	Illicit discharge eliminated
IDDE00265		
Wash water running down	10/28/2016 Received notification about what appears to be wash water from a car wash at a gas	Illicit discharge

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the street	<p>station flowing down the street.</p> <p>10/31/2016 DPW staff made a site visit and spoke with the manager of the gas station who confirmed there was an overflow from the car wash on Friday and he had already submitted a ticket to repair the issue.</p> <p>11/7/2016 DPW staff received a message from the manager who stated the issue has been fixed.</p>	eliminated
IDDE00266		
Possible water leak	<p>11/4/2016 Received notification via online spill reporting form about a potential water leak that is coming from under the pavement entering a storm drain and discharging into a stream. Utilities was also called.</p> <p>11/4/2016 DPW staff forwarded this location to DPU to investigate.</p>	Illicit discharge eliminated
IDDE00267		
Possible water leak	<p>11/1/2016 Received notification of several structures with dry weather flow that tested positive for chlorine. These were found during routine MS4 inspections.</p> <p>11/1/2016 DPW staff forwarded the locations to DPU to investigate for possible water leaks.</p>	Illicit discharge eliminated
IDDE00268		
Possible water leak	<p>11/9/2016 Received notification of several structures with dry weather flow that tested positive for chlorine. These were found during routine MS4 inspections.</p> <p>11/4/2016 DPW staff forwarded the locations to DPU to investigate for possible water leaks.</p>	Illicit discharge eliminated
IDDE00269		
Tree in the roadway	11/13/2016 Received notification via online spill reporting form about a tree that has been cut up	Illicit discharge

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	<p>and the logs are now sitting in the roadway.</p> <p>11/14/2016 DPW staff reached out to the Road Department to see if they had removed any trees in the right-of-way – they said they had not. DPW staff sent an email to the complainant letting them know it was a private company who took down the tree not the County therefore we would not be coming to remove it.</p> <p>12/1/2016 DPW staff made a site visit and did not see the logs in the roadway therefore they must have been removed.</p>	eliminated
IDDE00270		
Mattress and box spring dumped	<p>11/30/2016 Received notification via online spill reporting form about a mattress and box spring set that was dumped in the median.</p> <p>12/1/2016 DPW staff forwarded the information to Road Department to create a work order to have the items picked up and disposed of.</p>	Illicit discharge eliminated
IDDE00271		
Clogged inlet	<p>12/5/2016 Received notification via online spill reporting form about an inlet that is full of leaves and sticks.</p> <p>12/6/2016 DPW staff made a site visit and confirmed the inlet needed to be cleaned out. The inlet location was forwarded to the Road Department to get cleaned out.</p> <p>12/12/2016 An educational mailing was sent out to 6 homes around the clogged inlet about proper disposal of yard waste and debris.</p>	Illicit discharge eliminated
IDDE00272		
Unknown odor	<p>12/9/2016 Received notification of a pungent odor. The smell has been around for the last few weeks and they believe someone is dumping chemicals.</p>	Illicit discharge eliminated

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	12/9/2016 DPW staff met with complainant on site and walked the area where they had smelled the odor – we did get 1 small sniff of fertilizer but he said that was not what he said it was. DPW staff checked all the MS4 in the area and all were clean with no evidence of an illicit discharges.	
IDDE00273		
Possible water leak	12/9/2016 Received notification of dry weather flow that tested positive for chlorine. This was found during routine MS4 inspections. 12/9/2016 DPW staff forwarded the location to DPU to investigate as a potential water leak.	Illicit discharge eliminated
IDDE00274		
Possible water leak	12/9/2016 Received notification of dry weather flow that tested positive for chlorine. This was found during routine MS4 inspections. 12/9/2016 DPW staff forwarded the location to DPU to investigate as a potential water leak.	Illicit discharge eliminated
IDDE00275		
Dumping of yard debris	12/15/2016 Received notification via the online spill reporting form about a gentleman blowing leaves into the roadside drains. His truck had a name and number for a Lawn Care Company. 12/16/2016 DPW staff forwarded the location of the inlets to the Road Department to get cleaned out. 12/19/2016 DPW staff spoke with owner of the lawn care company who acknowledged he blew leaves down the inlets as he was not sure what else to do with them. DPW staff talked to him about different options for disposal such as bagged them and he said he would start doing this.	Illicit discharge eliminated
IDDE00276		
Possible water leak	12/21/2016 Received notification of dry weather flow that tested positive for chlorine. This was found during routine MS4 inspections.	Illicit discharge eliminated

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	12/21/2016 DPW staff forwarded the location to DPU to investigate as a potential water leak.	
IDDE00277		
Dumping of yard debris	<p>12/27/2016 Received notification about an individual was is dumping their leaves in to the inlet and it is completely clogged.</p> <p>12/29/2016 Educational letter was mailed out to 5 homes near the affected inlet about the proper disposal of yard waste. Road Department has a work order to clean out the inlet.</p>	Illicit discharge eliminated

Sewage Discharges between January 1, 2016 and December 31, 2016		
2/5/2016	A stoppage between MH #200NW024 and MH #200NW025, located in easement behind the property of 4620 Willow Leaf Place. The stoppage caused sewage to overflow from the MH #200NW024 into a surrounding grass area and a nearby stream. Spill of approximately 4,600 gallons.	A cleanup and wash down of the area was performed; lime was applied.
3/3/2016	A stoppage in MH#107SW051, located in right of way near 704 Rural Drive. The stoppage caused sewage to overflow from MH#107SW051 into the surrounding grass area and into a nearby stream. Spill of approximately 1,150 gallons.	Obstruction in manhole was cause. Obstruction was removed; lime was applied.
3/28/2016	A stoppage between MH #150SW515 and MH#150SW517, located in the parking lot in front of 2000 Montbrook Lane. The stoppage caused sewage to overflow from MH#150SW516. Spill of approximately	The overflow is believed to be the result of a build-up of grease.

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	1,190 gallons.	
5/3/2016	A stoppage between MH #078NW031 and MH#078NW032, located in front of 304 Meadowspring Road. The stoppage caused sewage to overflow from MH#078NW031. Spill of approximately 750 gallons.	The overflow is believed to be the result of a build-up of grease.
5/6/2016	MH at Almond Creek Sewage Pump Station overflowed for approximately 13.75 hours. The cause was heavy rain on saturated soil. Spill of approximately 178,900 gallons.	Surrounding area was cleaned and lime was applied.
5/6/2016	One junction chamber and 1 MH at Gillies Creek Sewage Pump Station overflowed for approximately 12.25 hours. The cause was heavy rain on saturated soil. Spill of approximately 22,730 gallons.	Surrounding area was cleaned and lime was applied.
5/6/2016	Four flow equalization basins at Strawberry Hill Sewage Pump Station overflowed for approximately 4.5 hours. The cause was heavy rain on saturated soil. Spill of approximately 423,400 gallons.	Surrounding area was cleaned and lime was applied.
5/15/2016	A stoppage between MH #198SE036 and MH#198SE018, located in the easement between 8410 and 8412 Marroitt Road. The stoppage caused sewage to overflow from MH#198SE036. Spill of approximately 816 gallons.	The cause is still being investigated at this time.
5/27/2016	A stoppage between MH #259SW054 and MH #198NS020, located in an easement on the property of 2811 N Parham Rd. The stoppage caused sewage to overflow from a cleanout at 2811 N. Parham Rd and across the yard of 2813 N Parham Rd. Spill of	A wash down of area was performed and lime was applied. Roots in the sewer mainline is

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	approximately 3,500 gallons.	believed to be the cause of the overflow.
6/14/2016	Two broken sewer mains, MH#218SW031 to MH#218SW029, located in an easement on the property of 141 N Spruce Avenue and MH#218SW020 to MH#218SW015, located in an easement on the property of 598 N Airport Drive. The broken mains caused sewage to flow out of the mains and into a tributary to the Chickahominy River. Spill of approximately 177,600 gallons.	Broken mains were fixed.
6/16/2016	Surcharging mainlines related to power outage at Gambles Mill Pump Station during a recent storm caused a sewage spill between MH#141SW020, located in an easement on the property of 237 Ross Rd and MH#141SW021, located in an easement on the property of 238 Ross Rd. Spill of approximately 70,000 gallons.	The area surrounding the spill was cleaned and lime was applied. Electricity at the pump station was restored.
6/17/2016	Severe thunderstorm produced an interruption of electrical power to the 2 feeders which supply power to a sewage pumping station located downstream of the River Road Sewage Pump Station. One junction chamber at the River Road Pump Station overflowed for approximately 4.5 hours. Spill of approximately 2,437,500 gallons.	The area surrounding the spill was cleaned and lime was applied.
7/6/2016	A stoppage between MH#282SW020 and MH#282SW021, located in Early Forest Circle near the intersection of Early Forest Circle and Branch Glen Lane. The stoppage caused sewage to overflow from	A cleanup and wash down of the area where the overflow occurred was performed.

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	MH#282SW020. Spill of approximately 249 gallons.	The upstream sanitary sewer mainline has been repaired.
07/14/2016	A broken sewer main between MH#079NE003 to MH#078SE022, located in an easement on the property of 4346 S Laburnum Avenue. Spill of approximately 32,400 gallons.	Bypass pumping was set up on July 14, 2016. Repair made to the broken sewer main.
07/15/2016	A stoppage between MH#050NE004 and MH#050NE003, located in the right of way in the grass in front of 1700 Darbytown Rd. Spill of approximately 2,400 gallons.	First Call Environmental contained and recovered the discharge.
07/21/2016	A stoppage between MH#255SE012 and MH#255SE011, located in the street between the properties of 37 & 38 Huneycutt Dr. Spill of approximately 640 gallons.	Buildup of asphalt in the mainline and manhole caused by a repaving project. Blockage was removed. Area was cleaned.
09/28/2016	Heavy rain caused a manhole at Almond Creek SPS overflowed. Spill of approximately 92,300 gallons.	The area was washed down and lime applied.
09/29/2016	Heavy rain caused a sanitary sewer line to surcharged and a clean out overflowed at the rear of 8015 Wilkinson Road. Spill of approximately 900 gallons.	The area was washed down and lime applied.
09/29/2016	Heavy rain caused 2 manholes at Broadwater I SPS overflowed. Spill of	The area was washed down and

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	approximately 125,700 gallons.	lime applied.
09/29/2016	Heavy rain caused a manhole at Gillies Creek SPS overflowed. Spill of approximately 673,000 gallons.	The area was washed down and lime applied.
09/29/2016	Four flow equalization basins at Strawberry Hill SPS overflowed. Spill of approximately 2,370,000 gallons.	The area was washed down and lime applied.
09/30/2016	Heavy rain caused a manhole and a junction chamber at Gillies Creek SPS overflowed. Spill of approximately 433,000 gallons.	The area was washed down and lime applied.
10/8/2016	Heavy rain caused surcharges in several sanitary sewer mains. The surcharges caused MH#203NW044, located in an easement on property of 1700 Lakeside Avenue, to overflow. Spill of approximately 39,250 gallons.	The area was washed down and lime applied.
10/8/2016	Heavy rain caused surcharges in several areas: 1 manhole at Almond Creek SPS overflowed. Spill of approximately 180,000 gallons; 2 manholes at the Broadwater I SPS. Spill of approximately 110,000 gallons; 1 manhole & 1 junction chamber at Gillies Creek SPS. Spill of approximately 96,000 gallons; 1 junction chamber at River Road SPS. Spill of approximately 2,170,000 gallons; 4 equalization basins at Strawberry Hills SPS. Spill of approximately 2,850,000 gallons.	All areas were washed down and lime applied.
10/9/2016	Heavy rain caused surcharges in several sanitary sewer mains. The surcharges caused MH#150SW002, located in an	The area was washed down and lime applied.

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	easement on property of 6000 Club Road, to overflow. Spill of approximately 27,500 gallons.	
10/9/2016	Heavy rain caused surcharges in several sanitary sewer mains. The surcharges caused MH#141SW021, located in an easement on property of 237 Ross Road, to overflow. Spill of approximately 8,000 gallons.	The area was washed down and lime applied.
10/9/2016	Heavy rain caused surcharges in several sanitary sewer mains. The surcharges caused MH#105NW039, located in an easement on property of 5200 Gillespie Road, to overflow. Spill of approximately 57,400 gallons.	The area was washed down and lime applied.
10/9/2016	Heavy rain caused surcharges in several sanitary sewer mains. The surcharges caused MH#150SW017, located in the street in front of 5506 Smith Avenue, to overflow. Spill of approximately 12,725 gallons.	The area was washed down and lime applied.
10/26/2016	A stoppage between MH#489NW027 and MH#489SW052, located in an easement on the property of 4701 Four Seasons Terrace. Spill of approximately 920 gallons.	The area was washed down and lime applied.
11/21/2016	A stoppage between MH#396NW036 and MH# 396NW037, located in an easement behind 1616 Hollandale Road. Spill of approximately 13,500 gallons.	The area was washed down and lime applied.
11/24/2016	A stoppage between MH#331NW027 and MH# 331NW010, located in front of 2408 Ellerbee Rd. Spill of approximately 14,100 gallons.	The area was washed down and lime applied.
12/12/2016	A hydraulic line broke on a refuse collection vehicle. Hydraulic fluid spread along Lafayette Road as well as in the grass area	First Call Environmental was hired to

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	in front of 2614 & 2615 Lafayette. Fluid was contained with speedy dry and boons. Spill of approximately 25 gallons.	provided full cleanup of area.
12/14/2016	A stoppage between MH#163SW011 and MH# 163SW005, located in front of 121 S Grove Ave. Spill of approximately 387 gallons.	The area was washed down and lime applied.

Each annual report shall include the amount of linear feet of sanitary sewer inspected during the reporting year.

Length of Sanitary Sewer Inspected between January 1, 2016 and December 31, 2016	381,825 feet
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The initial annual report shall include a description of the procedures the permittee will implement to reduce floatables as required by Part I.B.2.e)3).

Public Works

DPW requires trash racks on all curb inlets in proposed shopping centers, fast food restaurants, convenience stores, auto parts stores, and other facilities where significant trash, debris and other contaminants may be generated. Due to flooding and safety issues, trash racks are not permitted on any inlets in the public right-of-way. The minimum design standards for the trash racks are specified in Chapter 15 of the Henrico County Environmental Compliance Manual.

Henrico County employs ARC to remove litter from County right-of-ways. The pick-up is performed on a daily basis, and progress is tracked in tons of litter removed as well as the number of bags of litter removed. ARC is also used bi-weekly on the West and East End maintenance yards to reduce floatables from entering the MS4. Program effectiveness is evaluated based on the tons of litter removed, as this decreases the quantity of floatables entering the MS4. Between 1/1/2016 and 12/31/2016, ARC removed 191 tons or 12,753 bags and 416 tires worth of litter from County right-of-ways and maintenance facilities.

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Public Utilities

- Division of Solid Waste implemented programs:
 - Neighborhood clean-ups are a program designed to allow neighborhoods with homeowners associations with an opportunity to remove trash/debris from their property. There is no qualification process for neighborhoods to be selected.
 - Community clean-ups are a program designed to allow older neighborhoods with an opportunity to remove trash/debris from their property. There is a qualification process for neighborhoods to be selected.
 - Hazardous Material Disposal is a program where residents can bring their oil/antifreeze/paints/solvents to the public use areas for disposal.
 - Bulky Waste Program is a program where residents can request a pickup of large items, brush, etc from their property for a fee.
- Keep Henrico Beautiful implemented programs:
 - Because We Care Program is a program where groups or individuals can sign up to adopt any County road, park community or school within the County.
 - Yard Waste Disposal Education is a program where we discuss how to get rid of all your yard waste.
 - Litter Removal Education is a program where we discuss the importance of Keeping Henrico Beautiful by not littering.
 - Pet Waste Education is a program where we discuss the importance of picking up after your pets.
 - Green Machine Program – Litter prevention program that targets kids ages 4-7.
 - Trash Time Capsule – Litter prevention program that targets kids ages 8-13.

Each following annual report shall include a list of sites monitored, a summary of the monitoring protocols used, and a summary of the monitoring results and analyses.

This reporting language was originally included in a draft version of the MS4 Permit and was related to a "floatables monitoring" condition. Prior to finalization of the MS4 Permit, the "floatables monitoring" condition was eliminated after DEQ reviewed the federal rule making document and determined this condition was not

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required. However, the reporting language was moved to Part I.B.2.e without being edited to remove reference to the "monitoring" that was no longer required. When this oversight was discovered, DEQ agreed that the reporting element could be interpreted to read:

Each following annual report shall include a summary of the County's efforts to reduce floatables and an evaluation of the effectiveness of those efforts.

Therefore, the following revised Specific Reporting Requirement is addressed in this Annual Report.

Each following annual report shall include a summary of the County's efforts to reduce floatables and an evaluation of the effectiveness of those efforts.

Although the reductions can't be quantified, the County's trash rack program appears to be effective at reducing the floatables leaving the sites generating the floatables based on observations of several of the sites on which trash racks have been installed.

DPW removed 191 tons of litter from the County ROW using ARC.

Department of Public Utilities views its program to reduce floatables as a success. During this reporting period, Public Utilities have removed the following from our community:

- Community cleanups have removed 2,830 tons of trash and debris from our older communities.
- Neighborhood cleanups have removed 118 tons of trash and debris from selected neighborhoods.
- Our bulky waste program has removed 645 tons of trash and debris from the County.
- Public Utilities have collected 182 tons of tires.
- Solid Waste division has collected 32,655 gallons of used oil/antifreeze at our public use areas.

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- Solid Waste division has collected 5,795 gallons of oil based paint & solvents at our public use areas.
- Keep Henrico Beautiful has collected 310 bags of trash from our roadsides, communities, schools and parks with their programs.

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PART I.B.2.f

MS4 PROGRAM IMPLEMENTATION SPILL PREVENTION AND RESPONSE

Each annual report shall include a list of spills, the source (identified to the best of the permittee's ability), and a description of follow-up activities taken.

Spills that Occurred between January 1, 2016 and December 31, 2016	
1/4/2016	Water Reclamation Facility had a flexible fill hose inserted into digester blend tank broke and came out of hole and sprayed sludge onto ground. <1,000 gallons spilled. Straw and absorbent pads were deployed and area was limed with 150 lbs. Straw and absorbent pads were cleaned up on 1/5/16.
1/29/2016	Oil leak from a contractor vehicle. Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.
2/2/2016	Hydraulic oil leak from tandem. Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.
2/3/2016	Water Reclamation Facility had a loader that was not cleaned of residual biosolids and some material was deposited on roads and in grassy areas. 5 gallon bucket of material. Clean loader in truck was or with non-potable water hose before leaving biosolids pad. DPW was contacted to have street sweeping performed at WRF on 2/5/16.
2/12/2016	Hydraulic oil leak from a contractor vehicle. Put oil dry on spill; swept and placed oil dry in Clean

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	Harbors barrel.
2/29/2016	Hydraulic oil leak from a loader. Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.
2/29/2016	Hydraulic oil leak from an unknown source. Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.
3/1/2016	Hydraulic oil leak from a contractor vehicle. Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.
3/2/2016	Misc. oil based spill. Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.
3/3/2016	Hydraulic leak from loader – hydraulic hose ruptured. Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.
3/8/2016	Water Reclamation Facility had a delivery driver accidentally kicked drip recovery bucket over. <1 gallon. Remind drivers to be careful. Driver washed down spill.
3/8/2016	Concrete washout was reported at Parham and Shrader Road. Notice was provided to the contractor on 3/8/2016. Concrete was removed from hole and was determined not to be classified as an illicit discharge.
3/9/2016	Oil leak from truck. Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.
3/31/2016	Water Reclamation Facility had a delivery tanker discharged valve leaking around flange O-ring. <1 gallon.

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	Univar notified, they sent their spill crew on site to cleanup remaining residue.
4/1/2016	<p>Illegally dumped container of liquid driveway sealer at the end of the road.</p> <p>Container was removed. Spilled sealer and contaminated layer of soil were placed in sealed drum for pickup and disposal by Clean Harbors.</p>
4/6/2016	<p>Hydraulic fluid spill from truck.</p> <p>Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.</p>
4/6/2016	<p>Transmission fluid leak from backhoe.</p> <p>Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.</p>
4/12/2016	<p>Petroleum sheen from Central Automotive Maintenance lot.</p> <p>Used booms and pads to prevent from flowing into inlet.</p>
4/25/16	<p>Water Reclamation Facility had a small amount of gas was spilled on the ground when filling vehicle. <1 gallon.</p> <p>Absorbent material was scattered over the spill area. The material was cleaned up and disposed of on 4/26/16.</p>
4/27/2016	<p>80w/90 gear oil leak from truck.</p> <p>Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.</p>
5/2/2016	<p>A contract vendor for Waste Disposal was emptying the dumpsters in the loading dock area. The vendor reported that as the truck began to pick up the dumpster a hydraulic hose burst and leaked less than 20 gallons of hydraulic fluid.</p> <p>Absorbent pads and a bag of absorbent was used to protect the closest inlet. No product reached the grate or entered the inlet. A cleaning contractor hired by the vendor</p>

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	responded within 90 minutes to remove the remaining free product and sheen from the pavement surface and clean the surface. The vendor protected the closest inlet and pumped wash solution so that no product or effluent wash water reached the grate or entered the inlet. There is a spill kit located nearby as appropriate to address spills.
5/5/2016	<p>Water Reclamation Facility had a pump that was leaking. Chief Operator changed pumping rate and pump began leaking. 5 gallons.</p> <p>Work order entered to fix problem. No material leaked into the grass. Operators deployed spill material and berms to redirect material into plant sewer.</p>
5/11/2016	<p>Water Reclamation Facility had a small overflow of water. Compactor containment area drain was stopped up. 10 gallons.</p> <p>Drain was unclogged and area was cleaned up. Water was reasonably clear and absorbed into the ground.</p>
6/1/2016	<p>Fuel spill from truck – ruptured fuel line.</p> <p>Put oil dry on spill and placed booms around; swept and placed oil dry in Clean Harbors barrel.</p>
6/2/2016	<p>Water Reclamation Facility had a pump that leaked wash water from the ENR tank cleanout. 900 gallons.</p> <p>Lime was applied, absorbent pads and dikes placed over inlets. A sample was taken to the lab for testing.</p>
6/23/2016	<p>Hydraulic fluid leak from backhoe.</p> <p>Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.</p>
6/29/2016	<p>Hydraulic fluid leak from backhoe.</p> <p>Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.</p>
7/19/2016	Fire responded to a diesel fuel leak in West Broad Village. Approximately 5 gallons of diesel fuel was released onto

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	<p>the roadway and a small amount of product made its way through the storm drain and outflowed to a retention pond.</p> <p>The roadway spill was mitigated by the Division of Fire personnel and the remaining cleanup was handled by Clean Harbors.</p>
7/28/16	<p>Upham Brook Facility had an oil or hydraulic fluid leak from a piece of equipment.</p> <p>Contractor dug the gravel area down 2 feet and disposed of the contaminated soil/gravel at an EPA approved landfill. The area was filled with new gravel.</p>
8/8/2016	<p>Intentional dumping of shop sweeper materials into inlet at the Central Automotive Maintenance lot.</p> <p>Contacted IDDE and they responded with HazMat booms/pads. Placed boom at BMP outfall. (IDDE00244)</p>
8/18/2016	<p>Hydraulic fluid leak from unknown source.</p> <p>Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.</p>
9/14/2016	<p>Concrete washout was reported outside of the designated area on Creighton Road.</p> <p>Notice was provided to the contractor on 9/14/2016. Concrete was removed from area and concrete washout was added in additional location.</p>
9/23/2016	<p>Power steering fluid leak from truck.</p> <p>Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.</p>
9/26/2016	<p>Hydraulic leak from roller.</p> <p>Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.</p>
9/30/2016	<p>Unknown oil-based spill from contractors unknown equipment.</p>

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	Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.
10/4/2016	Overspray resulting in biolube residual. Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.
10/17/2016	Hydraulic leak from gradeall. Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.
10/19/2016	Oil- based fluid from unknown. Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.
11/15/2016	Hydraulic oil from unknown. Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.
11/16/2016	An Allied Waste commercial truck picking up trash at the Human Services building ruptured a hydraulic line spilling approximately 12 gallons of hydraulic fluid in the parking lot. County staff and the truck driver put down oil dry, captured the hydraulic leak and dammed inlets in the parking lot. Allied Waste contacted their spill response team. The spill response team applied oil dry, swept up all residue and power washed the parking lot capturing the runoff with absorbent pads.
12/1/2016	Fuel leak from truck, Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.
12/8/2016	Citrus clean spill from drum. Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.

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12/14/2016	Oil based fluid from unknown equipment. Put oil dry on spill; swept and placed oil dry in Clean Harbors barrel.
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PART I.B.2.g

MS4 PROGRAM IMPLEMENTATION INDUSTRIAL AND HIGH RISK RUNOFF

The annual report due March 31, 2016 shall include a list of all known industrial and high risk dischargers including any non-VPDES regulated industrial and commercial stormwater dischargers determined by the permittee as contributing a significant pollutant load and that discharge to the MS4 system, a schedule of inspections and procedures for inspecting outfalls.

Industrial and High Risk Dischargers Determined to be Contributing a Significant Pollutant Load to the MS4 between January 1, 2016 and December 31, 2016		
Industrial and High Risk Discharger	VPDES Permit (Permit # or None)	Outfalls to the following to MS4 Structure(s)
No Industrial and High Risk Dischargers were found to be contributing a significant pollutant load to the MS4.		

No fewer than fifty MS4 structures that Industrial and High Risk Runoff Facilities discharge into will be inspected during each permit year and each will be inspected at least once during the permit cycle. In addition, Industrial and High Risk Runoff Facilities outfalls with a history of contributing significant pollutant loading to the MS4 during the previous permit year will be re-inspected the following permit year. These outfalls will be subject to the established inspection procedure, including evaluations of identified flows and maintenance and repair needs.

Each annual report shall report on implementation of the inspection schedule and include a list of the facilities and/or facility outfalls inspected during the reporting period.

During the permit year, fifty outfalls from Industrial and High Risk Dischargers were

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inspected.

Inspections of Outfalls from Industrial and High Risk Dischargers conducted between January 1, 2016 and December 31, 2016			
Industrial and High Risk Discharger	Outfall Location	Inspection Date	Determined to be Contributing Significant Pollutant Load to the MS4?
IC0104	IN000000006675	9/26/2016	No
IC0107	MH000000007500	11/4/2016	No
IC0114	IN000000045985	9/26/2016	No
IC0116	IN000000020956	9/29/2016	No
IC0116	IN000000021000	11/4/2016	No
IC0116	IN000000021003	11/4/2016	No
IC0119	IN000000019153	9/29/2016	No
IC0124	IN000000017138	11/4/2016	No
IC0129	IN000000012166	11/4/2016	No
IC0130	IN000000012154	11/4/2016	No
IC0131	IN000000009209	11/4/2016	No
IC0133	IN000000017257	11/4/2016	No
IC0133	MH000000002923	11/4/2016	No
IC0137	EN000000004588	11/9/2016	No
IC0138	IN000000025368	11/9/2016	No
IC0138	MN000000038673	11/10/2016	No
IC0144	IN000000021708	11/9/2016	No
IC0146	IN000000020314	11/9/2016	No
IC0164	IN000000040144	11/9/2016	No
IC0165	MH000000007378	9/29/2016	No
IC0166	IN000000020862	11/9/2016	No
IC0172	MH000000007378	9/29/2016	No
IC0189	IN000000042539	11/9/2016	No
IC0197	IN000000019581	11/9/2016	No
IC0208	IN000000016229	9/29/2016	No
IC0223	MN000000084567	11/9/2016	No
IC0232	MN000000079975	7/13/2016	No
IC0235	IN000000047291	11/9/2016	No

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IC0238	IN000000025235	11/29/2016	No
IC0238	MN000000125601	11/29/2016	No
IC0239	IN000000025085	11/29/2016	No
IC0239	IN000000025087	11/29/2016	No
IC0246	IN000000016873	11/29/2016	No
IC0248	IN000000016124	11/29/2016	No
IC0250	MN000000067762	11/29/2016	No
IC0256	IN000000022188	11/29/2016	No
IC0260	IN000000045894	11/29/2016	No
IC0262	MH000000007628	11/29/2016	No
IC0265	MN000000125605	11/29/2016	No
IC0303	IN000000025487	11/28/2016	No
IC0311	IN000000017344	11/28/2016	No
IC0311	IN000000017348	11/28/2016	No
IC0347	MH000000004429	12/13/2016	No
IC0358	IN000000025304	11/28/2016	No
IC0358	IN000000025484	11/28/2016	No
IC0370	IN000000007478	11/28/2016	No
IC0384	MN000000091672	12/1/2016	No
IC0384	MN000000091675	12/1/2016	No
IC0385	MN000000083917	12/1/2016	No
IC0385	IN000000023473	12/1/2016	No

Inspections of Industrial and High Risk Dischargers determined to be contributing significant pollutant load to the MS4
conducted between January 1, 2016 and December 31, 2016

Industrial and High Risk Discharger ID#	Inspection Date	Results of Inspection
No Industrial and High Risk Dischargers were found to be contributing a significant pollutant load to the MS4. Therefore, no Industrial and High Risk Dischargers were inspected during the permit year.		

Each annual report shall include a list of referrals to the Department.

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Industrial and High Risk Dischargers referred to
the Virginia Department of Environmental Quality
between January 1, 2016 and December 31, 2016

Industrial and High Risk Discharger	Referral Date	Reason for Referral
No Industrial and High Risk Dischargers were referred to the Virginia Department of Environmental Quality during the permit year. (See the following table for DMR submittal information from VPDES Industrial Stormwater Permitted Facilities located in Henrico County)		

DMRs received from VPDES Industrial Stormwater Permitted Facilities* as of December 31, 2016

Permitted Facility	VPDES Permit #	DMR	
		Date	Received
Alfa Laval Incorporated	VAR051131	No DMRs Received	
BFI Old Dominion Landfill	VAR052236	12/6/16	1/11/17
Bunge Oils Incorporated	VAR050595	No DMRs Received	
Coca Cola Refreshments USA Inc.	VAR050709	No DMRs Received	
CSX Transportation Inc. – Bryan Park Terminal	VAR051056	No DMRs Received	
Ennis Paints Incorporated	VAR051550	5/11/16	7/15/16

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Federal Express Corporation – Sandston	VAR051169	No DMRs Received	
Gillies Creek Industrial Recycling	VAR052249	No DMRs Received	
Hankins and Johann Incorporated	VAR051060	No DMRs Received	
Henkel Corporation	VAR050574	12/12/16	1/4/17
Henrico County DPU Springfield Road Waste Management	VAR051025	5/6/16	2/24/17
		5/17/16	2/24/17
		12/6/16	2/24/17
Henrico County Water Reclamation Facility	VAR051633	11/14/16	12/12/16
Hilex Poly Company LLC	VAR051636	No DMRs Received	
IR Engraving LLC	VAR051142	No DMRs Received	
Johns Manville	VAR051167	No DMRs Received	
Lee Hy Paving Corporation	VAR051024	No DMRs Received	
Mondelez Global LLC	VAR051209	No DMRs Received	
Republic Services of Richmond	VAR051152	12/6/16	1/11/17
Rolling Frito Lay	VAR051607	No DMRs Received	
San J International	VAR050623	No DMRs Received	

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S.B. Cox Recycling Center MRF	VAR051869	No DMRs Received	
The East End Landfill	VAR050624	1/27/16	2/28/17
		2/3/16	2/28/17
		5/17/16	2/28/17
TRANSFLO Terminal Services TTSI	VAR051821	No DMRs Received	
WestRock CP LLC – Laburnum	VAR052154	No DMRs Received	

* data retrieved on January 31, 2017 from VDEQ's website

<http://deq.state.va.us/Programs/Water/PermittingCompliance/PollutionDischargeElimination/PermitsFees.aspx#isw>

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MS4 PROGRAM IMPLEMENTATION STORMWATER INFRASTRUCTURE MANAGEMENT

Each annual report shall include a progress report on efforts to repair failed storm sewer outfalls.

Progress Reports on Efforts to Repair Failed Storm Sewer Outfalls		
Outfall ID	Identified Problem	Repair Status
EN000000000227	Need clean out, outfall not visible and standing water present	No work by road dept pipe open
EN000000000530	Breaking pipe	Forwarded to Road Maintenance
EN000000000758	Pipe believed to be blocked	No work by county. Pipe end section is slightly submerged and empties into a stream. No blockages in the pipe. A floodplain also exists in the area and continues upstream into the system.
EN000000000783	EN clogged with leaves, needs cleanout	Open up ditch at outfall of end section and jet pipe
EN000000001452	End treatment over 60% full with sediment and lawn debris.	Open mouth of pipe and remove trees. Jet pipe
EN000000001508	End Treatment over 60% full with sediment, blocking flow.	Open mouth of pipe to drain and jet inlet and pipe
EN000000001583	Concrete starting to fall off.	No work by Road Department outlet end okay
EN000000002001	Bottom half of pipe has corroded away, needs repair	Forwarded to Road Maintenance
EN000000002071	Sediment covering over 50%	Forwarded to Road

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	of end treatment	Maintenance
EN000000002567	Pipe is made out of corrugated plastic, needs to be replaced	No work by road dept do not know how far plastic comes out
EN000000002604	Clogged with sediment	Forwarded to Road Maintenance
EN000000002676	Clogged somewhere, causing a pool of standing water.	Forwarded to Road Maintenance
EN000000002827	Erosion around end treatment needs to be repaired	No work at this time; homeowner will not give permission to enter his property to get to outlet of pipe
EN000000002899	May be on the main attached but area where concrete from main comes out of ground an where end treatment starts, there is a hole in the concrete.	Forwarded to Road Maintenance
EN000000003081	blockage approaching 50%, will likely be clogged in future.	Open mouth of pipe to drain and jet pipe
EN000000003655	Rip Rap blocking flow of water, needs a clean out	Forwarded to Road Maintenance
EN000000003656	Grass and debris blocking flow of water from out fall, needs a clean out	Clean mouth of debris and replace rip rap
EN000000003751	Heavy erosion downstream of the end treatment	Forwarded to Road Maintenance
EN000000004174	End of pipe has concrete deterioration causing exposed rebar, not affecting function of pipe	No work by county. Some exposed rebar and missing concrete on spigot end at the pipe outfall that is not affecting pipe functionality.
EN000000004210	End treatment pipe mostly clogged with muddy	Forwarded to Road Maintenance

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	decomposing vegetation, needs to be cleaned out	
EN000000004679	One end of culvert located, but this end seems to be completely covered by sediment.	Forwarded to Road Maintenance
EN000000006218	Side of wall where end treatments are located is deteriorating. Sinkhole.	Place rip rap up against bank
EN000000006477	End treatment covered with vegetation/ sediment. Ground above end treatment is starting to become a sink hole	Forwarded to Road Maintenance
EN000000007452	Facility submerged	No work by county. Pipe out falls into lake. Water level in lake dictates whether the outfall is submerged
EN000000007791	Needs cleanout	Forwarded to Road Maintenance
EN000000010923	Need cleanup	Clean mouth of pipe about 10' to drain
EN000000011251	Heavy erosion occurring	Place asphalt around mouth of pipe
EN000000013050	Sinkhole created near culvert.	Place asphalt around mouth of pipe
EN000000013277	Debris in end treatment, needs clean out	Place asphalt around mouth of pipe
EN000000013278	Sediment in end treatment, needs cleanout	No work by Road Department
EN000000013279	End treatment filled with leaf debris, may not be able to access due to the end treatment being inside a fence. Is potentially the cause for clogging adjacent end treatment	No work by Road Department

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EN000000013318	EN is clogged with sediment and vegetative debris, needs cleanout, blocking flow	Forwarded to Road Maintenance
EN000000013319	EN filled more than halfway with sediment, needs cleanout	Forwarded to Road Maintenance

Each annual report shall include a list of activities including inspections, maintenance, and repair of stormwater infrastructure operated by the permittee as required in Part I.B.2.h)1), including the total number of stormwater facilities operated by the permittee, the type and number of stormwater facilities inspected and maintained; the linear feet of storm sewer system owned and/or operated by the permittee, and the linear feet of storm sewer system inspected.

MS4 Infrastructure Inspected* between January 1, 2016 and December 31, 2016		
MS4 Infrastructure Type	Unit	Inspected
Inlets	each	7,284
Manholes	each	1,006
Junction Boxes	each	33
End Treatments	each	1,372
Mains	linear feet	1,412,334

* includes Screening Inspections, Screening Inspection Follow-Ups, Construction Acceptance Inspections, Maintenance Evaluations, and Repair and/or Maintenance Activities

During this permit year (January 1, 2016 and December 31, 2016), 17.26% of the MS4 infrastructure was inspected.

Since the effective date of the MS4 Permit (April 1, 2015), 37.76% of the MS4 infrastructure has been inspected.

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Inspection, Maintenance, and Repair Actions conducted on MS4 Infrastructure between January 1, 2016 and December 31, 2016			
MS4 Infrastructure Type	Inspections	Maintenance	Repair
Inlets	6,995	72	217
Manholes	991	6	9
Junction Boxes	33	0	0
End Treatments	1,288	82	2
Mains	1,320	807	123

On-Line* County-Operated SWM Facilities Inspected and/or Maintained between January 1, 2016 and December 31, 2016			
Type	Total	Inspected	Maintained
50/10 Basin (5)	7	7	3
50/10 Underground Detention (6)	7	7	7
BayFilter (200)	1	1	1
BaySeparator (205)	1	1	1
Bioretention Basin/Trench (10)	9	9	9
Extended Detention Basin (15)	31	31	30
Extended Detention Basin w/a Shallow Marsh (16)	2	2	2
Filterra (215)	24	24	21
Grassed Swale (20)	3	3	2
Imbrium Jellyfish (250)	1	1	1
Infiltration Basin/Trench (25)	8	8	5
Retention Basin (30)	7	7	6
StormCeptor (225)	1	1	1

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StormFilter (220)	4	4	4
StormTreat (230)	1	1	1
Stormwater360 (235)	5	5	5
TOTAL	112	112	99

* Facilities with either an Active or Accepted status

On-Line Privately-Operated SWM Facilities Discharging to the MS4 that were Inspected and/or Maintained between January 1, 2016 and December 31, 2016			
Type	Total	Inspected	Maintained
50/10 Basin (5)	52	18	0
50/10 Underground Detention (6)	59	18	0
BaySaver (210)	1	0	0
Bioretention Basin/Trench (10)	23	7	0
Dry Swale 1 (150)	1	1	0
Extended Detention Basin (15)	197	81	1
Extended Detention Basin w/a Shallow Marsh (16)	48	26	0
Filtterra (215)	197	89	0
Grassed Swale (20)	6	2	0
Imbrium Jellyfish (250)	2	0	0
Infiltration Basin/Trench (25)	8	4	1
Retention Basin (30)	63	21	1
Sand Filter (35)	63	21	1
StormTreat (230)	4	3	0
Stormwater360 (235)	19	11	0
Vegetated Filter Strip (40)	1	1	0
VortexSeparator (245)	2	1	0
Stormceptor (225)	1	0	0
TOTAL	747	304	4

* Facilities with either an Active or Accepted status

County-Owned/Operated Culverts and Pipes Inventoried as of December 31, 2016 and Inspected between January 1, 2016 and December 31, 2016	
Culverts and Pipes Inventoried (miles)	Culverts and Pipes Inspected between January 1, 2016 and December 31, 2016

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	(miles)
1,553.32	267.49

Each annual report shall provide a summary of actions taken by the permittee to address failure of privately maintained SWM facilities owners to abide by maintenance agreements.

<p>The number of privately-maintained SWM facilities that:</p> <ul style="list-style-type: none"> 1) discharge to the MS4, 2) needed <i>required</i> maintenance and/or repair based on a previous inspection, and 3) are subject to a recorded maintenance agreement, <p>where the owner(s) failed to perform <i>required</i> maintenance and/or repair as directed by the County.</p>	2
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Each annual report shall include a list of activities including inspections performed and notifications of needed maintenance and repair of stormwater facilities not operated by the permittee as required by Part I.B.2.h)2).

Facility ID	Action Date	Action Type
BMP01433	4-Jan-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00124	5-Jan-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00123	5-Jan-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01673	5-Jan-16	ACCEPTANCE INSPECTION
BMP01673	5-Jan-16	RECEIPT OF CERTIFICATION
BMP00338	7-Jan-16	EDUCATION
BMP01433	7-Jan-16	EDUCATION
BMP01641	8-Jan-16	CONSTRUCTION INSPECTION

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BMP01490	8-Jan-16	ACCEPTANCE INSPECTION
BMP01492	8-Jan-16	ACCEPTANCE INSPECTION
BMP01489	8-Jan-16	ACCEPTANCE INSPECTION
BMP01491	8-Jan-16	ACCEPTANCE INSPECTION
BMP00167	11-Jan-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00166	11-Jan-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00371	11-Jan-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00165	12-Jan-16	MAINTENANCE INSPECTION
BMP00164	12-Jan-16	MAINTENANCE INSPECTION
BMP00167	12-Jan-16	MAINTENANCE INSPECTION
BMP00166	12-Jan-16	MAINTENANCE INSPECTION
BMP00371	12-Jan-16	MAINTENANCE INSPECTION
BMP01421	12-Jan-16	MAINTENANCE INSPECTION
BMP01199	14-Jan-16	MAINTENANCE INSPECTION
BMP01227	19-Jan-16	ACCEPTANCE INSPECTION
BMP00019	19-Jan-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00920	19-Jan-16	RECEIPT OF CERTIFICATION
BMP00920	19-Jan-16	ACCEPTANCE INSPECTION
BMP01176	20-Jan-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01177	20-Jan-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00842	20-Jan-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00371	20-Jan-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01227	20-Jan-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00844	20-Jan-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00158	20-Jan-16	MAINTENANCE INSPECTION
BMP00843	20-Jan-16	PUNCHLIST DEVELOPMENT AND

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		DISTRIBUTION
BMP00843	20-Jan-16	MAINTENANCE INSPECTION
BMP00019	20-Jan-16	MAINTENANCE INSPECTION
BMP01176	21-Jan-16	MAINTENANCE INSPECTION
BMP01177	21-Jan-16	MAINTENANCE INSPECTION
BMP00842	21-Jan-16	MAINTENANCE INSPECTION
BMP01641	21-Jan-16	CONSTRUCTION INSPECTION
BMP00019	21-Jan-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01311	4-Feb-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00338	5-Feb-16	CONSTRUCTION INSPECTION
BMP01311	5-Feb-16	MAINTENANCE INSPECTION
BMP01641	5-Feb-16	CONSTRUCTION INSPECTION
BMP01433	5-Feb-16	ACCEPTANCE INSPECTION
BMP01411	9-Feb-16	MAINTENANCE INSPECTION
BMP01404	9-Feb-16	MAINTENANCE INSPECTION
BMP01413	9-Feb-16	MAINTENANCE INSPECTION
BMP01407	9-Feb-16	MAINTENANCE INSPECTION
BMP01401	9-Feb-16	MAINTENANCE INSPECTION
BMP01409	9-Feb-16	MAINTENANCE INSPECTION
BMP01402	9-Feb-16	MAINTENANCE INSPECTION
BMP00739	9-Feb-16	MAINTENANCE INSPECTION
BMP01403	9-Feb-16	MAINTENANCE INSPECTION
BMP00742	9-Feb-16	MAINTENANCE INSPECTION
BMP01414	9-Feb-16	MAINTENANCE INSPECTION
BMP01412	9-Feb-16	MAINTENANCE INSPECTION
BMP01406	9-Feb-16	MAINTENANCE INSPECTION
BMP01400	9-Feb-16	MAINTENANCE INSPECTION
BMP01405	9-Feb-16	MAINTENANCE INSPECTION
BMP00738	9-Feb-16	MAINTENANCE INSPECTION
BMP01408	9-Feb-16	MAINTENANCE INSPECTION
BMP01410	9-Feb-16	MAINTENANCE INSPECTION
BMP00741	9-Feb-16	MAINTENANCE INSPECTION

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BMP01415	9-Feb-16	MAINTENANCE INSPECTION
BMP00740	9-Feb-16	MAINTENANCE INSPECTION
BMP00214	9-Feb-16	MAINTENANCE INSPECTION
BMP01182	9-Feb-16	MAINTENANCE INSPECTION
BMP00137	9-Feb-16	MAINTENANCE INSPECTION
BMP00216	9-Feb-16	RETIREMENT
BMP00593	9-Feb-16	MAINTENANCE INSPECTION
BMP00844	9-Feb-16	MAINTENANCE INSPECTION
BMP01464	9-Feb-16	MAINTENANCE INSPECTION
BMP00215	9-Feb-16	MAINTENANCE INSPECTION
BMP01176	11-Feb-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01177	11-Feb-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00214	17-Feb-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01182	17-Feb-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00842	17-Feb-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00137	17-Feb-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01311	17-Feb-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00844	17-Feb-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01694	17-Feb-16	ACCEPTANCE INSPECTION
BMP00843	17-Feb-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01464	17-Feb-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00348	19-Feb-16	MAINTENANCE INSPECTION
BMP01694	22-Feb-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00330	23-Feb-16	CONSTRUCTION INSPECTION
BMP00330	23-Feb-16	ACCEPTANCE INSPECTION

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BMP00332	23-Feb-16	CONSTRUCTION INSPECTION
BMP00332	23-Feb-16	ACCEPTANCE INSPECTION
BMP00329	23-Feb-16	CONSTRUCTION INSPECTION
BMP00329	23-Feb-16	ACCEPTANCE INSPECTION
BMP00331	23-Feb-16	CONSTRUCTION INSPECTION
BMP00331	23-Feb-16	ACCEPTANCE INSPECTION
BMP00328	23-Feb-16	CONSTRUCTION INSPECTION
BMP00328	23-Feb-16	ACCEPTANCE INSPECTION
BMP00333	23-Feb-16	CONSTRUCTION INSPECTION
BMP00333	23-Feb-16	ACCEPTANCE INSPECTION
BMP01176	23-Feb-16	EDUCATION
BMP01177	23-Feb-16	EDUCATION
BMP01177	23-Feb-16	EDUCATION
BMP00348	24-Feb-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01698	25-Feb-16	INVENTORIED
BMP00735	29-Feb-16	MAINTENANCE INSPECTION
BMP00736	29-Feb-16	MAINTENANCE INSPECTION
BMP00737	29-Feb-16	MAINTENANCE INSPECTION
BMP00749	29-Feb-16	RETIREMENT
BMP01701	29-Feb-16	INVENTORIED
BMP01703	29-Feb-16	INVENTORIED
BMP01337	1-Mar-16	MAINTENANCE INSPECTION
BMP01334	1-Mar-16	MAINTENANCE INSPECTION
BMP01335	1-Mar-16	MAINTENANCE INSPECTION
BMP01336	1-Mar-16	MAINTENANCE INSPECTION
BMP01338	1-Mar-16	MAINTENANCE INSPECTION
BMP00416	2-Mar-16	MAINTENANCE INSPECTION
BMP00414	2-Mar-16	MAINTENANCE INSPECTION
BMP00411	2-Mar-16	MAINTENANCE INSPECTION
BMP00413	2-Mar-16	MAINTENANCE INSPECTION
BMP00415	2-Mar-16	MAINTENANCE INSPECTION
BMP00412	2-Mar-16	MAINTENANCE INSPECTION
BMP00419	2-Mar-16	MAINTENANCE INSPECTION

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BMP00417	2-Mar-16	MAINTENANCE INSPECTION
BMP00464	2-Mar-16	MAINTENANCE INSPECTION
BMP00422	2-Mar-16	MAINTENANCE INSPECTION
BMP00418	2-Mar-16	MAINTENANCE INSPECTION
BMP00423	2-Mar-16	MAINTENANCE INSPECTION
BMP01704	2-Mar-16	MAINTENANCE INSPECTION
BMP00420	2-Mar-16	MAINTENANCE INSPECTION
BMP00421	2-Mar-16	MAINTENANCE INSPECTION
BMP01288	2-Mar-16	MAINTENANCE INSPECTION
BMP00570	2-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00565	2-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00568	2-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00566	2-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00736	3-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00737	3-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01704	3-Mar-16	INVENTORIED
BMP01658	3-Mar-16	RECEIPT OF CERTIFICATION
BMP00570	3-Mar-16	MAINTENANCE INSPECTION
BMP00567	3-Mar-16	MAINTENANCE INSPECTION
BMP00565	3-Mar-16	MAINTENANCE INSPECTION
BMP00568	3-Mar-16	MAINTENANCE INSPECTION
BMP00566	3-Mar-16	MAINTENANCE INSPECTION
BMP00454	4-Mar-16	MAINTENANCE INSPECTION
BMP00453	4-Mar-16	MAINTENANCE INSPECTION
BMP01039	4-Mar-16	RETIREMENT
BMP00214	4-Mar-16	MAINTENANCE ACTIVITY
BMP00452	4-Mar-16	MAINTENANCE INSPECTION
BMP00649	4-Mar-16	MAINTENANCE INSPECTION
BMP00099	4-Mar-16	MAINTENANCE INSPECTION

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BMP01658	4-Mar-16	ACCEPTANCE INSPECTION
BMP00098	4-Mar-16	MAINTENANCE INSPECTION
BMP01658	7-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00358	8-Mar-16	MAINTENANCE INSPECTION
BMP00614	8-Mar-16	MAINTENANCE INSPECTION
BMP00842	8-Mar-16	EDUCATION
BMP00613	8-Mar-16	MAINTENANCE INSPECTION
BMP01033	8-Mar-16	MAINTENANCE INSPECTION
BMP00257	8-Mar-16	MAINTENANCE INSPECTION
BMP00844	8-Mar-16	EDUCATION
BMP00258	8-Mar-16	MAINTENANCE INSPECTION
BMP01706	8-Mar-16	INVENTORIED
BMP00843	8-Mar-16	EDUCATION
BMP01068	8-Mar-16	MAINTENANCE INSPECTION
BMP01069	8-Mar-16	MAINTENANCE INSPECTION
BMP00112	8-Mar-16	MAINTENANCE INSPECTION
BMP00137	9-Mar-16	EDUCATION
BMP00649	9-Mar-16	RETIREMENT
BMP00649	9-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00109	9-Mar-16	EDUCATION
BMP01322	9-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01641	10-Mar-16	CONSTRUCTION INSPECTION
BMP00371	11-Mar-16	EDUCATION
BMP01421	11-Mar-16	EDUCATION
BMP01464	11-Mar-16	EDUCATION
BMP01554	14-Mar-16	ACCEPTANCE INSPECTION
BMP01554	14-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01033	15-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01658	15-Mar-16	RECEIPT OF CERTIFICATION
BMP00214	16-Mar-16	MAINTENANCE INSPECTION

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BMP00662	16-Mar-16	MAINTENANCE INSPECTION
BMP00662	16-Mar-16	EDUCATION
BMP00162	16-Mar-16	MAINTENANCE INSPECTION
BMP00162	16-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00664	16-Mar-16	EDUCATION
BMP00664	16-Mar-16	MAINTENANCE INSPECTION
BMP00109	16-Mar-16	MAINTENANCE ACTIVITY
BMP01679	17-Mar-16	RECEIPT OF CERTIFICATION
BMP01679	17-Mar-16	ACCEPTANCE INSPECTION
BMP01678	17-Mar-16	RECEIPT OF CERTIFICATION
BMP01678	17-Mar-16	ACCEPTANCE INSPECTION
BMP01677	17-Mar-16	RECEIPT OF CERTIFICATION
BMP01677	17-Mar-16	ACCEPTANCE INSPECTION
BMP01570	22-Mar-16	ACCEPTANCE INSPECTION
BMP01658	22-Mar-16	ACCEPTANCE INSPECTION
BMP00109	23-Mar-16	MAINTENANCE INSPECTION
BMP00416	24-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00413	24-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00417	24-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00464	24-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00454	28-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00453	28-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01337	28-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00257	28-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01641	28-Mar-16	CONSTRUCTION INSPECTION
BMP01516	28-Mar-16	CONSTRUCTION INSPECTION

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BMP00258	28-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01069	28-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01334	28-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01335	28-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01336	28-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01338	28-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01554	29-Mar-16	ACCEPTANCE INSPECTION
BMP01554	29-Mar-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00564	30-Mar-16	MAINTENANCE INSPECTION
BMP00660	30-Mar-16	MAINTENANCE INSPECTION
BMP00794	4-Apr-16	ACCEPTANCE INSPECTION
BMP01694	4-Apr-16	RECEIPT OF CERTIFICATION
BMP00105	4-Apr-16	CONSTRUCTION INSPECTION
BMP00678	6-Apr-16	MAINTENANCE INSPECTION
BMP01708	6-Apr-16	MAINTENANCE INSPECTION
BMP00057	6-Apr-16	MAINTENANCE INSPECTION
BMP00679	6-Apr-16	MAINTENANCE INSPECTION
BMP01210	6-Apr-16	MAINTENANCE INSPECTION
BMP00969	6-Apr-16	MAINTENANCE INSPECTION
BMP01694	6-Apr-16	ACCEPTANCE INSPECTION
BMP01146	6-Apr-16	CONSTRUCTION INSPECTION
BMP01473	6-Apr-16	MAINTENANCE INSPECTION
BMP00444	6-Apr-16	MAINTENANCE INSPECTION
BMP00058	6-Apr-16	MAINTENANCE INSPECTION
BMP00624	6-Apr-16	MAINTENANCE INSPECTION
BMP01708	7-Apr-16	INVENTORIED
BMP00624	12-Apr-16	RETIREMENT
BMP00624	12-Apr-16	PUNCHLIST DEVELOPMENT AND

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		DISTRIBUTION
BMP01490	15-Apr-16	RECEIPT OF CERTIFICATION
BMP01492	15-Apr-16	RECEIPT OF CERTIFICATION
BMP01489	15-Apr-16	RECEIPT OF CERTIFICATION
BMP01491	15-Apr-16	RECEIPT OF CERTIFICATION
BMP00678	19-Apr-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01708	19-Apr-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00057	19-Apr-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00679	19-Apr-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01473	19-Apr-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00444	19-Apr-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00058	19-Apr-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01323	21-Apr-16	MAINTENANCE INSPECTION
BMP00368	21-Apr-16	MAINTENANCE INSPECTION
BMP00374	21-Apr-16	MAINTENANCE INSPECTION
BMP00375	21-Apr-16	MAINTENANCE INSPECTION
BMP01324	21-Apr-16	MAINTENANCE INSPECTION
BMP01554	26-Apr-16	ACCEPTANCE INSPECTION
BMP01554	27-Apr-16	RECEIPT OF CERTIFICATION
BMP01554	28-Apr-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00041	4-May-16	ACCEPTANCE INSPECTION
BMP01127	9-May-16	MAINTENANCE INSPECTION
BMP01135	9-May-16	MAINTENANCE INSPECTION
BMP01138	9-May-16	MAINTENANCE INSPECTION
BMP01132	9-May-16	MAINTENANCE INSPECTION
BMP01137	9-May-16	MAINTENANCE INSPECTION
BMP01129	9-May-16	MAINTENANCE INSPECTION

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BMP01134	9-May-16	MAINTENANCE INSPECTION
BMP01131	9-May-16	MAINTENANCE INSPECTION
BMP01136	9-May-16	MAINTENANCE INSPECTION
BMP01128	9-May-16	MAINTENANCE INSPECTION
BMP01130	9-May-16	MAINTENANCE INSPECTION
BMP01133	9-May-16	MAINTENANCE INSPECTION
BMP00747	9-May-16	MAINTENANCE INSPECTION
BMP00591	9-May-16	MAINTENANCE INSPECTION
BMP00743	9-May-16	MAINTENANCE INSPECTION
BMP01045	9-May-16	MAINTENANCE INSPECTION
BMP00632	11-May-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00632	11-May-16	EDUCATION
BMP00364	11-May-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00364	11-May-16	EDUCATION
BMP00365	11-May-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00365	11-May-16	EDUCATION
BMP01081	11-May-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01081	11-May-16	EDUCATION
BMP00840	12-May-16	MAINTENANCE INSPECTION
BMP00734	12-May-16	MAINTENANCE INSPECTION
BMP00177	12-May-16	MAINTENANCE INSPECTION
BMP00753	12-May-16	MAINTENANCE INSPECTION
BMP00034	12-May-16	MAINTENANCE INSPECTION
BMP00005	12-May-16	MAINTENANCE INSPECTION
BMP00257	16-May-16	MAINTENANCE ACTIVITY
BMP00258	16-May-16	MAINTENANCE ACTIVITY
BMP01537	19-May-16	ACCEPTANCE INSPECTION
BMP01537	6-Jun-16	RECEIPT OF CERTIFICATION
BMP00464	10-Jun-16	MAINTENANCE ACTIVITY
BMP00765	15-Jun-16	MAINTENANCE INSPECTION

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BMP00830	15-Jun-16	MAINTENANCE INSPECTION
BMP00831	15-Jun-16	MAINTENANCE INSPECTION
BMP00766	15-Jun-16	MAINTENANCE INSPECTION
BMP00764	15-Jun-16	MAINTENANCE INSPECTION
BMP01053	15-Jun-16	MAINTENANCE INSPECTION
BMP00197	22-Jun-16	MAINTENANCE INSPECTION
BMP01182	22-Jun-16	MAINTENANCE ACTIVITY
BMP01464	22-Jun-16	MAINTENANCE ACTIVITY
BMP00557	22-Jun-16	MAINTENANCE INSPECTION
BMP00111	27-Jun-16	MAINTENANCE INSPECTION
BMP00842	28-Jun-16	MAINTENANCE ACTIVITY
BMP00844	28-Jun-16	MAINTENANCE ACTIVITY
BMP00843	28-Jun-16	MAINTENANCE ACTIVITY
BMP00476	29-Jun-16	MAINTENANCE INSPECTION
BMP00859	29-Jun-16	MAINTENANCE INSPECTION
BMP01280	29-Jun-16	RETIREMENT
BMP00860	29-Jun-16	MAINTENANCE INSPECTION
BMP00338	8-Jul-16	ACCEPTANCE INSPECTION
BMP00338	11-Jul-16	RECEIPT OF CERTIFICATION
BMP00858	12-Jul-16	MAINTENANCE INSPECTION
BMP00856	12-Jul-16	MAINTENANCE INSPECTION
BMP00857	12-Jul-16	MAINTENANCE INSPECTION
BMP00096	12-Jul-16	MAINTENANCE INSPECTION
BMP00097	12-Jul-16	MAINTENANCE INSPECTION
BMP00094	12-Jul-16	MAINTENANCE INSPECTION
BMP00095	12-Jul-16	MAINTENANCE INSPECTION
BMP00712	12-Jul-16	MAINTENANCE INSPECTION
BMP00615	12-Jul-16	MAINTENANCE INSPECTION
BMP01628	13-Jul-16	ACCEPTANCE INSPECTION
BMP00719	14-Jul-16	MAINTENANCE INSPECTION
BMP00170	14-Jul-16	MAINTENANCE INSPECTION
BMP01048	15-Jul-16	MAINTENANCE INSPECTION
BMP01049	15-Jul-16	MAINTENANCE INSPECTION
BMP00074	15-Jul-16	MAINTENANCE INSPECTION

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BMP00091	15-Jul-16	ACCEPTANCE INSPECTION
BMP00367	15-Jul-16	MAINTENANCE INSPECTION
BMP01709	18-Jul-16	INVENTORIED
BMP01710	18-Jul-16	INVENTORIED
BMP00033	18-Jul-16	RETIREMENT
BMP00514	19-Jul-16	MAINTENANCE INSPECTION
BMP00237	19-Jul-16	MAINTENANCE INSPECTION
BMP00236	19-Jul-16	MAINTENANCE INSPECTION
BMP00515	19-Jul-16	MAINTENANCE INSPECTION
BMP00238	19-Jul-16	MAINTENANCE INSPECTION
BMP01029	19-Jul-16	RETIREMENT
BMP00703	19-Jul-16	MAINTENANCE INSPECTION
BMP00042	19-Jul-16	MAINTENANCE INSPECTION
BMP01730	25-Jul-16	INVENTORIED
BMP01729	25-Jul-16	INVENTORIED
BMP01728	25-Jul-16	INVENTORIED
BMP01683	26-Jul-16	ACCEPTANCE INSPECTION
BMP00633	26-Jul-16	MAINTENANCE INSPECTION
BMP00634	26-Jul-16	MAINTENANCE INSPECTION
BMP01682	26-Jul-16	ACCEPTANCE INSPECTION
BMP01681	26-Jul-16	ACCEPTANCE INSPECTION
BMP01732	27-Jul-16	INVENTORIED
BMP01731	27-Jul-16	INVENTORIED
BMP01733	27-Jul-16	INVENTORIED
BMP01734	27-Jul-16	INVENTORIED
BMP01628	27-Jul-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01735	27-Jul-16	INVENTORIED
BMP01340	27-Jul-16	MAINTENANCE INSPECTION
BMP00867	27-Jul-16	MAINTENANCE INSPECTION
BMP00454	28-Jul-16	MAINTENANCE INSPECTION
BMP00453	28-Jul-16	MAINTENANCE INSPECTION
BMP00235	28-Jul-16	MAINTENANCE INSPECTION
BMP00703	28-Jul-16	MAINTENANCE INSPECTION

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BMP00464	28-Jul-16	MAINTENANCE INSPECTION
BMP01724	1-Aug-16	INVENTORIED
BMP01719	1-Aug-16	INVENTORIED
BMP01726	1-Aug-16	INVENTORIED
BMP01721	1-Aug-16	INVENTORIED
BMP01717	1-Aug-16	INVENTORIED
BMP01723	1-Aug-16	INVENTORIED
BMP01722	1-Aug-16	INVENTORIED
BMP01713	1-Aug-16	INVENTORIED
BMP01711	1-Aug-16	INVENTORIED
BMP01725	1-Aug-16	INVENTORIED
BMP01712	1-Aug-16	INVENTORIED
BMP01718	1-Aug-16	INVENTORIED
BMP01176	3-Aug-16	MAINTENANCE INSPECTION
BMP01177	3-Aug-16	MAINTENANCE INSPECTION
BMP00514	3-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00842	3-Aug-16	MAINTENANCE INSPECTION
BMP00074	3-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00515	3-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00257	3-Aug-16	MAINTENANCE INSPECTION
BMP00844	3-Aug-16	MAINTENANCE INSPECTION
BMP00703	3-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00258	3-Aug-16	MAINTENANCE INSPECTION
BMP00843	3-Aug-16	MAINTENANCE INSPECTION
BMP01069	3-Aug-16	MAINTENANCE INSPECTION
BMP01182	4-Aug-16	MAINTENANCE INSPECTION
BMP00371	4-Aug-16	MAINTENANCE INSPECTION
BMP01464	4-Aug-16	MAINTENANCE INSPECTION
BMP00641	8-Aug-16	MAINTENANCE INSPECTION
BMP00641	8-Aug-16	MAINTENANCE INSPECTION

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BMP01017	11-Aug-16	ACCEPTANCE INSPECTION
BMP01018	11-Aug-16	ACCEPTANCE INSPECTION
BMP00754	11-Aug-16	ACCEPTANCE INSPECTION
BMP00768	11-Aug-16	ACCEPTANCE INSPECTION
BMP01019	11-Aug-16	ACCEPTANCE INSPECTION
BMP00769	11-Aug-16	ACCEPTANCE INSPECTION
BMP01730	12-Aug-16	CONSTRUCTION INSPECTION
BMP00675	12-Aug-16	ACCEPTANCE INSPECTION
BMP00719	15-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00858	15-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00840	15-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00734	15-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00753	15-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00856	15-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00857	15-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01713	15-Aug-16	CONSTRUCTION INSPECTION
BMP00712	15-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00615	15-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01462	15-Aug-16	MAINTENANCE INSPECTION
BMP01461	15-Aug-16	MAINTENANCE INSPECTION
BMP01340	15-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00338	16-Aug-16	ACCEPTANCE INSPECTION
BMP00074	17-Aug-16	MAINTENANCE INSPECTION
BMP00074	17-Aug-16	EDUCATION
BMP00206	17-Aug-16	MAINTENANCE INSPECTION
BMP00204	17-Aug-16	MAINTENANCE INSPECTION

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BMP00542	19-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00213	22-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00754	22-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00163	22-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00163	22-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00050	22-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00703	22-Aug-16	MAINTENANCE INSPECTION
BMP01568	22-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01567	22-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00482	22-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01370	22-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00542	22-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00542	22-Aug-16	MAINTENANCE INSPECTION
BMP01080	23-Aug-16	MAINTENANCE INSPECTION
BMP00213	23-Aug-16	MAINTENANCE INSPECTION
BMP00163	23-Aug-16	MAINTENANCE INSPECTION
BMP00050	23-Aug-16	MAINTENANCE INSPECTION
BMP01568	23-Aug-16	MAINTENANCE INSPECTION
BMP01567	23-Aug-16	MAINTENANCE INSPECTION
BMP00482	23-Aug-16	MAINTENANCE INSPECTION
BMP01370	23-Aug-16	MAINTENANCE INSPECTION
BMP01495	23-Aug-16	ACCEPTANCE INSPECTION
BMP00719	24-Aug-16	EDUCATION
BMP00615	24-Aug-16	EDUCATION
BMP01738	25-Aug-16	INVENTORIED

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BMP00512	25-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01739	25-Aug-16	RECEIPT OF CERTIFICATION
BMP01569	25-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01135	26-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01138	26-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01131	26-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01136	26-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01133	26-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00747	26-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01323	26-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00591	26-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00512	26-Aug-16	MAINTENANCE INSPECTION
BMP01739	26-Aug-16	INVENTORIED
BMP00766	26-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00374	26-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00375	26-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00764	26-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01053	26-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00747	29-Aug-16	MAINTENANCE INSPECTION
BMP01256	29-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01026	29-Aug-16	CONSTRUCTION INSPECTION

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BMP01256	30-Aug-16	MAINTENANCE INSPECTION
BMP00360	30-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00706	30-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01569	30-Aug-16	MAINTENANCE INSPECTION
BMP01320	30-Aug-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00360	31-Aug-16	MAINTENANCE INSPECTION
BMP00706	31-Aug-16	MAINTENANCE INSPECTION
BMP01320	31-Aug-16	MAINTENANCE INSPECTION
BMP01323	1-Sep-16	MAINTENANCE INSPECTION
BMP00855	1-Sep-16	EDUCATION
BMP00658	1-Sep-16	EDUCATION
BMP01026	2-Sep-16	CONSTRUCTION INSPECTION
BMP00124	2-Sep-16	MAINTENANCE ACTIVITY
BMP00123	2-Sep-16	MAINTENANCE ACTIVITY
BMP00591	6-Sep-16	EDUCATION
BMP00100	6-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01300	6-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01299	6-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00514	7-Sep-16	MAINTENANCE INSPECTION
BMP00100	7-Sep-16	MAINTENANCE INSPECTION
BMP00515	7-Sep-16	MAINTENANCE INSPECTION
BMP01300	7-Sep-16	MAINTENANCE INSPECTION
BMP01299	7-Sep-16	MAINTENANCE INSPECTION
BMP00607	7-Sep-16	ACCEPTANCE INSPECTION
BMP00766	8-Sep-16	EDUCATION
BMP00764	8-Sep-16	EDUCATION
BMP01742	9-Sep-16	INVENTORIED
BMP01741	9-Sep-16	INVENTORIED
BMP01740	9-Sep-16	INVENTORIED

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BMP01048	9-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01049	9-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00237	9-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00236	9-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00235	9-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00238	9-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00124	9-Sep-16	MAINTENANCE INSPECTION
BMP00123	9-Sep-16	MAINTENANCE INSPECTION
BMP00482	9-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01370	9-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01569	9-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00607	9-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00634	9-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01369	9-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01047	12-Sep-16	MAINTENANCE INSPECTION
BMP01739	12-Sep-16	RETIREMENT
BMP00465	12-Sep-16	MAINTENANCE INSPECTION
BMP01369	12-Sep-16	MAINTENANCE INSPECTION
BMP01005	13-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00442	13-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01157	13-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION

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BMP01005	14-Sep-16	MAINTENANCE INSPECTION
BMP00442	14-Sep-16	MAINTENANCE INSPECTION
BMP01157	14-Sep-16	MAINTENANCE INSPECTION
BMP00808	15-Sep-16	MAINTENANCE INSPECTION
BMP01743	21-Sep-16	INVENTORIED
BMP01744	21-Sep-16	INVENTORIED
BMP01745	21-Sep-16	INVENTORIED
BMP01323	22-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01256	22-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00734	22-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00753	22-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00512	22-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00100	22-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00808	22-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00748	22-Sep-16	MAINTENANCE INSPECTION
BMP01300	22-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01568	22-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01567	22-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01299	22-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00442	22-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01157	22-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00706	22-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION

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BMP01340	22-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01320	22-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01023	23-Sep-16	MAINTENANCE INSPECTION
BMP01021	23-Sep-16	MAINTENANCE INSPECTION
BMP01022	23-Sep-16	MAINTENANCE INSPECTION
BMP01020	23-Sep-16	MAINTENANCE INSPECTION
BMP00388	23-Sep-16	ACCEPTANCE INSPECTION
BMP01701	23-Sep-16	ACCEPTANCE INSPECTION
BMP00723	26-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00162	26-Sep-16	MAINTENANCE INSPECTION
BMP00403	26-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00044	27-Sep-16	MAINTENANCE INSPECTION
BMP00547	27-Sep-16	MAINTENANCE INSPECTION
BMP00723	27-Sep-16	MAINTENANCE INSPECTION
BMP00746	27-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00140	27-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00745	27-Sep-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00558	27-Sep-16	ACCEPTANCE INSPECTION
BMP00559	27-Sep-16	ACCEPTANCE INSPECTION
BMP01472	28-Sep-16	RETIREMENT
BMP01471	28-Sep-16	RETIREMENT
BMP01048	28-Sep-16	EDUCATION
BMP01049	28-Sep-16	EDUCATION
BMP00746	28-Sep-16	MAINTENANCE INSPECTION
BMP00140	28-Sep-16	MAINTENANCE INSPECTION
BMP00745	28-Sep-16	MAINTENANCE INSPECTION
BMP00138	28-Sep-16	MAINTENANCE INSPECTION
BMP01746	28-Sep-16	INVENTORIED

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BMP00634	28-Sep-16	EDUCATION
BMP01256	30-Sep-16	EDUCATION
BMP01323	4-Oct-16	EDUCATION
BMP00374	4-Oct-16	MAINTENANCE INSPECTION
BMP00375	4-Oct-16	MAINTENANCE INSPECTION
BMP00071	4-Oct-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01540	5-Oct-16	MAINTENANCE INSPECTION
BMP01553	5-Oct-16	MAINTENANCE INSPECTION
BMP01548	5-Oct-16	MAINTENANCE INSPECTION
BMP00071	5-Oct-16	MAINTENANCE INSPECTION
BMP00442	6-Oct-16	EDUCATION
BMP01470	7-Oct-16	RETIREMENT
BMP01568	10-Oct-16	EDUCATION
BMP01567	10-Oct-16	EDUCATION
BMP00805	11-Oct-16	MAINTENANCE INSPECTION
BMP00409	11-Oct-16	MAINTENANCE INSPECTION
BMP01180	11-Oct-16	MAINTENANCE INSPECTION
BMP00826	11-Oct-16	MAINTENANCE INSPECTION
BMP00278	11-Oct-16	MAINTENANCE INSPECTION
BMP01051	11-Oct-16	MAINTENANCE INSPECTION
BMP00630	11-Oct-16	MAINTENANCE INSPECTION
BMP00629	11-Oct-16	MAINTENANCE INSPECTION
BMP00083	12-Oct-16	MAINTENANCE INSPECTION
BMP00878	13-Oct-16	MAINTENANCE INSPECTION
BMP00879	13-Oct-16	MAINTENANCE INSPECTION
BMP00253	13-Oct-16	MAINTENANCE INSPECTION
BMP01357	17-Oct-16	MAINTENANCE INSPECTION
BMP01278	18-Oct-16	MAINTENANCE INSPECTION
BMP01277	18-Oct-16	MAINTENANCE INSPECTION
BMP01279	18-Oct-16	MAINTENANCE INSPECTION
BMP01237	18-Oct-16	MAINTENANCE INSPECTION
BMP00146	19-Oct-16	MAINTENANCE INSPECTION
BMP00152	19-Oct-16	MAINTENANCE INSPECTION

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BMP00149	19-Oct-16	MAINTENANCE INSPECTION
BMP00150	19-Oct-16	MAINTENANCE INSPECTION
BMP00151	19-Oct-16	MAINTENANCE INSPECTION
BMP00147	19-Oct-16	MAINTENANCE INSPECTION
BMP00148	19-Oct-16	MAINTENANCE INSPECTION
BMP01162	19-Oct-16	MAINTENANCE INSPECTION
BMP00916	20-Oct-16	MAINTENANCE INSPECTION
BMP01281	20-Oct-16	CONSTRUCTION INSPECTION
BMP01349	21-Oct-16	MAINTENANCE INSPECTION
BMP01348	21-Oct-16	MAINTENANCE INSPECTION
BMP01372	21-Oct-16	RETIREMENT
BMP01373	21-Oct-16	RETIREMENT
BMP00938	21-Oct-16	MAINTENANCE INSPECTION
BMP00937	21-Oct-16	MAINTENANCE INSPECTION
BMP00947	21-Oct-16	MAINTENANCE INSPECTION
BMP00936	21-Oct-16	MAINTENANCE INSPECTION
BMP00945	21-Oct-16	MAINTENANCE INSPECTION
BMP00944	21-Oct-16	MAINTENANCE INSPECTION
BMP00946	21-Oct-16	MAINTENANCE INSPECTION
BMP01157	21-Oct-16	MAINTENANCE INSPECTION
BMP00948	21-Oct-16	MAINTENANCE INSPECTION
BMP00578	24-Oct-16	RETIREMENT
BMP00299	24-Oct-16	MAINTENANCE INSPECTION
BMP01135	25-Oct-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01138	25-Oct-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01131	25-Oct-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01136	25-Oct-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00858	25-Oct-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01133	25-Oct-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION

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BMP00856	25-Oct-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00544	25-Oct-16	MAINTENANCE INSPECTION
BMP00857	25-Oct-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00016	25-Oct-16	MAINTENANCE INSPECTION
BMP01397	25-Oct-16	MAINTENANCE INSPECTION
BMP00961	25-Oct-16	MAINTENANCE INSPECTION
BMP00456	26-Oct-16	MAINTENANCE INSPECTION
BMP00457	26-Oct-16	MAINTENANCE INSPECTION
BMP01062	28-Oct-16	MAINTENANCE INSPECTION
BMP00892	28-Oct-16	MAINTENANCE INSPECTION
BMP01061	28-Oct-16	MAINTENANCE INSPECTION
BMP00603	28-Oct-16	MAINTENANCE INSPECTION
BMP00798	28-Oct-16	MAINTENANCE INSPECTION
BMP00602	28-Oct-16	MAINTENANCE INSPECTION
BMP01060	28-Oct-16	MAINTENANCE INSPECTION
BMP00605	28-Oct-16	MAINTENANCE INSPECTION
BMP00604	28-Oct-16	MAINTENANCE INSPECTION
BMP01183	28-Oct-16	MAINTENANCE INSPECTION
BMP00426	31-Oct-16	MAINTENANCE INSPECTION
BMP01211	1-Nov-16	MAINTENANCE INSPECTION
BMP00838	1-Nov-16	MAINTENANCE INSPECTION
BMP00482	2-Nov-16	MAINTENANCE INSPECTION
BMP00766	2-Nov-16	EDUCATION
BMP00764	2-Nov-16	EDUCATION
BMP00056	3-Nov-16	MAINTENANCE INSPECTION
BMP00322	3-Nov-16	MAINTENANCE INSPECTION
BMP00172	3-Nov-16	MAINTENANCE INSPECTION
BMP00284	3-Nov-16	MAINTENANCE INSPECTION
BMP00925	3-Nov-16	MAINTENANCE INSPECTION
BMP00640	3-Nov-16	MAINTENANCE INSPECTION
BMP00988	4-Nov-16	MAINTENANCE INSPECTION
BMP00390	4-Nov-16	MAINTENANCE INSPECTION

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BMP00391	4-Nov-16	MAINTENANCE INSPECTION
BMP00989	4-Nov-16	MAINTENANCE INSPECTION
BMP00297	4-Nov-16	MAINTENANCE INSPECTION
BMP00240	4-Nov-16	MAINTENANCE INSPECTION
BMP00987	4-Nov-16	MAINTENANCE INSPECTION
BMP00239	4-Nov-16	MAINTENANCE INSPECTION
BMP00083	7-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00805	8-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00723	8-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01008	8-Nov-16	MAINTENANCE INSPECTION
BMP00288	8-Nov-16	MAINTENANCE INSPECTION
BMP00745	8-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01548	8-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01350	8-Nov-16	MAINTENANCE INSPECTION
BMP01352	8-Nov-16	MAINTENANCE INSPECTION
BMP01351	8-Nov-16	MAINTENANCE INSPECTION
BMP00935	9-Nov-16	SCREENING INSPECTION
BMP01309	9-Nov-16	MAINTENANCE INSPECTION
BMP01063	9-Nov-16	MAINTENANCE INSPECTION
BMP00450	10-Nov-16	MAINTENANCE INSPECTION
BMP01082	10-Nov-16	MAINTENANCE INSPECTION
BMP00068	10-Nov-16	MAINTENANCE INSPECTION
BMP00551	10-Nov-16	MAINTENANCE INSPECTION
BMP00551	10-Nov-16	MAINTENANCE INSPECTION
BMP01083	10-Nov-16	MAINTENANCE INSPECTION
BMP00550	10-Nov-16	MAINTENANCE INSPECTION
BMP00449	10-Nov-16	MAINTENANCE INSPECTION
BMP00541	10-Nov-16	MAINTENANCE INSPECTION
BMP00707	11-Nov-16	ACCEPTANCE INSPECTION
BMP00540	11-Nov-16	MAINTENANCE INSPECTION

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BMP00869	15-Nov-16	MAINTENANCE INSPECTION
BMP00084	15-Nov-16	MAINTENANCE INSPECTION
BMP01318	15-Nov-16	MAINTENANCE INSPECTION
BMP01278	16-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01349	16-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01348	16-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01277	16-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01279	16-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00939	16-Nov-16	MAINTENANCE INSPECTION
BMP00938	16-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00937	16-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00798	16-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01060	16-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00906	16-Nov-16	MAINTENANCE INSPECTION
BMP00940	16-Nov-16	MAINTENANCE INSPECTION
BMP00941	16-Nov-16	MAINTENANCE INSPECTION
BMP00947	16-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00945	16-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00944	16-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00911	16-Nov-16	MAINTENANCE INSPECTION
BMP00911	16-Nov-16	MAINTENANCE INSPECTION
BMP00246	16-Nov-16	MAINTENANCE INSPECTION
BMP00247	16-Nov-16	MAINTENANCE INSPECTION
BMP01350	16-Nov-16	PUNCHLIST DEVELOPMENT AND

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		DISTRIBUTION
BMP00442	17-Nov-16	EDUCATION
BMP00592	18-Nov-16	MAINTENANCE INSPECTION
BMP01046	18-Nov-16	MAINTENANCE INSPECTION
BMP00085	18-Nov-16	MAINTENANCE INSPECTION
BMP01071	18-Nov-16	MAINTENANCE INSPECTION
BMP00805	21-Nov-16	MAINTENANCE INSPECTION
BMP00805	21-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01433	22-Nov-16	MAINTENANCE INSPECTION
BMP01433	22-Nov-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00442	23-Nov-16	EDUCATION
BMP01349	28-Nov-16	MAINTENANCE INSPECTION
BMP01348	28-Nov-16	MAINTENANCE INSPECTION
BMP00943	28-Nov-16	MAINTENANCE INSPECTION
BMP00040	28-Nov-16	MAINTENANCE INSPECTION
BMP00755	28-Nov-16	MAINTENANCE INSPECTION
BMP01350	28-Nov-16	MAINTENANCE INSPECTION
BMP00199	29-Nov-16	MAINTENANCE INSPECTION
BMP00201	29-Nov-16	MAINTENANCE INSPECTION
BMP00200	29-Nov-16	MAINTENANCE INSPECTION
BMP00712	29-Nov-16	MAINTENANCE INSPECTION
BMP00650	30-Nov-16	MAINTENANCE INSPECTION
BMP00723	1-Dec-16	EDUCATION
BMP00890	1-Dec-16	MAINTENANCE INSPECTION
BMP01701	1-Dec-16	RECEIPT OF CERTIFICATION
BMP00370	1-Dec-16	MAINTENANCE INSPECTION
BMP00296	1-Dec-16	RETIREMENT
BMP00319	2-Dec-16	MAINTENANCE INSPECTION
BMP00178	2-Dec-16	MAINTENANCE INSPECTION
BMP01701	2-Dec-16	ACCEPTANCE INSPECTION
BMP01701	2-Dec-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION

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BMP00530	2-Dec-16	MAINTENANCE INSPECTION
BMP00924	5-Dec-16	MAINTENANCE INSPECTION
BMP00029	5-Dec-16	MAINTENANCE INSPECTION
BMP00323	6-Dec-16	MAINTENANCE INSPECTION
BMP00053	7-Dec-16	MAINTENANCE INSPECTION
BMP01184	7-Dec-16	MAINTENANCE INSPECTION
BMP00350	8-Dec-16	MAINTENANCE INSPECTION
BMP01344	8-Dec-16	MAINTENANCE INSPECTION
BMP01042	9-Dec-16	MAINTENANCE INSPECTION
BMP01067	9-Dec-16	MAINTENANCE INSPECTION
BMP00933	9-Dec-16	MAINTENANCE INSPECTION
BMP00654	9-Dec-16	MAINTENANCE INSPECTION
BMP01161	9-Dec-16	MAINTENANCE INSPECTION
BMP01160	9-Dec-16	MAINTENANCE INSPECTION
BMP01159	9-Dec-16	MAINTENANCE INSPECTION
BMP00653	9-Dec-16	MAINTENANCE INSPECTION
BMP00574	9-Dec-16	MAINTENANCE INSPECTION
BMP01041	9-Dec-16	MAINTENANCE INSPECTION
BMP01184	12-Dec-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00984	13-Dec-16	MAINTENANCE INSPECTION
BMP00983	13-Dec-16	MAINTENANCE INSPECTION
BMP00986	13-Dec-16	MAINTENANCE INSPECTION
BMP00985	13-Dec-16	MAINTENANCE INSPECTION
BMP00982	13-Dec-16	MAINTENANCE INSPECTION
BMP01164	13-Dec-16	MAINTENANCE INSPECTION
BMP01165	13-Dec-16	MAINTENANCE INSPECTION
BMP01163	13-Dec-16	MAINTENANCE INSPECTION
BMP01166	13-Dec-16	MAINTENANCE INSPECTION
BMP00594	13-Dec-16	MAINTENANCE INSPECTION
BMP00655	13-Dec-16	MAINTENANCE INSPECTION
BMP01309	13-Dec-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP00202	13-Dec-16	MAINTENANCE INSPECTION

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BMP00838	13-Dec-16	PUNCHLIST DEVELOPMENT AND DISTRIBUTION
BMP01249	13-Dec-16	MAINTENANCE INSPECTION
BMP01256	15-Dec-16	EDUCATION
BMP01701	15-Dec-16	RECEIPT OF CERTIFICATION
BMP00431	16-Dec-16	MAINTENANCE INSPECTION
BMP00628	19-Dec-16	MAINTENANCE INSPECTION
BMP00997	19-Dec-16	MAINTENANCE INSPECTION
BMP00998	19-Dec-16	MAINTENANCE INSPECTION
BMP00999	19-Dec-16	MAINTENANCE INSPECTION
BMP00866	19-Dec-16	MAINTENANCE INSPECTION
BMP01762	19-Dec-16	INVENTORIED
BMP01761	19-Dec-16	INVENTORIED
BMP00922	20-Dec-16	MAINTENANCE INSPECTION
BMP01701	20-Dec-16	ACCEPTANCE INSPECTION
BMP00302	30-Dec-16	MAINTENANCE INSPECTION

The MS4 service area map including outfalls and information included in Part I.B.2.h)3) shall be submitted no later than 18 months after the effective date of this state permit. The information shall be submitted as an electronic file in one of the following formats shapefile, geodatabase, .xls, .xlsx, .csv, .mdx, .dbf, delimited text, XML, or other file approved by the Department.

The requested information was delivered to DEQ on September 27, 2016.

The second annual report submitted under this state permit shall include the information included in Part I.B.2.h)4). The information shall be submitted in a format specified by the Department.

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Local Watershed	MS4 Service Area (acres)	Regulated Impervious Acreage as of June 30, 2009	Regulated Pervious Acreage as of June 30, 2009	Acres Treated by SWM Facilities	Impervious Acreage Treated by SWM Facilities	Pervious Acreage Treated by SWM Facilities
1	1399.09	325.84	560.40	184.63	49.89	134.74
2	168.79	24.16	56.72	7.15	1.36	5.79
3	566.41	112.11	234.39	241.64	87.15	154.49
4	1804.92	602.69	632.10	3984.86	1422.68	2562.18
5	130.22	28.13	55.39	0	0	0
6	417.69	133.17	152.58	952.55	104.17	848.38
7	1581.18	550.87	595.12	482.37	126.65	355.72
8	356.17	96.94	163.10	144.88	25.51	119.37
9	1330.30	388.20	546.34	946.19	87.31	858.88
10	734.82	194.23	361.46	99.78	36.66	63.12
11	255.06	43.39	99.44	47.02	36.2	10.82
12	249.56	83.83	98.07	85.59	35.64	49.95
13	774.36	201.68	281.67	55.61	15.1	40.51
14	606.67	139.95	220.84	72.76	19.27	53.49
15	272.02	38.97	107.21	31.1	31.1	0
16	884.00	295.08	363.15	29.87	25.12	4.75
17	385.57	73.55	143.26	22.37	9.82	12.55
18	1011.49	278.49	364.38	278.926	153.337	125.589
19	483.84	70.10	187.84	42.61	15.77	26.84
20	192.47	66.09	63.49	176.69	115.05	61.64
21	840.96	226.75	254.30	1000.248	158.716	841.532
22	927.41	419.26	277.70	583.33	169.26	414.07
23	1143.54	422.91	348.94	58.81	39.338	19.472
24	655.22	206.82	180.18	35.01	6.92	28.09
25	416.07	121.58	134.40	97	7.28	89.72
26	751.33	244.81	236.74	94.27	19.16	75.11
27	767.66	251.14	253.86	185.77	49.26	136.51
28	331.85	48.83	116.46	0	0	0
29	216.49	30.02	77.18	7.86	0	7.86
30	1650.70	263.85	681.33	190.67	81.94	108.73
31	1423.93	452.79	457.71	620.15	287.906	332.244
32	644.11	195.72	168.89	129.89	30.31	99.58
33	234.80	117.57	56.98	133.86	27.03	106.83
34	628.61	185.98	232.54	66.6	10.04	56.56
35	799.89	177.71	244.42	17.36	4.49	12.87
36	521.72	164.64	235.58	50.18	14.53	35.65
37	1526.31	411.38	642.50	559.06	153.43	405.63
38	1139.36	311.24	346.45	11.18	5.96	5.22
39	1073.92	270.11	310.87	221.83	13.23	208.6

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40	17.15	1.83	3.37	0	0	0
41	18.53	2.70	1.65	0	0	0
42	731.91	91.71	242.53	11.17	9.9	1.27
43	23.64	2.06	5.18	0	0	0
44	269.54	33.71	83.93	0	0	0
45	120.73	17.02	61.82	0	0	0
46	312.19	31.47	63.98	0	0	0
47	69.10	4.07	2.44	0	0	0
48	260.75	93.60	86.12	47.35	16.14	31.21
49	1221.07	459.33	356.85	1400.87	354.33	1046.54
50	819.00	267.37	254.08	181.082	61.31	119.772
51	758.09	206.70	238.97	29.95	12.09	17.86
52	1079.15	265.88	375.06	550.578	327.435	223.143
53	653.02	351.38	154.23	213.36	121.27	92.09
54	1106.44	457.92	353.53	517.696	206.13	311.566
55	2315.00	798.34	804.03	405.96	148.98	256.98
56	1276.19	390.98	555.30	270.12	86.19	183.93
57	1328.53	387.05	541.42	252.11	43.28	208.83
58	1384.34	427.60	540.13	491.598	163.897	327.701
59	1810.37	444.86	659.04	238.835	72.85	165.985
60	847.09	291.18	337.72	181.72	70.48	111.24
61	957.52	329.59	352.45	64.68	15.55	49.13
62	269.58	98.94	99.68	35.185	6	29.185
63	130.56	98.13	21.18	3.97	1.59	2.38
64	789.84	249.75	257.90	2144.37	588.88	1555.49
65	284.83	39.74	119.52	1.37	0	1.37
66	156.63	35.26	49.83	287.23	131.76	155.47
67	943.97	150.35	361.54	138.91	76.466	62.444

6 th Order HUC	MS4 Service Area (acres)	Regulated Impervious Acreage as of June 30, 2009	Regulated Pervious Acreage as of June 30, 2009	Acreage Treated by SWM Facilities	Impervious Acreage Treated by SWM Facilities	Pervious Acreages Treated by SWM Facilities
JL01	6582.17	1913.69	2433.33	1744.37	573.136	1171.234
JL03	1594.45	333.33	568.17	321.536	169.107	152.429
JL04	2168.67	338.91	859.73	198.53	81.94	116.59
JL05	388.64	43.38	95.14	0	0	0
JL06	924.95	112.29	290.48	11.17	9.9	1.27
JL16	5005.91	1602.01	1906.61	5413.42	1636.64	3776.78
JL17	1288.51	363.84	499.95	1424.66	252.47	1172.19

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JL18	12038.14	4055.38	4425.09	2675.234	936.217	1739.017
JL19	3299.43	868.51	1354.88	258.02	96.15	161.87
JL20	958.79	175.03	362.92	107.64	47.38	60.26
JL21	2105.83	460.89	764.85	2564.38	791.95	1772.43
JM84	9968.74	3285.61	3109.95	4440.958	1336.289	3104.669
JM85	1653.91	397.87	483.86	239.19	17.72	221.47
JM86	1235.12	334.00	374.22	18.68	11.116	7.564

Chesapeake Bay Segment	MS4 Service Area (acres)	Regulated Impervious Acreage as of June 30, 2009	Regulated Pervious Acreage as of June 30, 2009	Acreage Treated by SWM Facilities	Impervious Acreage Treated by SWM Facilities	Pervious Acreage Treated by SWM Facilities
CHKOH	24771.64	7558.01	9318.32	12443.354	3760.807	8682.547
JMSTF2	24481.61	6741.11	8209.14	6974.434	2199.208	4775.226

The fourth annual report shall include an updated list of all information requested in Part 1.B.2.h)5).

Noted.

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PART I.B.2.i
MS4 PROGRAM IMPLEMENTATION
COUNTY FACILITIES

There are no Specific Reporting Requirements associated with this part of the MS4 Permit for this permit year.

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PART I.B.2.j

MS4 PROGRAM IMPLEMENTATION PUBLIC EDUCATION / PARTICIPATION

Each annual report shall include a list of permittee public outreach and education activities and the estimated number of individuals reached through the activities. An evaluation of program effectiveness, as outlined in the MS4 Program Plan with recommendations for future changes shall also be included.

Public Outreach and Education Goals and Activities			
Department / Division	Activity	Date	# of Individuals / Households / Reaches
Goal: Promote, publicize, and facilitate public reporting of the presence of illicit discharges or improper disposal of materials into the MS4			
DPW - EESD	Illicit Discharge Reporting	1/1/2016 thru 12/31/2016	81
Fire	MS4 Education Posters in stations in view of public	Always	Unknown
Goal: Continue to promote individual and group involvement in local water quality improvement initiatives including the promotion of local restoration and clean-up projects, programs, groups, meetings and other opportunities for public involvement			
DPW - EESD	Visited High School schools and talked to them about sewage treatment, Total Maximum Daily Loads and where human waste is a pollutant source and Chesapeake Bay Preservation Areas	3/3/2016	18
DPW - EESD	Middle James Roundtable (MJRT) Annual Watershed Conference	9/14/2016	89
DPW - EESD	Septic Educational Mailings Sent in 2016	Multiple	1,748
DPU	Seed balls and polluted runoff-	Multiple	34

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	program for scouts or other youth groups outside of school. Kids make seed balls, learn about conservation and talk about how plants help reduce polluted runoff.		
Henricopolis	Rain Barrel Workshops	April 28, May 25 & June 30, 2016	42
Henricopolis	Virginia State Fair Water Quality Outreach Exhibit	September 23 – October 2, 2016	215
Goal: Develop an outreach program with public and private golf courses located within Henrico County that discharge to the permittee's MS4 that would encourage implementation of integrated management practice (IMP) plans and techniques to reduce runoff of fertilizer and pesticides			
Extension / Rec & Parks	MS4 Outreach for Private Golf Course Owners / Operators	Multiple	5
Goal: Promote, publicize, and facilitate the proper management and disposal of used oil and household hazardous wastes			
Fire	MS4 educational posters in all stations	Always	Unknown
Goal: Promote and publicize the proper disposal of pet waste and household yard waste			
DPW - EESD	Bark in the Park – pet waste bags were given away	10/1/2016	200
DPW - EESD	Animal Control gave away pet waste bags	Multiple	200
DPW - EESD	Henrico County Energy Fair – pet waste bags were given away	10/28/2016	100
DPW - EESD	Henrico County Energy Fair – had educational information on proper pet waste disposal, leaf disposal, car washing and mosquitoes	10/28/2016	300
DPW - Maintenance	Bark in the Park – Educational Frisbees were handed out	10/1/2016	85
DPW -	Henrico County Energy Fair –	10/28/2016	65 Frisbees

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Maintenance	educational Frisbees & 30-gallon paper leaf bags were handed out		200 leaf bags
DPW - Maintenance	Brochures/Information accompanying violations letters	Multiple	1,949
DPW - Maintenance	Leaf insert sent in DPU utility bill	Multiple	98,000
DPU	Bark in the Park – Pet Waste Education	October 2016	267
DPU	Educational booth at events – recycling education, litter prevention, pet waste disposal, waste disposal	Multiple	2,523
DPU/KHB	Adult Education Programs – all KHB topics	February 2016	32
Police	Curb Your Dog brochure, promoting the proper disposal of pet waste	Multiple	
Community Revitalization	Attended 40 neighborhood meetings which has been very effective in educating the public in zoning and environmental ordinances (grass & weeds, trash & debris, inoperative vehicles, outside storage, etc...). Meetings are also used to promote opportunities such as volunteer assistance program, enterprise zones, and CDBG fund projects.	Multiple	800
Goal: Promote and publicize the use of the permittee's litter prevention program			
DPU	Social Media Video – Recycling Education on Facebook	June 2016	38,494
DPU	Social Media Video – Recycling Education on NBC12	July 2016	4,425
DPU	Social Media Video – Litter Removal Education on HCTV	November 2017	1,071

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DPU	Educational booth at events – recycling education, litter prevention, pet waste disposal, waste disposal	Multiple	2,523
DPU/KHB	Green Machine – Litter prevention and recycling education program (targeting ages 4-7)	Multiple	1,059
DPU/KHB	Trash Time Capsule – Litter prevention educational program (targeting ages 8-13)	Multiple	241
DPU/KHB	Adult Education Programs – all KHB	February 2016	32
DPU/KHB	Summer Camp Educational Programs – Litter Removal and Recycling Education	Multiple	917
Goal: Promote and publicize methods for residential car washing that minimize water quality impacts			
DPW - EESD	Henrico County Energy Fair – had educational information on proper pet waste disposal, leaf disposal, car washing and mosquitoes	10/28/2016	300
Goal: Promote and publicize the proper use, application, and disposal of pesticides, herbicides, and fertilizers by public, commercial, and private applicators and distributors			
Extension Service	Initial Commercial Pesticide Applicator Certification Workshop – Category Reviews for 3A (Ornamentals) and 3B (Turf) <i>Mid Atlantic Horticulture Short Course</i>	1/20/2016	18
Extension	Initial Commercial Pesticide	1/21/2016	20

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Service	Applicator Certification Workshop – Core Review for Registered Tech (60) <i>Mid Atlantic Horticulture Short Course</i>		
Extension Service	Initial Commercial Pesticide Applicator Certification Workshop – Core Review for Category 60 (Registered Tech) <i>Virginia Turfgrass Council Mid Atlantic Turf Expo</i>	1/28/2016	21
Extension Service	“Environmentally-responsible Lawn Care” Training Session for Henrico Extension Master Gardeners	2/9/2016	
Extension Service	Commercial Pesticide Applicator Recertification Workshop for Categories 3A (Ornamentals), 3B (Turf), 8 (Public Health), and 60 (Registered Tech) <i>CVNLA Short Course</i>	2/12/2016	61
Extension Service	Certified fertilizer applicator (CFA) initial certification and recertification training for lawn and landscape maintenance professionals <i>Richmond Landscape Contractors Association</i>	2/17/2016	51
Extension Service	Initial Commercial Pesticide Applicator Certification Workshop – Core Review for Registered Techs (60) <i>Virginia Turfgrass Council</i>	2/23/2016	18
Extension Service	Curb Appeal Workshop: Lawn and Landscape Maintenance for Homeowners <i>Henrico County Community Maintenance, Habitat for Humanity</i>	3/5/2016	46
Extension	Certified Horticulturalist Review for	3/7/2016	23

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Service	Soils, Fertilizers, Turf Management, and Water Quality Protection <i>Central Virginia Nursery and Landscape Association</i>		
Extension Service	Training Class for Henrico Master Gardeners, Pesticide Safety	3/17/2016	
Extension Service	"Make Your Lawn a SMART Lawn", Homeowner Workshops – 2 sessions at HCPL		
Extension Service	"Implementing the SMART Lawns Program in Henrico County", Advanced Training Workshop for Henrico Extension Master Gardeners	3/30/2016	
Extension Service	Henrico Plant Health Care Diagnostic Clinic Advanced Training Session for Henrico Extension Master Gardeners	4/6/2016	
Extension Service	Private Pesticide Applicator Recertification Workshops – 2 sessions	12/1/2016	
Goal: Encourage private property owners to implement voluntary stormwater management techniques and/or retrofits			
Henricopolis	Virginia Conservation Assistance Program	Began this new program on January 1, 2016	9

Evaluations of Program Effectiveness

Public Utilities

DPU believes their outreach program is effective in getting the word out to our citizens. We utilize many different methods to ensure our residents are notified. We utilize social media; we hold programs within our schools and we attend neighborhood / community functions.

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Fire

Each station averages 4 citizens a day that interact at the 20 county stations. The posters are in locations and of a bright nature that they should capture the attention of those visiting the facilities. It would be expected that they would read the poster and retain the important nature of the program.

Extension Service

Pesticide Applicator Recertification Sessions
<p>During 2016, 61 commercial pesticide applicators were trained for recertification by the Henrico Extension Office. A total of 61 commercial applicators gained additional knowledge in pesticide safety and Integrated Pest Management (IPM) practices related to ornamental plants and turf. As a result of this pesticide safety education, 61 commercial applicators successfully maintained their pesticide applicator certification to legally apply pesticides in Virginia.</p> <p>Fifty-nine (59) of these participants completed and returned a post-program evaluation. Fifty-eight (58) of those responding (98%) agreed or strongly agreed that as a result of attending this session, they (a)"know what I need to do to comply with state and federal laws and regulations"; (b)"learned more about proper use of application equipment"; and (c)"read pesticide labels and use the personal protective equipment they require." Fifty-three (53) individuals (90%) rated the session as good, very good or excellent. Forty-four (44) individuals (75%) provided specific written information describing at least one pesticide safety practice they intend to change or improve upon.</p>
Initial Pesticide Applicator Certification Sessions
<p>During 2016, 77 individuals seeking commercial pesticide applicator status were trained for initial certification testing by the Henrico Extension Office. A total of 77 individuals seeking commercial pesticide applicator certification gained knowledge in pesticide safety and Integrated Pest Management (IPM) practices related to ornamental plants and turf.</p>

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SMART Lawns Program

A total of fifty (50) Henrico households with residential lawns were enrolled in the Henrico Extension SMART Lawns program in 2016. Sixty-eight (68) soil samples were submitted, and fifty (50) urban nutrient management plans were written and distributed to program participants. A total of 469,850 square feet (10.8 acres) of residential turf in Henrico County were brought under a nutrient management plan that is in full compliance with DCR urban nutrient management planning criteria.

Certified Fertilizer Applicator Certification and Recertification

The program agenda was approved through the Virginia Department of Agriculture and Consumer Services (VDACS) Certified Fertilizer Applicator Program for both initial certification (Course Approval # VDACS-004) and recertification (Course Approval # VA-15-003).

Fifty-two (52) lawn and landscape maintenance professionals who provide services to Henrico citizens attended the session. Twenty-six (26) participants were successfully certified; twenty-three (23) received recertification credits; and three (3) were trained to apply fertilizers under the supervision of a certified applicator.

Plant Health Diagnostics

During 2016, the Henrico Extension Office received 243 samples for either problem diagnosis and management recommendations or simple identification. Of the samples, 133 were pest or disease related. Integrated pest management (IPM) recommendations were given for 99 (74%) of these samples, resulting in the promotion of lower-risk pest control products and/or non-chemical pest management strategies. The newly-trained Master Gardener volunteers successfully handled 131 (54%) of the total number of samples with minimal supervision, an indicator of volunteer knowledge gained.

Public Works

Leaf collection program effectiveness is assessed annually by the total number of customer-placed vacuum leaf orders received and completed, the

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total number of violation orders processed and completed, and customer feedback. Recommendations for future changes will be based on the assessment of program effectiveness and updates will be made as necessary to improve the program overall.

Henrico County employs ARC to remove litter from County right-of-ways. The pick-up is performed on a daily basis, and progress is tracked in tons of litter removed as well as the number of bags of litter removed. ARC is also used bi-weekly on the West and East End maintenance yards to reduce floatables from entering the MS4. Program effectiveness is evaluated based on the tons of litter removed, as this decreases the quantity of floatables entering the MS4. Between 1/01/16 and 12/31/16, ARC removed 191 tons or 12,753 bags and 416 tires worth of litter from County right-of-ways and maintenance facilities.

Each annual report shall provide a summary of voluntary retrofits completed on private property used to demonstrate pollutant reduction requirements. Note that any voluntary project for which the permittee seeks to use for pollutant reduction requirements must be tracked and reported.

Voluntary Retrofits Completed on Private Property Used to Demonstrate Compliance with Pollutant Reduction Requirements	0
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Each annual report shall provide a summary of voluntary stormwater management techniques encouraged on private property.

Voluntary Stormwater Management Techniques Encouraged on Private Property			
Department / Division	Activity	Date	# of Individuals / Households / Reaches
Henricopolis	Below are 11 different voluntary stormwater BMPs that Henricopolis can provide technical and financial assistance for County property owners. For more information, refer to		

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	http://henrico.us/services/virginia-conservation-assistance-program/ <u>Basic BMPs</u> Impervious Surface Removal <u>Intermediate Level BMPs</u> Conversion Landscaping Rain Gardens Dry Well Rainwater Harvesting Vegetated Stormwater Conveyance <u>Advanced BMPs</u> Bioretention Infiltration Basin Constructed Wetlands Permeable Pavement Green Roofs		
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PART I.B.2.k MS4 PROGRAM IMPLEMENTATION TRAINING

Each annual report shall include a list of training events, the date and the estimated number of individuals attending each event.

Training Topics and Events Attended Between January 1, 2016 and December 31, 2016		
Event	Date	# of Individuals
Topic: The permittee shall provide biennial training to appropriate field personnel in the recognition and reporting of illicit discharges		
Illicit Discharge Recognition and Reporting	7/13/2016	52
	12/5/2016	76
Illicit Discharge Detection and Elimination (IDDE) (Schools)	8/25/2016	402
Fire: HazMat update: All Division of Fire operational personnel are trained to the level of Hazardous Materials Operations (HMO). The initial HMO program consists of 40 hrs. of tested content and is provided in the employee's initial recruit training program. Annual recertification training is mandatory and ensures competency maintenance, including spill response procedures.	Multiple	512
Fire: Hazmat update: Many Division of Fire personnel participate in additional hazardous materials training programs, such as Hazmat Technician and Hazmat Specialist. Initial training for these programs include 80 and 240 hours of tested content, respectfully. These higher levels of certification mandate 24 hours of	Multiple	63 Hazmat Technicians & 36 Hazmat Specialists

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additional recertification training annually. Personnel at the Hazmat Technician and Hazmat Specialist level provide additionally on-duty resources to respond to spills and emergencies throughout the community.		
Illicit Discharge Recognition Training		17
Topic: The permittee shall provide biennial training to appropriate employees in good housekeeping and pollution prevention practices that are to be employed in and around County facilities		
SOP Review Training	3/31/2016-4/1/2016	78
Good Housekeeping – Kitchen Practices	4/21/2016	321
MMA SWPPP Training	5/26/2016	2
MMA MS4/SWPPP Training	8/24/2016	20
SWPPP Training (DPU)	5/9/2016 5/10/2016 5/11/2016 5/12/2016 5/13/2016 5/16/2016 5/17/2016 5/18/2016 5/19/2016 12/5/2016 12/8/2016	179
Municipal Site Housekeeping	7/6/2016	36
	12/8/2016	50
Condenser Coil Cleaning Training to prevent coil cleaning by-products from entering the MS4 (DGS)	7/19/2016	9
Traffic Engineering conducted in house training of Traffic Engineering personnel to train them on: 1) the prohibition of vehicle washing, 2) the prohibition of discharge of wastewater in the MS4, 3) the prohibition of	8/23/2016	25

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dumping of yard waste into the MS4, 4) preventing fluid leaks from entering the storm sewer system, and 5) Hazardous Waste/Aerosol can puncture training		
Storm Water Pollution Prevention Training Online Course (Rec & Parks)	11/30/2016	95
Topic: The permittee shall ensure that employees, and require that contractors, who apply pesticides and herbicides are properly trained or certified per the Virginia Pesticide Control Act (§3.2-3900 et seq. of the Code of Virginia). The requirements of the Virginia Pesticide Control Act are established by the Virginia Pesticide Control Board		
DGS Pesticide Applicator Training	4/11/2016	5
Commercial Pesticide Applicator Recertification for Henrico County General Government and Schools Employees: Categories 3B (Turf), 8 (Public Health), and 60 (Registered Technician)	4/12/2016	54
Initial Commercial Pesticide Applicator Certification Workshop – Core Review for Registered Techs (60) <i>Henrico County Public Schools, Construction and Maintenance Division</i>	6/22/2016	29
Topic: The permittee shall have a program to ensure that County plan reviewers, inspectors, program administrators and construction site operators (e.g. responsible land disturber) are trained and obtain the appropriate certifications to the extent required under the Virginia Erosion and Sediment Control Law and attendant regulations		
Erosion and Sediment Control Inspector	7/13/2016	1
Applied Soil Concepts for ESC & SWP Professionals	8/24/2016	2
Erosion and Sediment Control Inspector	10/19/2016–10/20/2016	1
Photography for Inspectors	8/23/2016	1
Soil Amendments for Inspectors	8/23/2016	2
Erosion and Sediment Control Inspector	8/25/2016–8/26/2016	1
Erosion and Sediment Control Inspector	9/25/2016–	1

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	9/26/2016	
Erosion and Sediment Control Inspector	11/17/2016-11/18/2016	2
Erosion and Sediment Control Plan Reviewer	11/29/2016-12/1/2016	1
Erosion and Sediment Control Inspector	2/16/2016-2/17/2016	1
Topic: The permittee shall have a program to ensure that the applicable County employees obtain the appropriate certifications as required under the Virginia Erosion and Sediment control Law and its attendant regulations to implement the modified stormwater management design criteria		
DEQ Permeable Pavement for VSMP Inspectors	Various	1
VA DEQ ESC & SWM Training Applied Soil Concepts for ESC & SWM	1/25/2016 – 1/26/2017	1
Stormwater Plan Reviewer	2/9/2016-2/11/2016	1
Stormwater Inspector	2/25/2016-2/26/2016	1
Stormwater Management Program Administrator	7/14/2016	1
Stormwater Management Inspector	7/27/2016-7/28/2016	1
DEQ Rooftop Connection for VSMP Inspectors	9/21/2016	2
Bioretention for VSMP Inspectors	9/21/2016	1
Stormwater Management Inspector	11/3/2016-11/4/2016	1
Crater Bay Act Training	11/19/2016	5
Stormwater Management for Inspector	12/1/2016	1
Stormwater Management Plan Reviewer	12/6/2016	1
Stormwater Management Inspector	2/25/2016-2/26/2016	1
Grass Channels for VSMP Inspectors	12/30/2016	1
Pollution Prevention for VSMP Inspectors	12/30/2016	1
Soil Compost Amendments for VSMP Inspectors	12/30/2016	2
Sheetflow to Filter Strips for VSMP	12/30/2016	2

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Inspectors		
Topic: The appropriate emergency response employees shall have training in spill response.		
SPCC Plan Spill Prevention, Control & Countermeasures (Risk Management)		189
General Awareness Training – Spill Response, Aboveground Storage Tanks, Universal Waste, Workplace Hazard Assessments, Aerosol Can Disposal, PPE Selection (Risk Management)		9
Hazmat Awareness Training	9/15/2016- 9/16/2016	111
Spill Response Awareness Online Course (Rec & Parks)	12/31/2016	95
Spill Response Training (Rec & Parks)	1/28/2016	6
Fire: HazMat update: All Division of Fire operational personnel are trained to the level of Hazardous Materials Operations (HMO). The initial HMO program consists of 40 hrs. of tested content and is provided in the employee's initial recruit training program. Annual recertification training is mandatory and ensures competency maintenance, including spill response procedures.	Multiple	512
Topic: Other		
Henrico County MS4 Workgroup (Henricopolis)	6/8/2016	1
Stormwater Inspection Team Meetings The purpose of the Stormwater Inspection Team is to educate County staff regarding good municipal	2/8/2016	8
	2/26/2016	6
	3/29/2016	4

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<p>site housekeeping and the requirements of the County's Municipal Separate Storm Sewer System (MS4) Permit as they relate to municipal facilities.</p> <p>The Stormwater Inspection Team consists of a coordinator and representatives from Recreation and Parks, General Services, Public Utilities, Fire, Public Works and Public Schools and meets monthly to inspect one municipal facility. The inspections serve as a learning experience so team members become familiar with what is expected on all municipal facilities. Team members can then conduct inspections of the facilities for which their Department or Division is responsible.</p>	4/28/2016	5
	5/25/2016	9
	6/29/2016	7
	7/28/2016	7
	8/29/2016	5
	9/29/2016	5
	10/10/2016	6
	11/8/2016	6
<p>Quarterly Environmental Meetings</p> <p>In house meetings involving all Departments/Divisions that play a role in the County's MS4 Program and other environmental-related initiatives</p>	12/8/2016	13
	2/4/2016	3
	5/5/2016	2
<p>National Dam Safety Technical Seminar</p>	10/26/2016	3
	1/17/2016-11/18/2016	2
Virginia Water Conference	3/13/2016 – 3/15/2016	3
Floodplain Management Workshop	5/4/2016	2
River Modeling Workshop	10/13/2016	1
VMFA Workshop	10/25/2016	2
AST/UST Operator Training	Annual	Varies
ESMS R-22 Recovery Training	As needed	Varies

The annual report due March 31, 2016 shall include documentation of employee emergency spill response training and/or certification.

Emergency Response Employee Spill Response Training / Certifications Attended / Obtained Between January 1, 2016 and December 31, 2016		
Event / Certification	Date	# of Individuals
SPCC Training - DPW Maintenance	5/3/2016-	115

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	5/4/2016	
Fire: HazMat update: All Division of Fire operational personnel are trained to the level of Hazardous Materials Operations (HMO). The initial HMO program consists of 40 hrs. of tested content and is provided in the employee's initial recruit training program. Annual recertification training is mandatory and ensures competency maintenance, including spill response procedures.	Multiple	512
Fire: Hazmat update: Many Division of Fire personnel participate in additional hazardous materials training programs, such as Hazmat Technician and Hazmat Specialist. Initial training for these programs include 80 and 240 hours of tested content, respectfully. These higher levels of certification mandate 24 hours of additional recertification training annually. Personnel at the Hazmat Technician and Hazmat Specialist level provide additionally on-duty resources to respond to spills and emergencies throughout the community.	Multiple	63 Hazmat Technicians & 36 Hazmat Specialists
Risk Management conducted Spill Prevention Control and Countermeasure (SPCC) training		189
Spill Prevention Control and Countermeasure (SPCC) training for DGS	Jan/Feb 2016	15
Spill Prevention Control and Countermeasure (SPCC) training for CAM		70
Spill Prevention Control and Countermeasure (SPCC) training for Water Treatment Facility		16
General Spill Response Training		9

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PART I.B.2.I

MS4 PROGRAM IMPLEMENTATION WATER QUALITY SCREENING PROGRAMS

Each annual report shall include the total number of outfalls included as part of the permittee's MS4, the number of outfalls screened during the reporting period, a list of locations upon which dry weather screening was conducted, the results, and any follow-up actions including maintenance and/or repair of infrastructure or outfalls performed as a result of the dry weather screening.

# of MS4 Outfalls	3,244
-------------------	-------

# of Outfalls Screened between 1/1/2016 and 12/31/2016*	1,265
--	-------

* includes all end treatments for which a Screening Inspection was conducted, not just those that are identified as MS4 Outfalls

Dry Weather Screening Conducted between 1/1/2016 and 12/31/2016		
MS4 Outfall	Findings	Follow-Up Action
EN000000000241	No Issues Identified	None Necessary
EN000000000242	No Issues Identified	None Necessary
EN000000000247	No Issues Identified	None Necessary
EN000000000251	No Issues Identified	None Necessary
EN000000000252	No Issues Identified	None Necessary
EN000000000308	No Issues Identified	None Necessary
EN000000000315	Flow & Chlorine Positive	Forward to IDDE
EN000000000317	Flow & Chlorine Positive	Forward to IDDE
EN000000000350	No Issues Identified	None Required
EN000000000353	No Issues Identified	None Required
EN000000000355	No Issues Identified	None Required
EN000000000374	No Issues Identified	None Required
EN000000000433	No Issues Identified	None Required

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EN000000000437	No Issues Identified	None Required
EN000000000446	No Issues Identified	None Required
EN000000000447	No Issues Identified	None Required
EN000000000452	No Issues Identified	None Required
EN000000000502	No Issues Identified	None Required
EN000000000503	No Issues Identified	None Required
EN000000000504	No Issues Identified	None Required
EN000000000509	No Issues Identified	None Required
EN000000000514	No Issues Identified	None Required
EN000000000515	No Issues Identified	None Required
EN000000000516	No Issues Identified	None Required
EN000000000520	No Issues Identified	None Required
EN000000000536	No Issues Identified	None Required
EN000000000553	No Issues Identified	None Required
EN000000000564	No Issues Identified	None Required
EN000000000646	No Issues Identified	None Required
EN000000000653	No Issues Identified	None Required
EN000000000655	No Issues Identified	None Required
EN000000000659	No Issues Identified	None Required
EN000000000663	No Issues Identified	None Required
EN000000000666	No Issues Identified	None Required
EN000000000719	No Issues Identified	None Required
EN000000001370	No Issues Identified	None Required
EN000000001372	No Issues Identified	None Required
EN000000001455	No Issues Identified	None Required
EN000000001458	No Issues Identified	None Required
EN000000001477	No Issues Identified	None Required
EN000000001479	No Issues Identified	None Required
EN000000001592	No Issues Identified	None Required
EN000000001604	No Issues Identified	None Required
EN000000001607	No Issues Identified	None Required
EN000000001608	No Issues Identified	None Required
EN000000001609	No Issues Identified	None Required
EN000000001610	No Issues Identified	None Required
EN000000001704	No Issues Identified	None Required
EN000000001782	No Issues Identified	None Required
EN000000001791	No Issues Identified	None Required

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EN000000001854	No Issues Identified	None Required
EN000000001916	No Issues Identified	None Required
EN000000001987	No Issues Identified	None Required
EN000000002009	No Issues Identified	None Required
EN000000002010	No Issues Identified	None Required
EN000000002058	No Issues Identified	None Required
EN000000002085	No Issues Identified	None Required
EN000000002294	No Issues Identified	None Required
EN000000002298	No Issues Identified	None Required
EN000000002388	No Issues Identified	None Required
EN000000002677	No Issues Identified	None Required
EN000000002730	No Issues Identified	None Required
EN000000002789	No Issues Identified	None Required
EN000000002816	No Issues Identified	None Required
EN000000002935	No Issues Identified	None Required
EN000000003089	No Issues Identified	None Required
EN000000003092	No Issues Identified	None Required
EN000000003093	No Issues Identified	None Required
EN000000003155	No Issues Identified	None Required
EN000000003784	No Issues Identified	None Required
EN000000003821	No Issues Identified	None Required
EN000000003920	No Issues Identified	None Required
EN000000004035	No Issues Identified	None Required
EN000000004174	Concrete Deterioration	Forwarded to Road Department
EN000000004454	No Issues Identified	None Required
EN000000004501	No Issues Identified	None Required
EN000000004592	No Issues Identified	None Required
EN000000004637	No Issues Identified	None Required
EN000000004937	Flow with sewage smell	Forwarded to IDDE
EN000000006118	No Issues Identified	None Required
EN000000006162	No Issues Identified	None Required
EN000000006163	No Issues Identified	None Required
EN000000006164	No Issues Identified	None Required
EN000000006165	No Issues Identified	None Required
EN000000006166	No Issues Identified	None Required
EN000000006167	No Issues Identified	None Required
EN000000006194	No Issues Identified	None Required

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EN000000006215	No Issues Identified	None Required
EN000000006643	No Issues Identified	None Required
EN000000006854	No Issues Identified	None Required
EN000000006881	No Issues Identified	None Required
EN000000006882	No Issues Identified	None Required
EN000000007776	No Issues Identified	None Required
EN000000007804	No Issues Identified	None Required
EN000000007824	No Issues Identified	None Required
EN000000007871	No Issues Identified	None Required
EN000000008620	No Issues Identified	None Required
EN000000008657	No Issues Identified	None Required
EN000000012129	No Issues Identified	None Required
EN000000013076	No Issues Identified	None Required

Follow-Up Actions Performed as a Result of the Dry Weather Screening Conducted between 1/1/2016 and 12/31/2016	
MS4 Structure	Follow-Up Action
EN000000000315	11/9/2016 DPW forwarded this location to DPU as a potential water leak
EN000000000317	11/1/2016 DPW forwarded this location to DPU as a potential water leak
EN000000004174	12/22/2016 Road Department said there is no work needed as the exposed rebar and missing concrete are not affecting pipe function.
EN000000004937	<p>4/6/2016 DPW checked all the stormwater structures in the area and determined the flow was coming from the townhomes/apartments nearby. Building Inspections was notified and DPU is checking the County's sanitary system in the area.</p> <p>4/27/2016 A letter was sent to the owners of the townhomes, after several weeks of investigating, about the potential sewage issue.</p> <p>6/6/2016 DPW had not received a phone call from the Townhomes therefore we made another site visit but the offices were closed. DPW staff talked to one of the maintenance staff about the potential discharge and they said they would speak with the office manager and get them to call us. Learned the</p>

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	<p>letter was sent to the wrong company. (Never heard from manager or anyone else).</p> <p>8/1/2016 DPW made another site visit and checked the stormsewer structures and determined water was still flowing however there was no sewage odor detected. During this visit DPW staff spoke with property manager. DPU was contacted again to check the County's sanitary sewer for a leak.</p> <p>8/8/2016 DPU tested the sanitary line and they did not find a leak.</p> <p>8/17/16 An e.coli test was conducted on 8/17/16 and only 3 colony forming units were counted for e. Coli – based on this it is not believed the running water is sewage.</p>
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The annual report due March 31, 2016 shall include the written procedures for wet weather screening.

DPW will develop a list of MS4 structures subject to wet weather screening based on the areas of concern as identified by the County that are within the drainage area to the MS4 structure, including:

- (1) fertilizer storage yards,
- (2) mulch / soil storage yards,
- (3) building supply storage yards,
- (4) used automobile lots,
- (5) construction equipment storage areas,
- (6) automobile salvage yards, and
- (7) areas of previously identified spill / IDDE complaints.

DPW will screen no fewer than 25 of the MS4 structures identified as subject to wet weather screening each year between January 1, 2016 and December 31, 2019.

DPW will screen no fewer than 10 of the MS4 structures identified as subject to wet weather screening between January 1, 2020 and March 31, 2020.

The MS4 structures will be subject to the established inspection procedure, evaluating identified flows and maintenance and repair needs.

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Depending on the information observed and gathered during the wet weather screening inspections, identified flows may need to be sampled to determine the source of the flow. Whether or not samples are collected, suspected illicit discharges will be forwarded to the IDDE investigator as a potential illicit discharge for follow-up.

Each annual report shall include a list of locations upon which wet weather screening was conducted, the results, weather conditions at the time sample was collected to include date and approximate time of most recent storm event preceding sample collection, long term trends analyses, and any follow-up actions including maintenance and/or repair of infrastructure or outfalls performed as a result of the wet weather screening.

Wet Weather Screening Conducted between 1/1/2016 and 12/31/2016				
MS4 Structure	Last Significant Rainfall	Findings	Sample Collected	Weather Conditions at the time of Sample
IN000000005255	< 2 days	No Issues	No	N/A
IN000000005348	< 2 days	Concrete Deterioration	No	N/A
IN000000006675	< 2 days	Sinkhole	No	N/A
IN000000016229	< 2 days	No Issues	No	N/A
IN000000017217	< 2 days	No Issues	No	N/A
IN000000017218	< 2 days	No Issues	No	N/A
IN000000017287	< 2 days	No Issues	No	N/A
IN000000017306	< 2 days	No Issues	No	N/A
IN000000018108	< 2 days	No Issues	No	N/A
IN000000019105	< 2 days	Concrete Deterioration	No	N/A
IN000000019153	< 2 days	Concrete	No	N/A

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		Deterioration		
IN000000020956	< 2 days	No Issues	No	N/A
IN000000021618	< 2 days	No Issues	No	N/A
IN000000023802	< 2 days	No Issues	No	N/A
IN000000023806	< 2 days	No Issues	No	N/A
IN000000025347	< 2 days	Concrete Deterioration	No	N/A
IN000000040144	< 2 days	No Issues	No	N/A
IN000000045985	< 2 days	No Issues	No	N/A
IN000000048556	< 2 days	Submerged	No	N/A
MH000000003146	< 2 days	No Issues	No	N/A
MH000000003148	< 2 days	No Issues	No	N/A
MH000000007378	< 2 days	No Issues	No	N/A
MH000000007637	< 2 days	No Issues	No	N/A
MH000000007691	< 2 days	No Issues	No	N/A
MH000000007692	< 2 days	No Issues	No	N/A

The data does not lend itself to an analysis of any long term trends at this time.

Follow-Up Actions Performed as a Result of the Wet Weather Screening Conducted between 1/1/2016 and 12/31/2016	
MS4 Structure	Follow-Up Action
IN000000005348	12/27/2016 Road Department said there is no work needed. The inlet was forwarded to the Construction Division to have the DI-3 top replaced and curb replacement.
IN000000019105	10/15/2016 Road Department said there is no work done by them. They forwarded the location to Construction Division for curb replacement.
IN000000019153	11/30/2016 Road Department added top soil behind the inlet and

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	added cement to the right corner of the inlet.
IN000000025347	11/10/2016 Road Department added concrete to the left side of the inlet.
IN000000048556	10/31/2016 Road Department has an open work order to jet the inlet and clean the ditch leading from the inlet; work has not been completed.

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PART I.B.2.m

MS4 PROGRAM IMPLEMENTATION INFRASTRUCTURE COORDINATION

Annual Coordination Meeting – The permittee shall meet annually with VDOT for purposes of overall coordination on priority issues for the permittee’s MS4 program plan (including operations and maintenance elements) and TMDL action planning relevant to the interconnectivity of the MS4s.

The Annual Coordination Meeting was held on October 27, 2016 at the Henrico County Department of Public Works' office. The following were in attendance:

Tracey Harmon	VDOT
Chris Swanson	VDOT
Jacob Bauckman	VDOT
Scott Crafton	VDOT
Jennifer Welch	Henrico County
Keith White	Henrico County

Mapping – The permittee shall inform VDOT of the status of its mapping program, identifying any uncertainty regarding ownership or actual location of MS4 components associated with the physically-interconnected MS4s, and working to resolve such uncertainty. The permittee shall coordinate with VDOT to identify any areas within the permittee’s municipal boundaries that drain to the VDOT MS4.

Both VDOT and Henrico discussed their mapping efforts. Henrico will make its mapping available to VDOT to assist with identification of areas within the county that drain to VDOT's MS4.

Chesapeake Bay TMDL Action Plans – The permittee shall inform VDOT of the means, methods, and schedule by which the permittee will implement the reductions required by the Chesapeake Bay TMDL Special Condition (Part I.D.1) when those means and methods may impact the physically-interconnected MS4s. The parties are encouraged to cooperate with one another where the siting or design of best management practices (BMPs) may be accelerated or otherwise

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improved by mutual cooperation.

Henrico's Chesapeake Bay TMDL Action Plan is available on its website.

The permittee shall coordinate with VDOT to identify any areas within the permittee's municipal boundaries that drain to the VDOT MS4 and are unaccounted for in the Chesapeake Bay TMDL Action Plan developed by VDOT or the permittee. The unaccounted areas shall be quantified (acres) in the Chesapeake Bay TMDL Action Plan submitted by the permittee.

Henrico's Action Plan quantifies the areas accounted for (and unaccounted for) in the load reduction calculations.

Other TMDL Action Plans – The permittee shall inform VDOT of TMDL Action Plans and major milestones implemented for other (i.e., non-Chesapeake Bay) TMDLs when those plans may impact the physically-interconnected MS4s. The parties are encouraged to cooperate with one another where the siting or design of BMPs may be accelerated or improved by mutual cooperation.

Henrico Other TMDL Action Plans are available on its website.

Credit for TMDL Implementation – Permit specific BMP retrofit requirements shall not be double-counted in the calculation of load reductions. If the permittee undertakes the project, the permittee shall be entitled to full credit for the project, but may share credit with VDOT on mutually agreeable terms, which shall be in writing.

During the development of the TMDL Action Plans, Henrico did not include any projects that could potentially involves "double-counting" of pollutant reductions achieved in the physically-interconnected MS4.

Illicit Discharge Detection & Elimination – The permittee shall continue to be responsible for implementing a program for illicit discharge detection and elimination, including dry weather field screening, for the permittee's portion of the physically-interconnected MS4. As part of the annual coordination meeting, described in item (1) above, the permittee shall coordinate with VDOT on the

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identification of high risk industrial facilities. The permittee shall establish procedures for notifying VDOT when an illicit discharge is identified in the VDOT MS4.

Henrico discussed its identification of high risk industrial facilities in accordance with the MS4 permit and Henrico will continue to implement an illicit detection and elimination (IDDE) program. When an illicit discharge that drains to the physically-interconnected MS4 is found, Henrico will notify VDOT and DEQ via email.

Water Quality Monitoring – The permittee shall conduct water quality monitoring as required by Part I.B.2.l) and Part I.C of this state permit. The permittee shall make available to VDOT all monitoring data collected from areas where the physically-interconnected MS4 discharges to the VDOT MS4 or received flow from the VDOT MS4. The permittee and VDOT are encouraged to cooperate with one another to establish a joint monitoring network.

Henrico discussed the water quality monitoring provisions of the MS4 Permit and any monitoring data collected from areas that drain into or from the physically-interconnected MS4 will be made available to VDOT.

PART I.C.1
MONITORING REQUIREMENTS
BIOLOGICAL STREAM MONITORING

Each annual report shall include a summary of the monitoring results, analyses, and an interpretation of that data with respect to long-term patterns/trends.

Taxa Richness

Taxa Richness is the number of different taxa represented in an ecological community. Taxa Richness is simply a count of the taxa, and it does not take into account the relative abundances of the taxa. Taxa Richness for the 2016 Sampling Year was similar to previous years' data. At most of the stream sampling sites during 2016, there was a decrease in Taxa Richness between the spring sampling event and the fall sampling event. Taxa Richness is expected to decrease with increasing perturbation.

EPT Index

The EPT Index is a subset of the above Richness measure. It is the number of species/taxa in the sample in the generally more environmentally sensitive orders Ephemeroptera, Plecoptera, and Trichoptera. The EPT Index for the 2016 Sampling Year was similar to previous years' data. There was also similarity between the spring sampling event and the fall sampling event. The EPT Index is expected to decrease with increasing perturbation.

Dominant Taxon

The Dominant Taxon is a percentage measurement. It measures the percent abundance of individuals in the single most abundant taxon. In most cases there was an increase in this measurement between the spring sampling event and the fall sampling event. This measurement is expected to increase with increasing perturbation.

Hilsenhoff Biotic Index

The Hilsenhoff Biotic Index (HBI) estimates the overall tolerance of the community in a sampling area, weighted by the relative abundance of each taxonomic group

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(family, genus, etc.). Organisms are assigned a tolerance number from 0 to 10 pertaining to the group's known sensitivity to organic pollutants; 0 being most sensitive, 10 being most tolerant. HBI values range from 0 to 10. Low HBI values reflect a higher abundance of sensitive groups, thus a lower level of pollution. While there is much similarity with previous years' data, overall HBI scores decreased between the spring sampling event and the fall sampling event.

% Gatherers

This measures the percent abundance of individuals in the sample whose primary functional mechanism for obtaining food (functional feeding group (FFG)) is to collect/gather depositional organic matter. This percentage is expected to decrease with increasing perturbation for the stream. These measurements increased when compared to data collected in prior years. However, it decreased from the spring sampling event to the fall sampling event.

% Predators

This measures the percent abundance of individuals in the sample whose primary functional mechanism for obtaining food (FFG) is to attack prey and ingest whole organisms or their parts. This measurement is variable and difficult to determine if it should increase or decrease with increasing perturbation. This measurement increased for the spring sampling event to the fall sampling event at 3 out of the 5 monitoring sites.

% Scrapers

This measures the percent abundance of individuals in the sample whose primary functional mechanism for obtaining food (FFG) is to graze on substrate or periphyton-attached algae and associated material. This metric is expected to decrease with increasing perturbation. The majority of the monitoring stations showed an increase in this measurement from the spring sampling event to the fall sampling event.

Summary/Conclusions

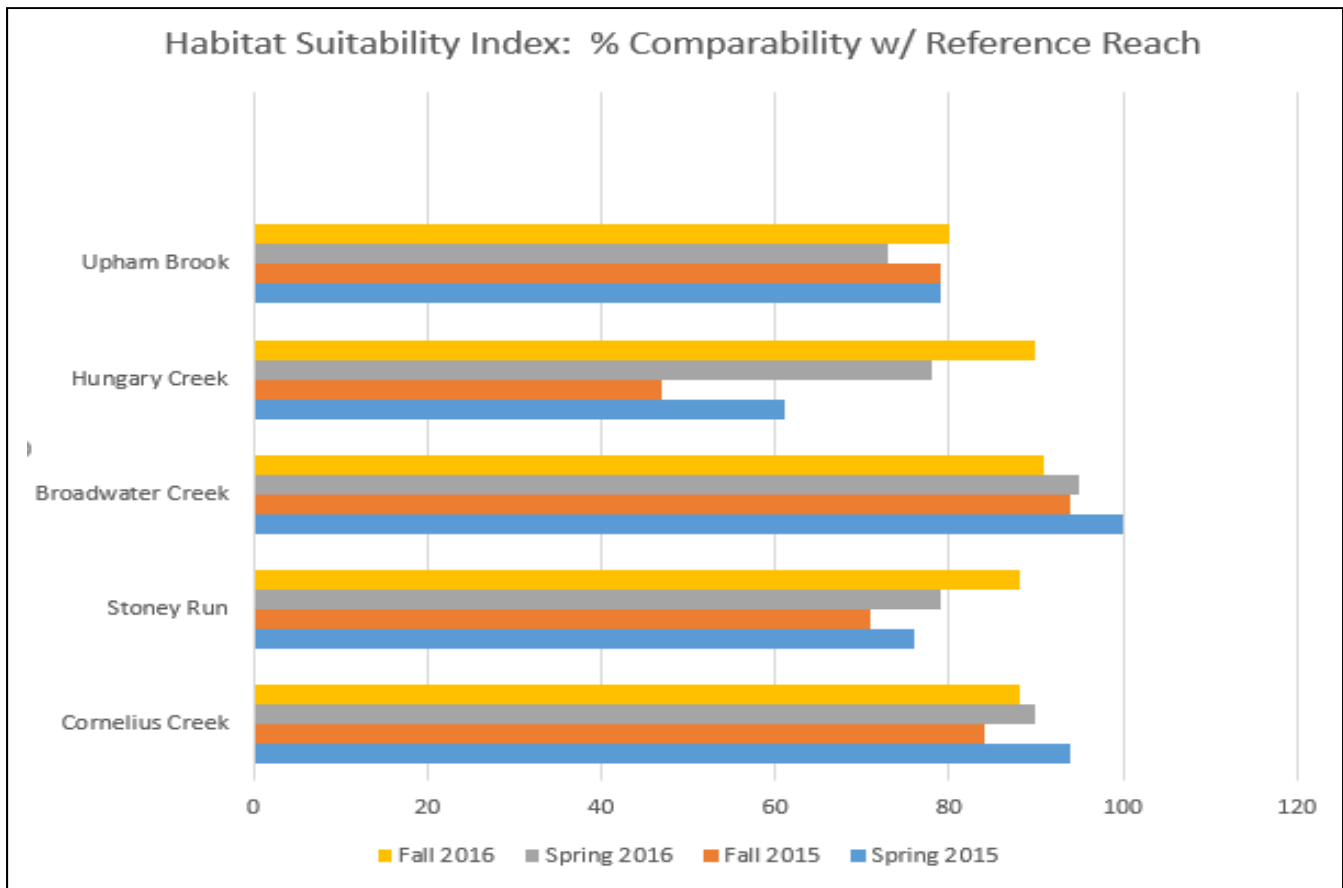
Habitat Suitability Data for the 2016 sampling year showed minor increases between the spring sampling event and the fall sampling event at all five monitoring sites. The Biological Condition Index for the 2016 sampling year showed only minor differences between the spring sampling event and the fall sampling event at all five monitoring sites.

The integrity of the Access Database used to calculate prior year's metric scores has

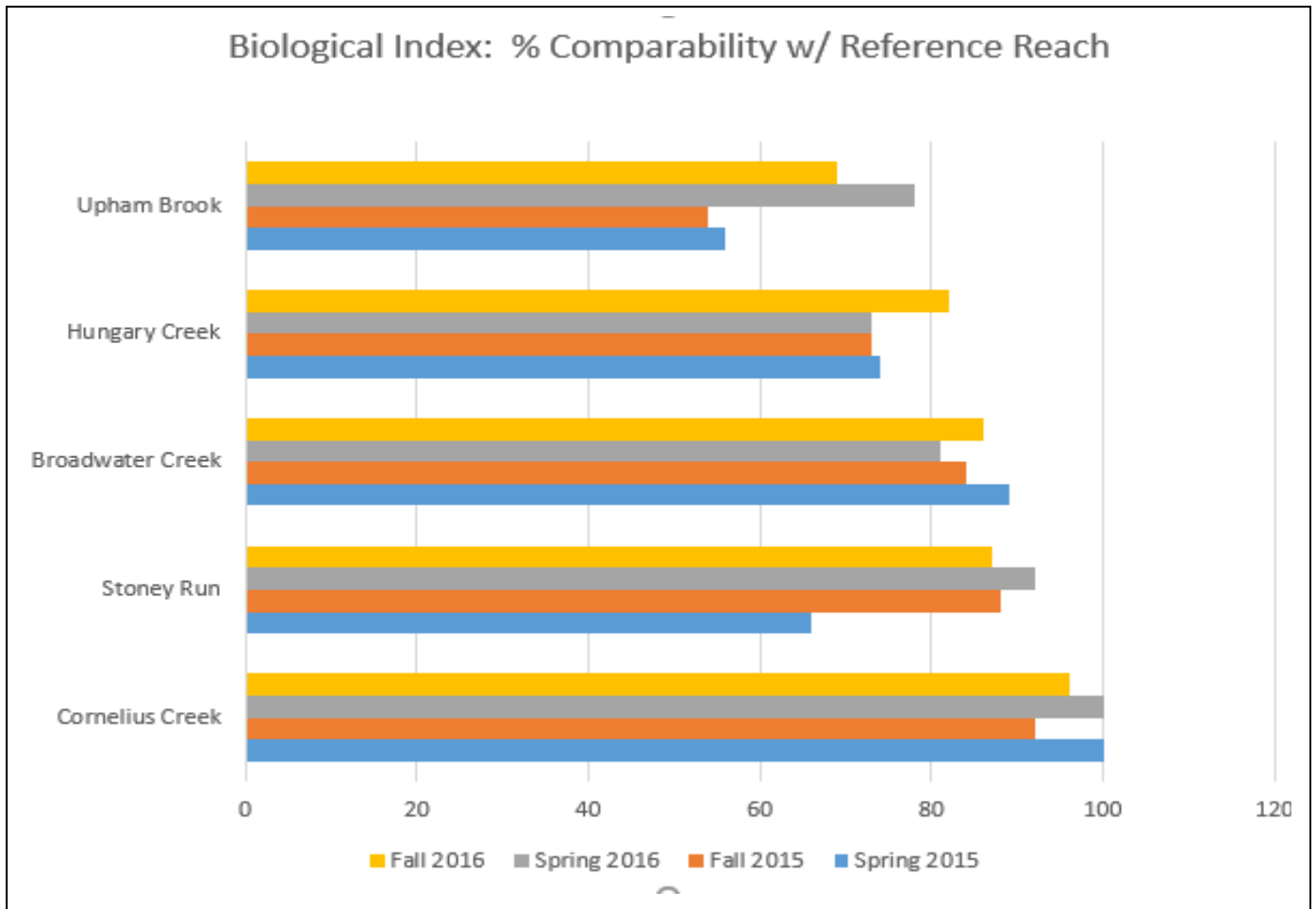
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become compromised. Therefore, it is difficult to compare this year's Biological Condition Index data with prior years' data. Because of this issue, long term trends cannot be easily determined. Habitat data is readily available within the Access Database, and no significant differences are noted when comparing 2015 habitat data with prior years' habitat data. The following graphs depict the Biological Condition Indices and the Habitat Suitability Indices for the 2015 and 2016 sampling years.

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Summary of Stream Habitat Assessment Result

Henrico County Stream Bioassessment Program 1/1/2016 through 6/30/2016

		Scoring Range	Reference		
		Poor to Optimal	Hnr2001Lo	CRC07.S01	DSR04.S01 HL
<u>Substrate and Instream Cover</u>					
Epifaunal substrate/available cover		0-20	17	13	13
Pool substrate characterization		0-20	16	11	18
Pool variability		0-20	17	10	6
<u>Channel Morphology</u>					
Sediment deposition		0-20	14	18	17
Channel flow status		0-20	16	15	11
Channel alteration		0-20	18	18	11
Channel sinuosity		0-20	15.5	16	18
<u>Riparian and Bank Structure</u>					
Bank stability	Left Bank	0-10	8	6	6
Bank stability	Right Bank	0-10	8.5	7	5
Bank vegetation protection	Left Bank	0-10	7	7	7
Bank vegetation protection	Right Bank	0-10	8	9	6
Riparian vegetative zone width	Left Bank	0-10	10	10	3
Riparian vegetative zone width	Right Bank	0-10	10	8	9
Total Score			165	148	130
Percent of Reference Site				90	79
Resulting Habitat Suitability					Supporting Cc

Habitat Criteria

>90% = Comparable to reference

75-89 = Supporting

60 - 74 = Partially supporting

<59 = non supporting

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Henrico County 2016 Bioassessment Metrics

Spring Bioassessments	Cornelius Creek	Stoney Run	Broadwater Creek	Hungary Creek	Upham Brook	Reference Reach
Taxa Richness	42	28	31	22	17	49
EPT Index	16	7	7	2	3	8
% Dominant Taxon	26.07	35.97	26.97	91.39	42.48	14.47
HBI	4.75	5.36	6.03	6	6.22	5.52
% Gatherers	53.99	59.88	9.98	95.17	88.94	37.82
% Predators	5.06	9.29	13.13	2.08	1.77	10.77
% Scrapers	17.48	2.57	19.44	0.19	0.22	14.38
Fall Bioassessments	Cornelius Creek	Stoney Run	Broadwater Creek	Hungary Creek	Upham Brook	Reference Reach
Taxa Richness	30	20	24	22	13	49
EPT Index	9	6	5	4	2	8
% Dominant Taxon	25.12	32.29	31.03	33.44	30.58	14.47
HBI	5.34	5.07	5.75	5.88	5.99	5.52
% Gatherers	33.49	50.86	11.72	46.88	67.77	37.82
% Predators	16.28	9.14	8.05	14.06	2.48	10.77
% Scrapers	7	16	72.64	0.94	2.48	14.38

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PART I.C.1

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Henrico County 2016 Bioassessment Metric Scores

Spring Bioassessments	Cornelius Creek	Stoney Run	Broadwater Creek	Hungary Creek	Upham Brook	Reference Reach
Taxa Richness	98	65	72	51	40	114
EPT Index	145	64	64	18	27	73
% Dominant Taxon	87	75	86	10	68	101
HBI	77	68	58	59	56	66
% Gatherers	142	158	26	250	234	100
% Predators	42	77	109	17	15	90
% Scrapers	36	5	40	0	0	29
Total:	90	73	65	58	63	80
% Comparability w/ Reference Reach:	100	92	81	73	78	
Biological Condition:	Non-impaired	Non-impaired	Non-impaired	Slightly Impaired	Slightly Impaired	

Fall Bioassessments	Cornelius Creek	Stoney Run	Broadwater Creek	Hungary Creek	Upham Brook	Reference Reach
Taxa Richness	70	47	56	51	30	114
EPT Index	82	55	45	36	18	73
% Dominant Taxon	88	80	81	78	82	101
HBI	69	73	63	61	59	66
% Gatherers	88	134	31	123	178	100
% Predators	136	76	67	117	21	90
% Scrapers	14	33	148	2	5	29
Total	78	71	70	67	56	82
% Comparability w/ Reference Reach:	96	87	86	82	69	
Biological Condition:	Non-impaired	Non-impaired	Non-impaired	Non-impaired	Slightly Impaired	

Biological Condition Criteria

0-22% - Severely Impaired

23-50% - Moderately Impaired

51-78% - Slightly Impaired

79-100% - Non-impaired

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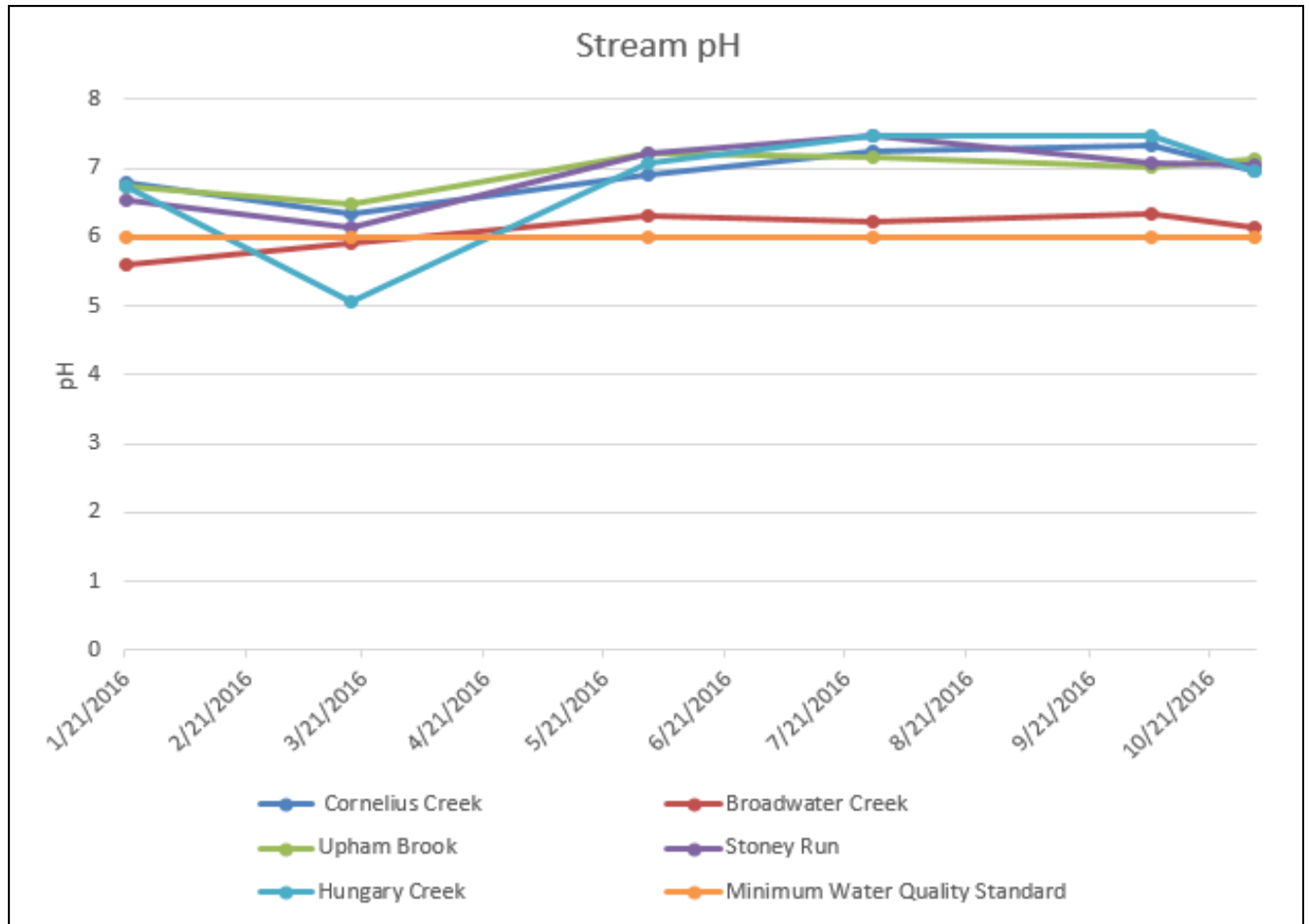
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PART I.C.2
MONITORING REQUIREMENTS
IN-STREAM MONITORING

Beginning with the annual report due March 31, 2017, each annual report shall include a summary of the monitoring results and analyses and an interpretation of that data with respect to long-term patterns/trends.

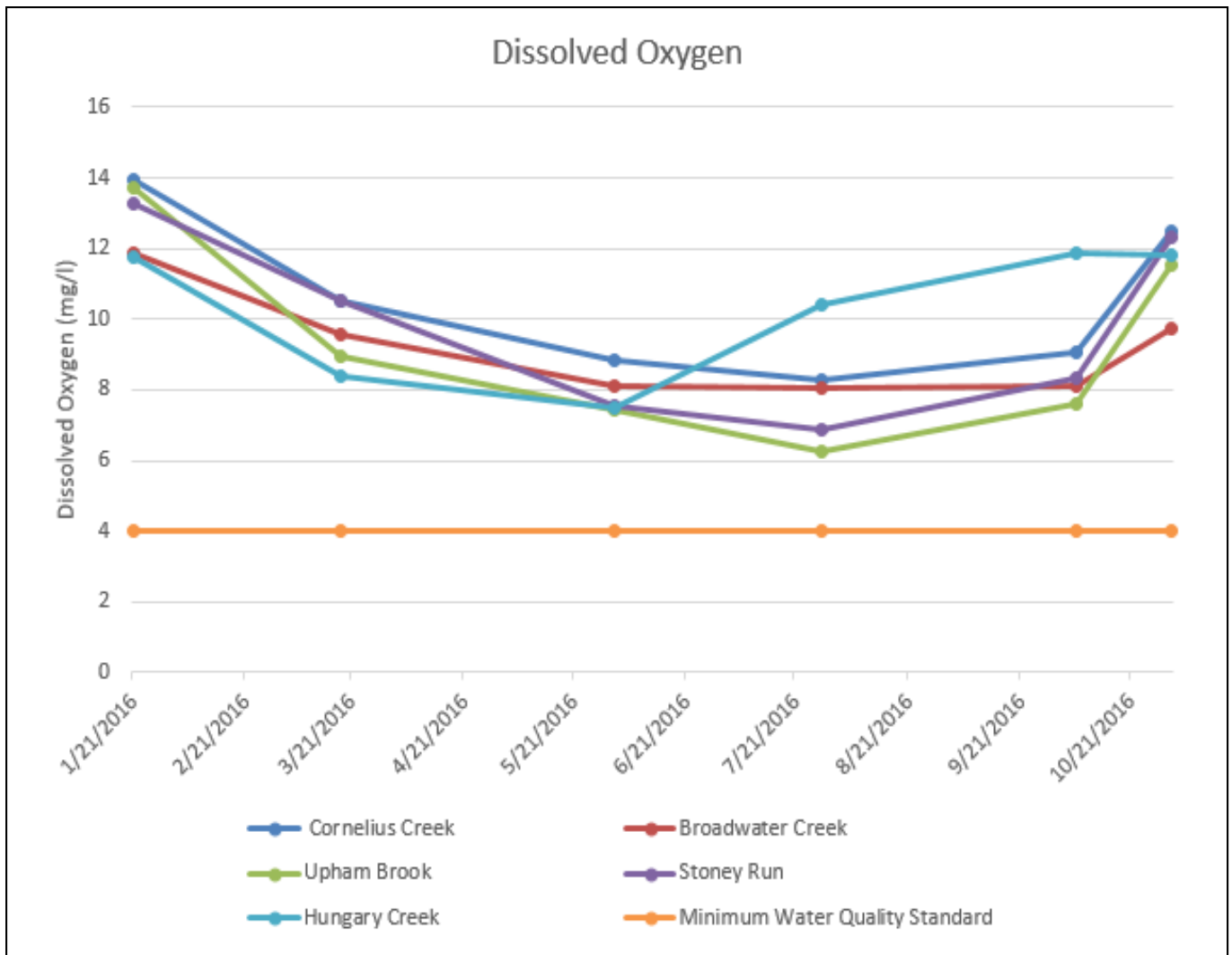
Each data point on the following graphs represents the data collected during this reporting period. Where available, the appropriate Water Quality Standard is also included on the graph. Not enough data have been collected to show statistically significant trends since monitoring began under the NPDES MS4 monitoring plan. Additional monitoring over time will be needed to move toward statistical relevance of the data.

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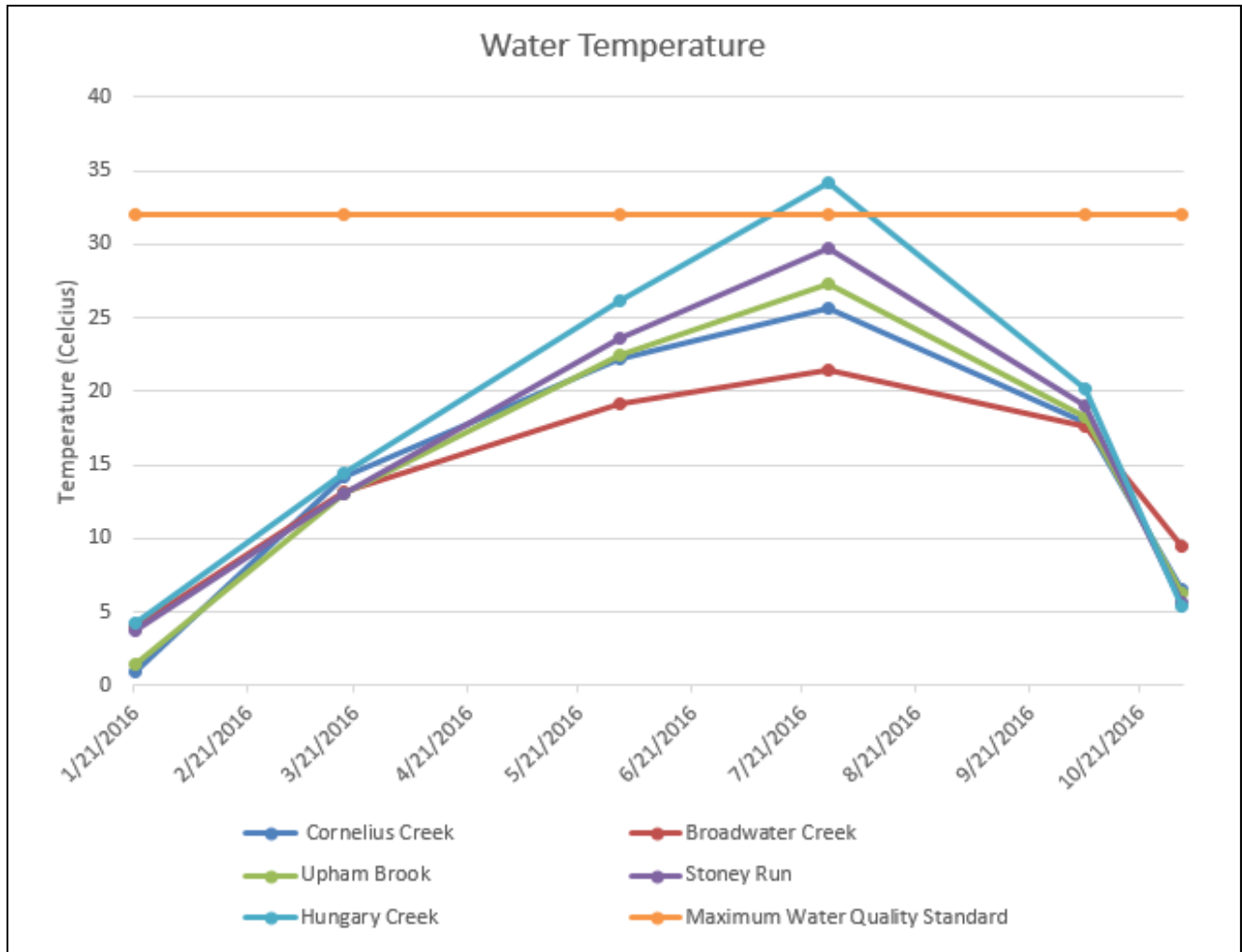


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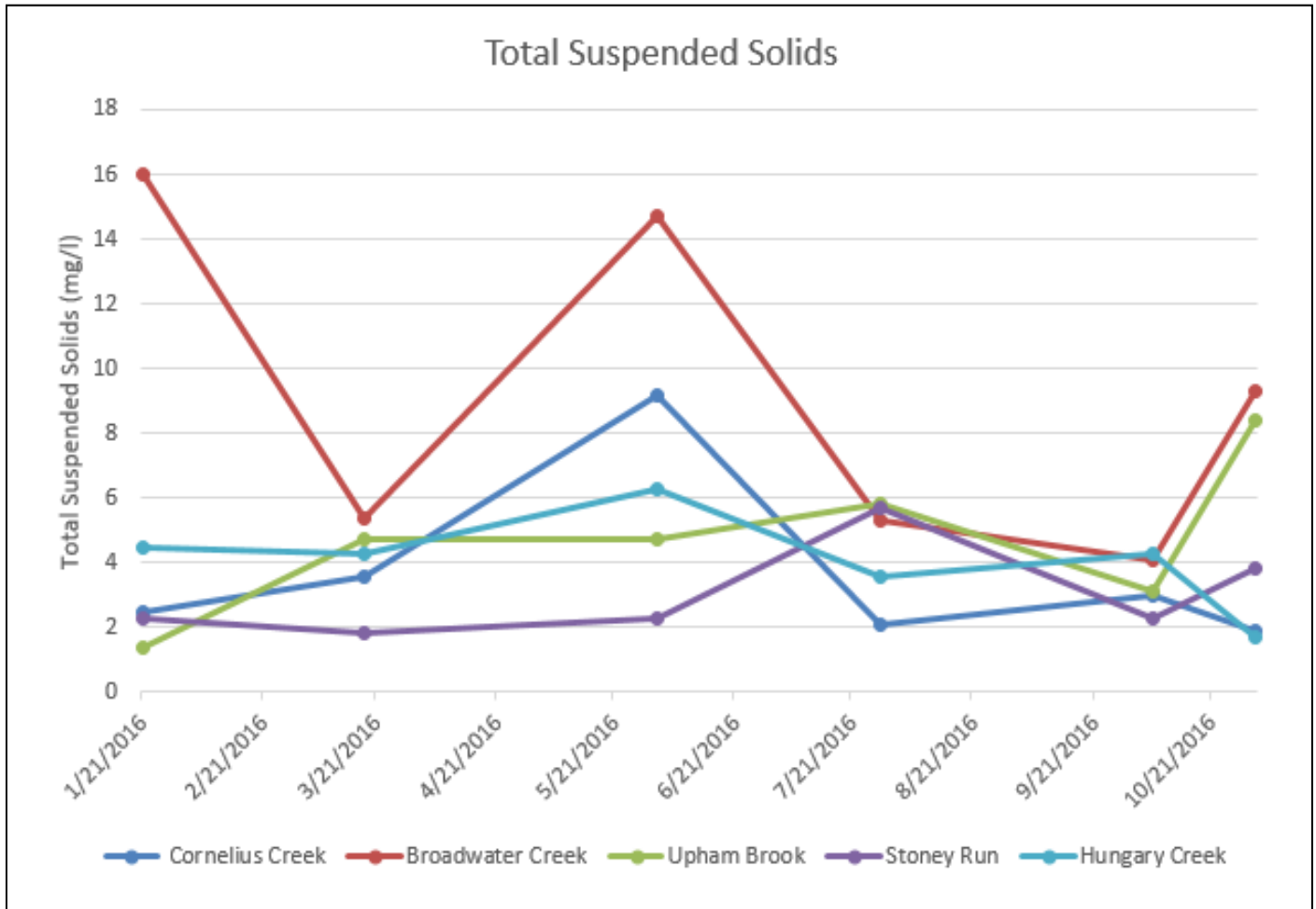
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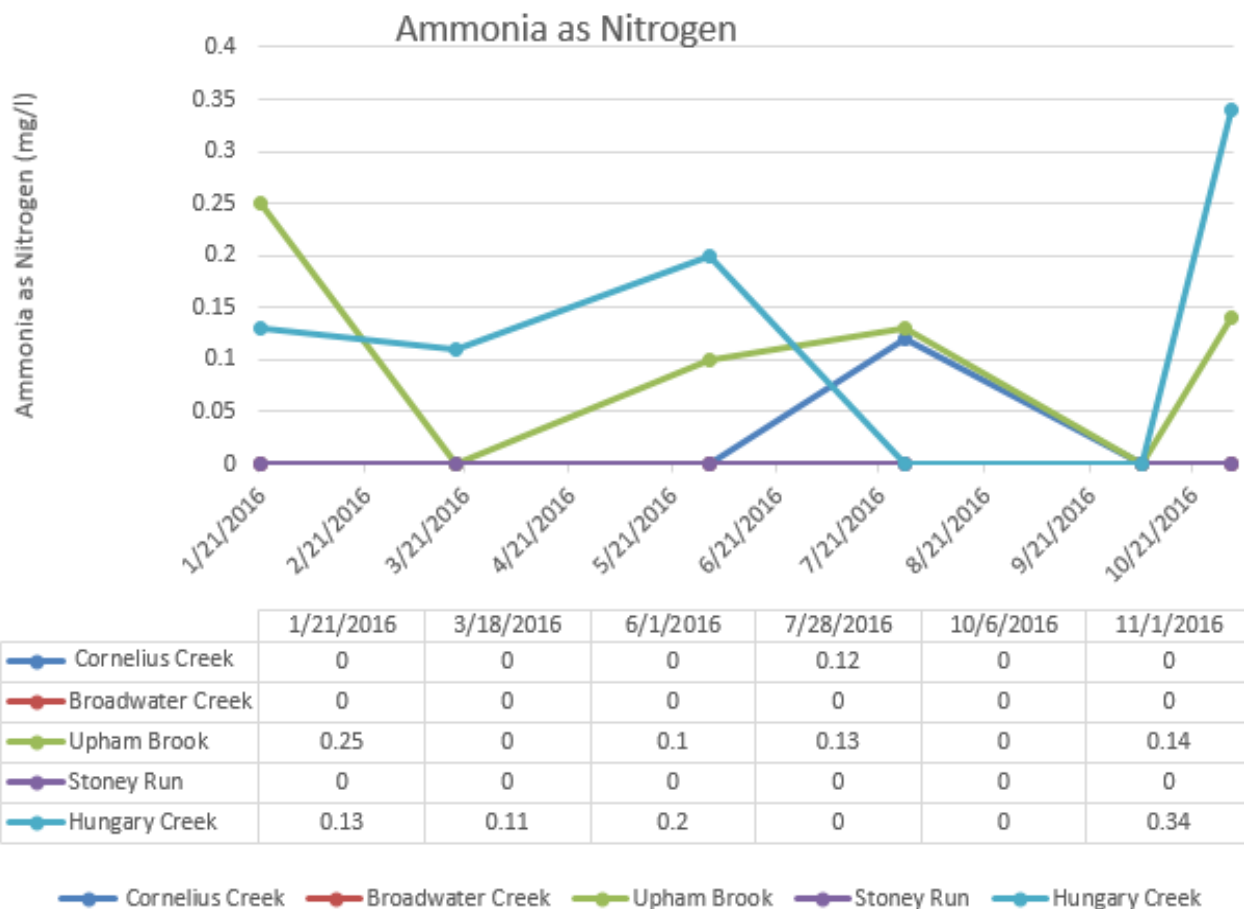
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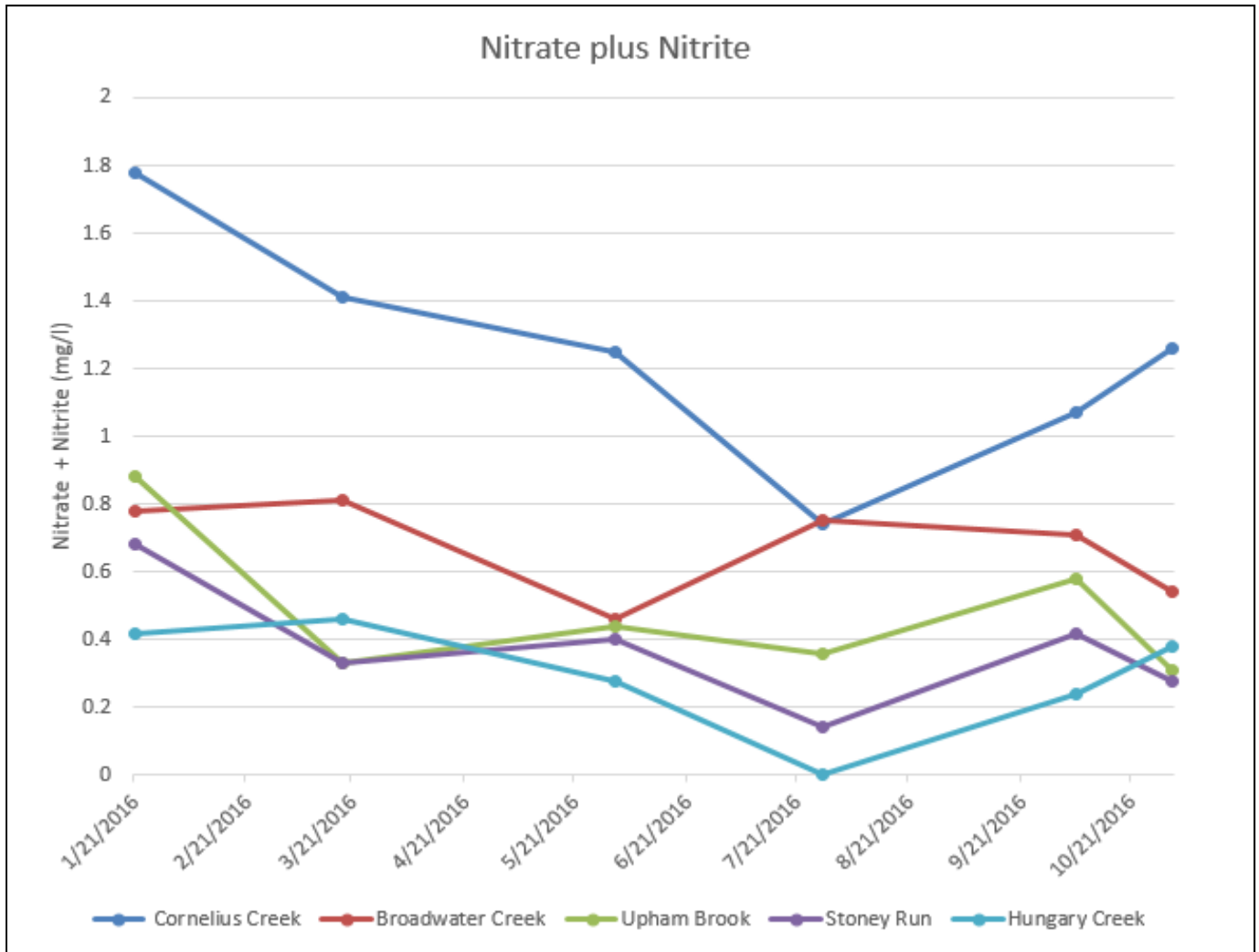


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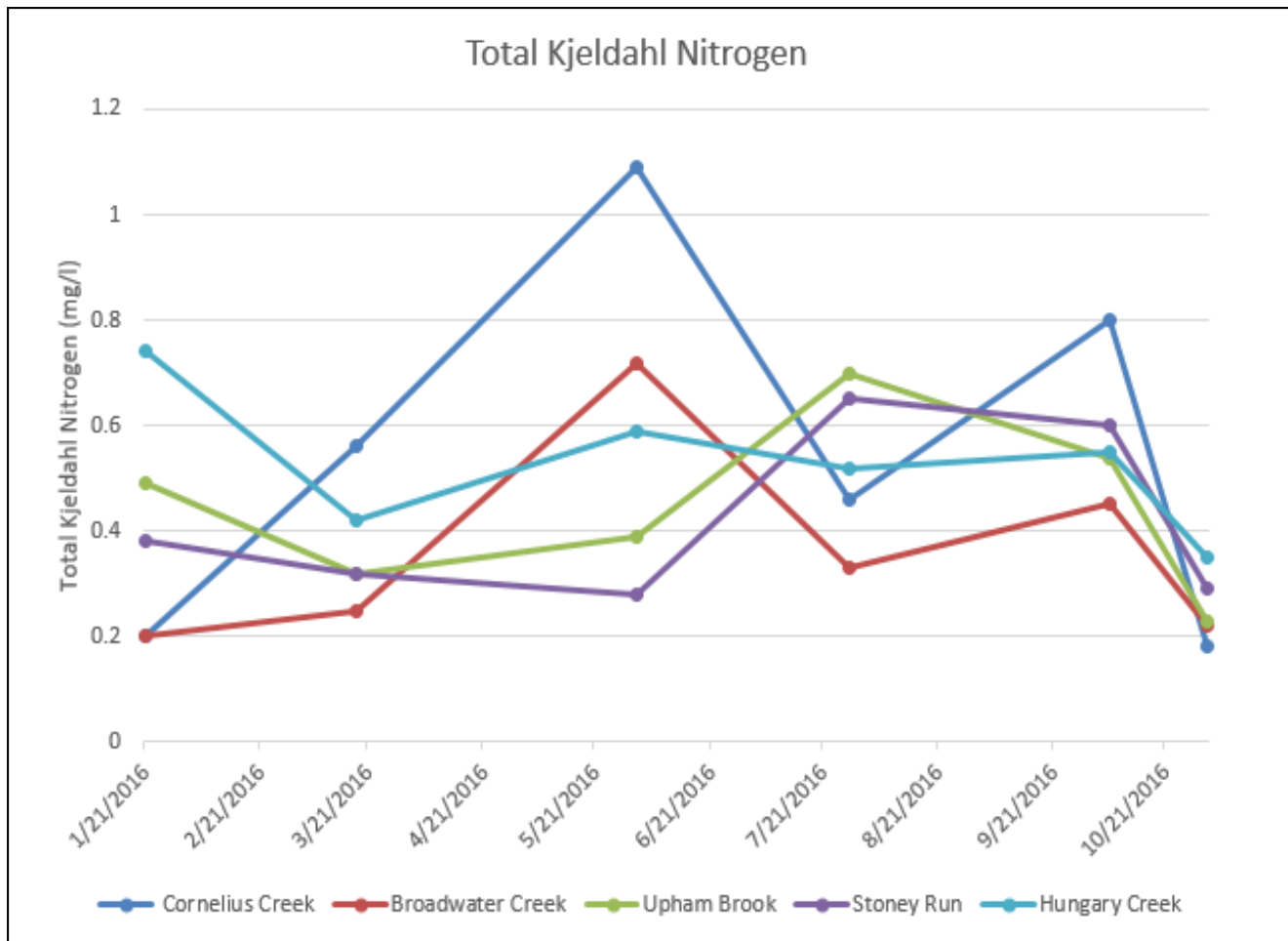
Note: Most Ammonia as Nitrogen measurements were Below Quantitation Limits and have been recorded for this graph as Zero.

HENRICO COUNTY MS4 PROGRAM PLAN

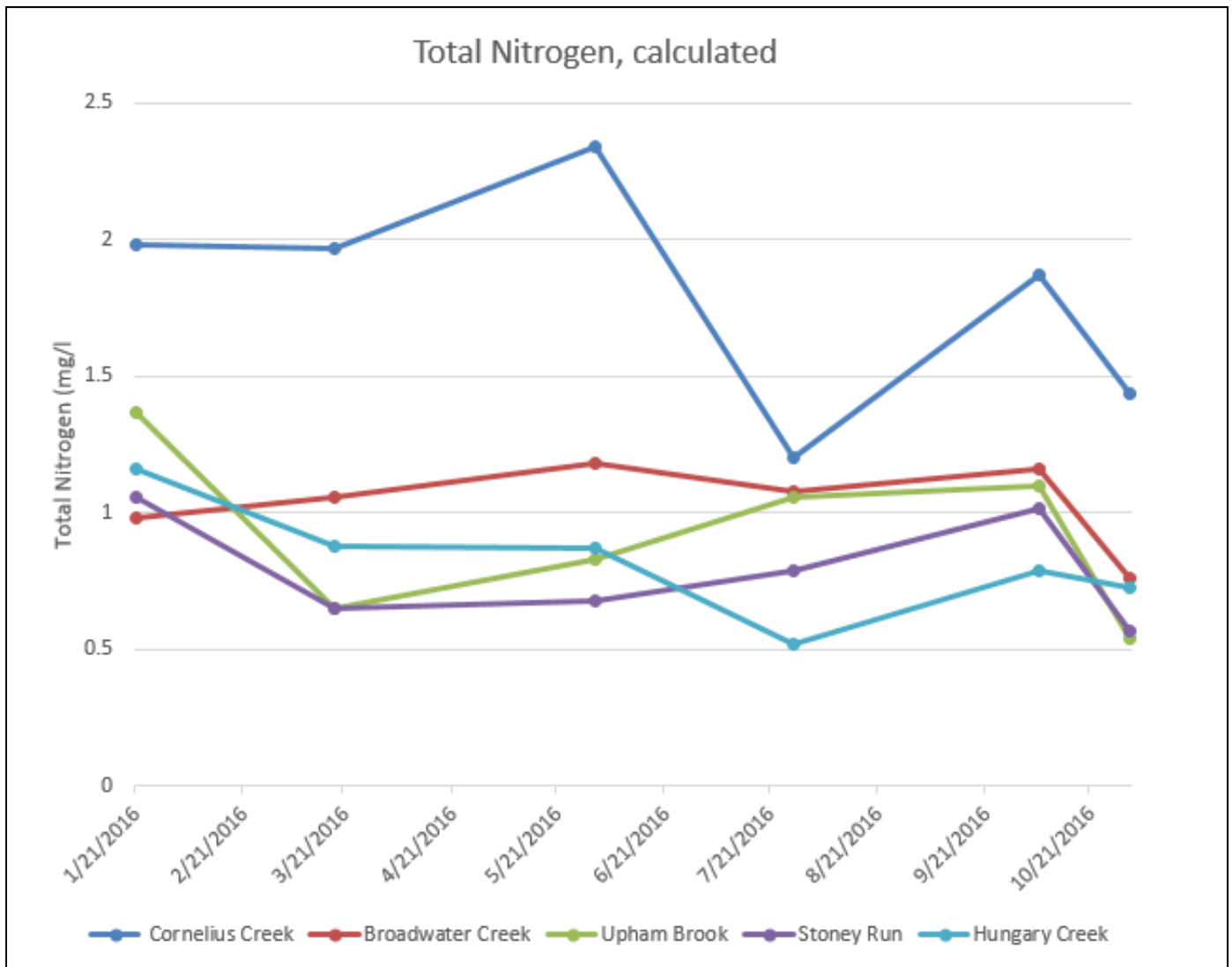


HENRICO COUNTY MS4 PROGRAM PLAN
PART I.C.2
ANNUAL REPORT SUPPLEMENT
JANUARY 1, 2016 THROUGH DECEMBER 31, 2016

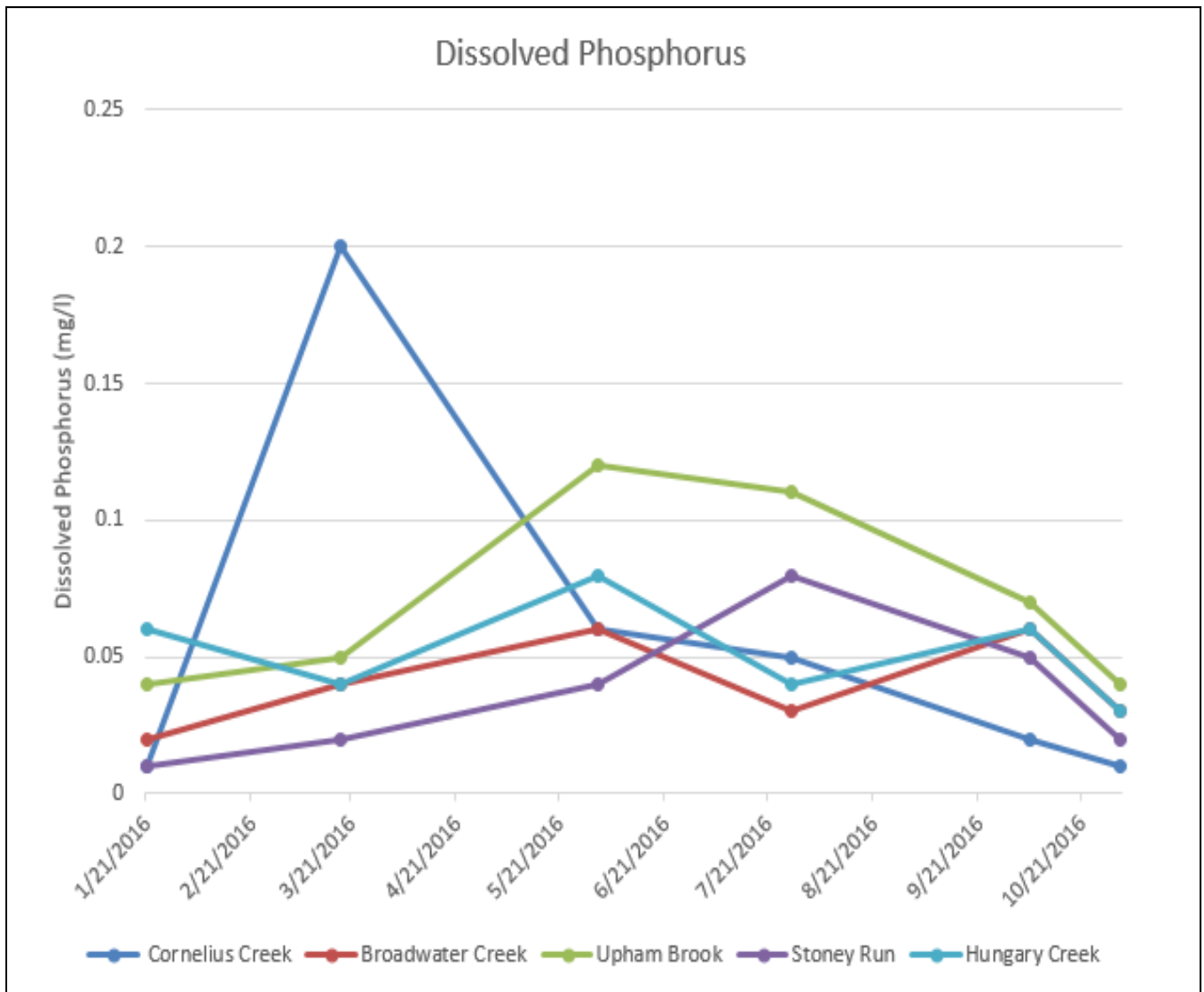
HENRICO COUNTY MS4 PROGRAM PLAN



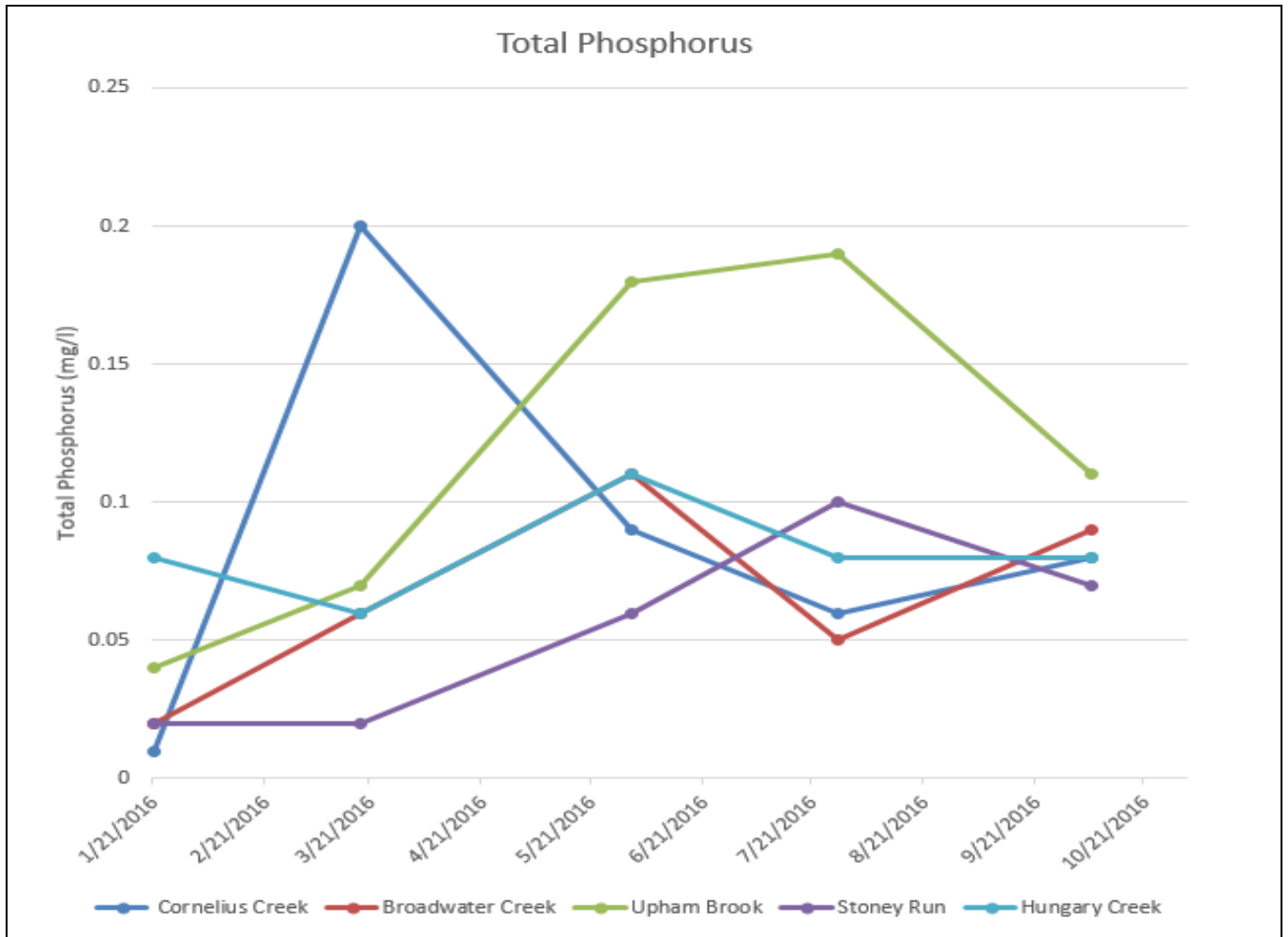
HENRICO COUNTY MS4 PROGRAM PLAN



HENRICO COUNTY MS4 PROGRAM PLAN

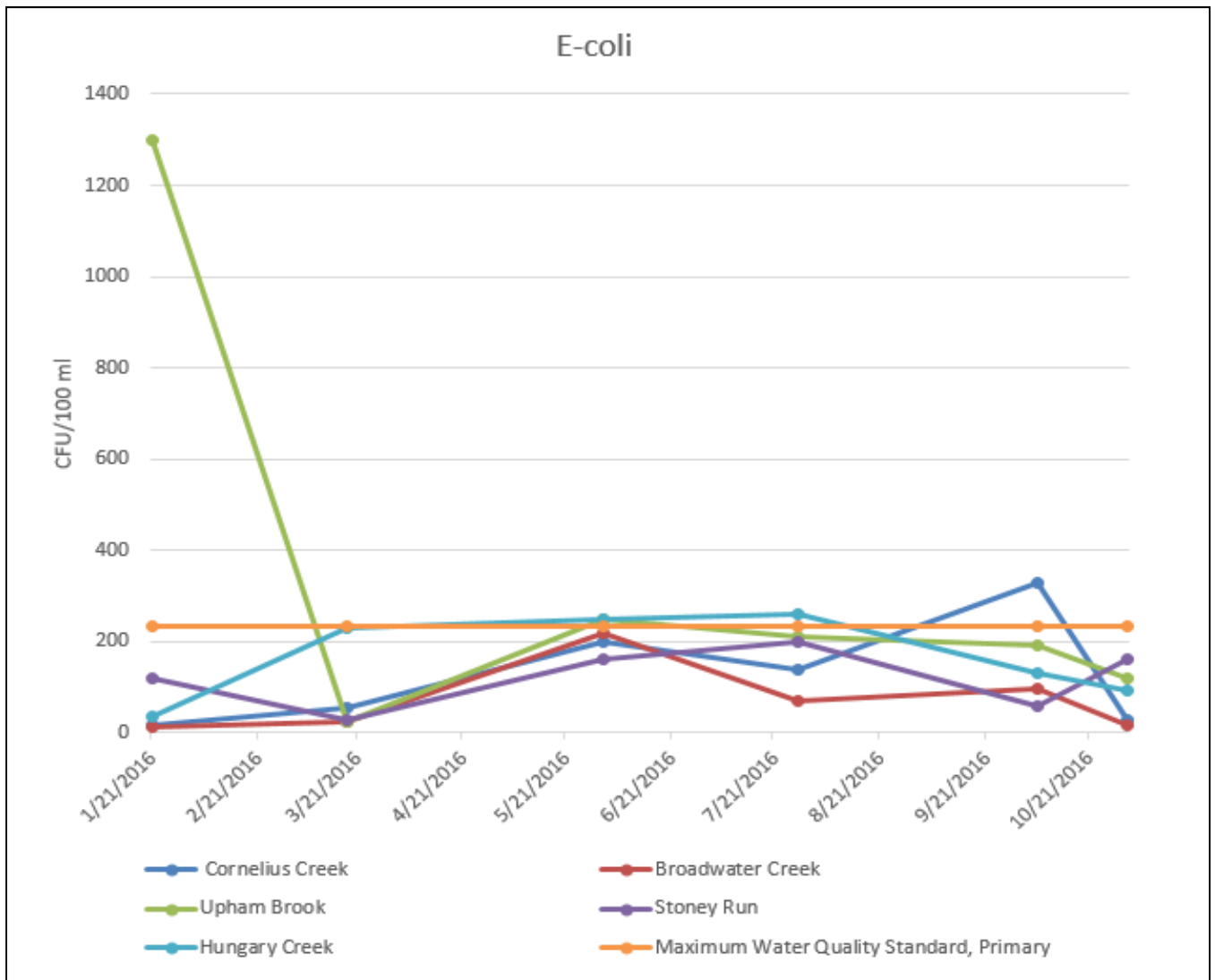


HENRICO COUNTY MS4 PROGRAM PLAN



HENRICO COUNTY MS4 PROGRAM PLAN
PART I.C.2
ANNUAL REPORT SUPPLEMENT
JANUARY 1, 2016 THROUGH DECEMBER 31, 2016

HENRICO COUNTY MS4 PROGRAM PLAN



PART I.C.3
MONITORING REQUIREMENTS
STRUCTURAL AND SOURCE CONTROLS COMPLIANCE
MONITORING AND TRACKING

Each annual report shall include a copy of the updated database in electronic format.

A spreadsheet (.xls format) of the required data from the County's electronic database of stormwater management facilities has been included in the digital submittal of the MS4 Program Plan and Annual Report Supplements. The spreadsheet includes data for the stormwater management facilities brought online between January 1, 2016 and December 31, 2016.

Each annual report shall include a summary of the program to ensure maintenance of private stormwater management facilities.

The Department of Public Works will inspect all privately owned and operated facilities. All privately owned facilities will be inspected a minimum of once every 5 years. All inspections will be documented in the online database (APEX) and in GIS. Any issues found during an inspection will be documented and a punchlist of repairs will be sent to the owner of the facility through certified mail. Owners will have 10 days from receipt of the letter to contact the County BMP inspector with a plan for repairs and a tentative schedule. The owner will contact the inspector at the start of any maintenance work and at its completion. The facility will be re-inspected after completion of work. All inspections will be completed by the county BMP inspector or other qualified person(s) (individuals holding the SWM inspector certification issued by DEQ or a licensed professional). All owner inspections will be documented in APEX.

Each annual report shall include a summary of the program to ensure maintenance of stormwater management facilities maintained by the permittee.

HENRICO COUNTY MS4 PROGRAM PLAN

Summary of Inspection and Maintenance Efforts related to On-Line County- Operated SWM Facilities Conducted between January 1, 2016 and December 31, 2016			
Type	Total	Inspected	Maintained
50/10 Basin (5)	7	7	3
50/10 Underground Detention (6)	7	7	7
BayFilter (200)	1	1	1
BaySeparator (205)	1	1	1
Bioretention Basin/Trench (10)	9	9	9
Extended Detention Basin (15)	31	31	30
Extended Detention Basin w/a Shallow Marsh (16)	2	2	2
Filterra (215)	24	24	21
Grassed Swale (20)	3	3	2
Imbrium Jellyfish (250)	1	1	1
Infiltration Basin/Trench (25)	8	8	5
Retention Basin (30)	7	7	6
StormCeptor (225)	1	1	1
StormFilter (220)	4	4	4
StormTreat (230)	1	1	1
Stormwater360 (Manufactured Unit)	5	5	5
TOTAL	112	112	99

The annual report due March 31, 2019 under this permit shall include an updated list of stormwater management facilities existing prior to the effective date of this permit.

Noted.

HENRICO COUNTY MS4 PROGRAM PLAN

PART I.D.1

TMDL ACTION PLAN AND IMPLEMENTATION CHESAPEAKE BAY SPECIAL CONDITION

The permittee shall submit the Chesapeake Bay TMDL Action Plan to the Department for review and acceptance with the annual report due March 31, 2017.

The draft Chesapeake Bay TMDL Action Plan is attached and can also be found at: <http://henrico.us/works/engineering-environmental-services/draft-total-maximum-daily-load-tmdl-action-plans/>

Beginning with the annual report due on March 31, 2018, the permittee shall include a list of control measures implemented during the reporting period and the cumulative progress toward meeting the compliance targets for total nitrogen, phosphorus, and total suspended solids.

Noted.

Beginning with the annual report due March 31, 2018, each annual report shall include a list of control measures that were implemented during the reporting cycle and the estimated reduction achieved by the control. For stormwater management controls, the report shall include the information required in Part I.C.3.a) and shall include whether an existing stormwater management control was retrofitted, and if so, the existing stormwater management control type retrofit used

Noted.

Beginning with the annual report due March 31, 2018, each annual report shall include a list of control measures that are expected to be implemented during the next reporting period and the expected progress toward meeting the compliance targets for total nitrogen, total phosphorus, and total suspended

HENRICO COUNTY MS4 PROGRAM PLAN

PART I.D.1

ANNUAL REPORT SUPPLEMENT

JANUARY 1, 2016 THROUGH DECEMBER 31, 2016

HENRICO COUNTY MS4 PROGRAM PLAN

solids.

Noted.

The permittee shall include the following as part of its reapplication package due no later than September 1, 2020:

- (a) Documentation that sufficient control measures have been implemented (or documentation detailing that implementation will be complete by the expiration date of this state permit) to meet the compliance target identified in this Special Condition. If temporary credits or offsets have been purchased in order to meet the compliance target, the list of temporary reductions utilized to meet the 5% reduction in this state permit and a schedule of implementation to ensure a permanent 5% reduction shall be provided; and**
- (b) A draft second phase Chesapeake Bay TMDL Action Plan designed to reduce the existing POC loads by an additional seven times the required reductions in loading rates using Table 2 of Part I.D.1.b) of this state permit unless alternative calculations have been provided by the Commonwealth;**
- (c) An additional 35% reduction in new sources developed between 2009 and 2014 and for which the land use cover condition was greater than 16%; and**
- (d) Accounting for any modification to the applicable loading rate provided to the permittee as a result of TMDL modification.**

Noted.

**HENRICO COUNTY
CHESAPEAKE BAY TMDL ACTION PLAN**

CHESAPEAKE BAY TMDL ACTION PLAN

SECTION 1. OVERVIEW

Henrico County's Chesapeake Bay TMDL Action Plan (Action Plan) has been developed in accordance with the requirements of the County's MS4 Permit and the applicable recommendations contained in *Chesapeake Bay TMDL Special Condition Guidance* (Guidance), developed by the Virginia Department of Environmental Quality and dated May 18, 2015. The County's MS4 Permit requires this Action Plan to document a minimum 5% reduction of the applicable total pollutants of concern (nitrogen, phosphorus, and sediment) during the first MS4 Permit cycle (April 1, 2016 through March 31, 2020.) As stated in the Guidance, **if there are inconsistencies between the requirements described in this guidance document and the requirements in a permittee's individual permit, the individual permit is the controlling document. If additional guidance is needed concerning any inconsistencies, the permittee should contact the Department.**

SECTION 2. MS4 PERMIT LANGUAGE

PART I.D. TMDL ACTION PLAN AND IMPLEMENTATION

1. Chesapeake Bay Special Condition

The Commonwealth in its Phase I and Phase II Chesapeake Bay TMDL Watershed Implementation Plans (WIP) committed to a phased approach for MS4s permittees to implement necessary reductions. This state permit is consistent with the Chesapeake Bay TMDL and the Virginia Phase I and II WIPs to meet the Level 2 (L2) scoping run for existing developed lands as it represents an implementation of 5% of L2 as specified in the 2010 Phase I WIP. Conditions of future permits will be consistent with the TMDL or WIP conditions in place at the time of permit issuance.

a) Definitions

The following definitions apply to this state permit for the purpose of the Special Condition for Discharges in the Chesapeake Bay Watershed:

- 1) "Existing Sources" means pervious and impervious urban land uses served by the MS4 as of June 30, 2009.
- 2) "New Sources" means pervious and impervious urban land uses served by the MS4 developed or redeveloped on or after July 1, 2009.
- 3) "Transitional Sources" means regulated land disturbing activities which are temporary in nature and discharge through the MS4.

HENRICO COUNTY CHESAPEAKE BAY TMDL ACTION PLAN

- 4) "Pollutants of concern" or "POC" means total nitrogen, total phosphorus and total suspended solids.
- b) Chesapeake Bay Watershed TMDL Planning
- 1) No later than 24-months after the effective date of this state permit, the permittee shall develop and submit to the Department for its review and acceptance an approvable phased Chesapeake Bay TMDL Action Plan that includes:
 - (a) A review of the current MS4 Program Plan including existing legal authorities and the permittee's ability to ensure compliance with this special condition;
 - (b) Identifies any new or modified legal authorities, such as ordinances, permits, orders, contracts and inter-jurisdictional agreements, implemented or needing to be implemented to meet the requirements of this special condition;
 - (c) The means and methods utilized to address discharges into the MS4 from new sources.
 - (d) An estimate of the annual POC loads discharged from the existing sources as of June 30, 2009 based on the 2009 progress run. The permittee shall utilize Table 1 and multiply the total existing acres served by the MS4 on June 30, 2009 and the 2009 Edge of Stream (EOS) Loading Rate.

Table 1: Calculation Sheet for Estimating Existing Source Loads for the James River Basin (Based on Chesapeake Bay Program Watershed Model Phase 5.3.2)				
Subsource	Pollutant	Total Existing Acres Served by MS4 (6/30/09)	2009 EOS Loading Rate (lbs/ac/yr)	Estimated Total POC Load Based on 2009 Progress Run (lb/yr)
Regulated Urban Impervious	Nitrogen		9.39	
Regulated Urban Pervious			6.99	
Regulated Urban Impervious	Phosphorus		1.76	
Regulated Urban Pervious			0.5	
Regulated Urban	Total Suspended		676.94	

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CHESAPEAKE BAY TMDL ACTION PLAN

Impervious	Solids			
Regulated				
Urban			101.08	
Pervious				

- (e) A determination of the total pollutant load reductions necessary to reduce the annual POC existing loads using Table 2 by multiplying the *Total Existing Acres Served by MS4* by the *First Permit Cycle Required Reduction in Loading Rate*.

Table 2: Calculation Sheet for Determining Total POC Reductions Required During this State Permit Cycle for the James River Basin (Based on Chesapeake Bay Program Watershed Model Phase 5.3.2)				
Subsource	Pollutant	Total Existing Acres Served by MS4 (6/30/09)	First Permit Cycle Required Reduction in Loading Rate (lbs/ac/yr)	Total Reduction Required During First Permit Cycle (lbs/yr)
Regulated Urban Impervious	Nitrogen		0.04	
Regulated Urban Pervious			0.02	
Regulated Urban Impervious	Phosphorus		0.01	
Regulated Urban Pervious			0.002	
Regulated Urban Impervious	Total Suspended Solids		6.67	
Regulated Urban Pervious			0.44	

- (f) The means and methods, such as the management practices and retrofit programs that will be utilized to meet the required reductions identified in Part I.D.1.b)(1)(e) and a schedule to achieve those reductions. The schedule should include annual benchmarks to demonstrate the on-going progress in meeting the reductions.
- (g) The means and methods to offset the increased loads from new sources initiating construction between July 1, 2009 and June 30, 2014 that

HENRICO COUNTY CHESAPEAKE BAY TMDL ACTION PLAN

disturb one acre or greater as a result of the utilization of an average land cover condition greater than 16% impervious cover for the design of post development stormwater management facilities. The permittee shall utilize Table 3 to develop the equivalent pollutant load for nitrogen and total suspended solids. The permittee shall offset 5% of the calculated increased load from these new sources during the permit cycle.

- (h) The means and methods to offset the increased loads from grandfathered projects in accordance with 9VAC25-870-48, that disturb one acre or greater that begin construction after July 1, 2014 where the project utilized an average land cover condition greater than 16% impervious cover in the design of post development stormwater management facilities. The permittee shall utilize Table 3 to develop the equivalent pollutant load for nitrogen and total suspended solids.

Table 3: Ratio of Phosphorus Loading Rate to Nitrogen and Total Suspended Solids Loading Rates for Chesapeake Bay Basins (Based on Chesapeake Bay Program Watershed Model Phase 5.3.2)			
<u>Ratio of Phosphorus to Other POCs (Based on All Land Uses 2009 Progress Run)</u>	<u>Phosphorus Loading Rate (lbs/ac/yr)</u>	<u>Nitrogen Loading Rate (lbs/ac/yr)</u>	<u>Total Suspended Solids Loading Rate (lbs/ac/yr)</u>
James River Basin	1.0	5.2	420.9

- (i) A list of future projects and associated acreage that qualify as grandfathered in accordance with 9VAC25-870-48.
- (j) An estimate of the expected cost to implement the necessary reductions during the permit cycle;
- (k) An opportunity for receipt and consideration of public comment on the draft Chesapeake Bay TMDL Action Plan; and,
- (l) A list of all comments received as a result of public comment and any modifications made to the draft Chesapeake Bay TMDL Action Plan as a result of the public comments.
- 2) As part of development of the Chesapeake Bay TMDL Action Plan, the permittee shall consider use of the following:
- (a) Implementation of BMPs on unregulated lands provided the baseline reduction is subtracted from the total reduction prior to application of the reduction towards meeting the required reductions.
- (b) Utilization of stream restoration projects provided the baseline reduction from the unregulated acreage treated by the stream restoration project is subtracted from the total reduction prior to application of the reduction towards meeting the required reductions.

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CHESAPEAKE BAY TMDL ACTION PLAN**

- (c) Establishment of a memorandum of understanding (MOU) with other MS4 permittees that discharge to the same or adjacent eight digit hydrologic unit within the same basin to implement BMPs collectively. The MOU shall include a mechanism for dividing the POC reductions created by BMP implementation between the cooperative MS4s.
 - (d) Utilization of any pollutant trading or offset program in accordance with §62.1-44.19:20 through 62.1-44.19:23 et seq. of the Code of Virginia governing trading and offsetting.
 - (e) A more stringent average land cover condition based on less than 16% impervious cover for new sources initiating construction between July 1, 2009, and June 30, 2014, and all grandfathered projects where allowed by law; and
 - (f) Any BMPs installed after June 30, 2009, as part of a retrofit program may be applied towards meeting the required load reductions provided any necessary baseline reductions are not included.
 - 3) The permittee shall address any modification to the TMDL or watershed implementation plan that occurs during the term of this state permit as part of its permit reapplication as required in Part II.M of this state permit.
 - 4) The Chesapeake Bay TMDL Action Plan shall become effective and enforceable upon written approval from the Department.
- c) Chesapeake Bay TMDL Action Plan Implementation
- 1) The permittee shall implement the TMDL action plan required in Part I.D.1.b)1) of this state permit according to the schedule therein. Compliance with this requirement represents adequate progress for this state permit term towards achieving TMDL wasteload allocations consistent with the assumptions and requirements of the TMDL.
 - 2) For the purposes of this state permit, the implementation of the following represents implementation to the maximum extent practicable and demonstrates adequate progress:
 - (a) Implementation of turf and landscape nutrient management plans in accordance Part I.B.2.d);
 - (b) Implementation of construction site runoff controls in Part I.B.2.a) in accordance with this state permit shall address discharges from transitional sources;
 - (c) Implementation of the means and methods to address discharges from new sources in accordance with requirements in Part I.B.2.a) for post-construction runoff from areas of new development and development on prior developed lands to offset 5% of the total increase in POC loads between July 1, 2009 and June 30, 2014 required in Part I.D.1.b)1)(g) and to offset increases in the POC load from grandfathered projects initiating

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construction after July 1, 2014 prior to completion of the project as required in Part I.D.1.b)1)(h); and,

- (d) Implementation of means and methods sufficient to meet 5% required reductions of POC loads from existing sources defined in this state permit in accordance with the Chesapeake Bay TMDL Watershed Implementation Plan as required in Part I.D.1.b)1)(e).

d) Annual Reporting Requirements

- 1) In accordance with Part I D.1.b)1), the permittee shall submit the Chesapeake Bay TMDL Action Plan with the annual report due March 31, 2017.
- 2) Beginning with the annual report due March 31, 2018, each annual report shall include a list of control measures implemented during the reporting period and the cumulative progress toward meeting the compliance targets for total nitrogen, phosphorus, and total suspended solids.
- 3) Beginning with the annual report due March 31, 2018, each annual report shall include a list of control measures that were implemented during the reporting cycle and the estimated reduction achieved by the control. For stormwater management controls, the report shall include the information required in Part I.C.3.a) and shall include whether an existing stormwater management control was retrofitted, and if so, the existing stormwater management control type retrofit used.
- 4) Beginning with the annual report due March 31, 2018, each annual report shall include a list of control measures that are expected to be implemented during the next reporting period and the expected progress toward meeting the compliance targets for total nitrogen, total phosphorus, and total suspended solids.
- 5) The permittee shall include the following as part of its reapplication package due in accordance with Part II.M:
 - (a) Documentation that sufficient control measures have been implemented (or documentation detailing that implementation will be complete by the expiration date of this state permit) to meet the compliance target identified in this Special Condition. If temporary credits or offsets have been purchased in order to meet the compliance target, the list of temporary reductions utilized to meet the 5% reduction in this state permit and a schedule of implementation to ensure a permanent 5% reduction shall be provided; and
 - (b) A draft second phase Chesapeake Bay TMDL Action Plan designed to reduce the existing POC loads by an additional seven times the required reductions in loading rates using Table 2 of Part I.D.1.b) of this state

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- permit unless alternative calculations have been provided by the Commonwealth;
- (c) An additional 35% reduction in new sources developed between 2009 and 2014 and for which the land use cover condition was greater than 16%; and
 - (d) Accounting for any modification to the applicable loading rate provided to the permittee as a result of TMDL modification.

SECTION 3. APPLICABLE WASTELOAD ALLOCATIONS

Total Nitrogen

Wasteload Allocation (lbs / year)	Watershed(s)	TMDL Report	EPA Approval Date	SWCB Approval Date
25,385.25	Chickahominy River oligohaline estuary	Chesapeake Bay TMDL	12/29/2010	N/A
150,930.68	James River upper tidal freshwater estuary	Chesapeake Bay TMDL	12/29/2010	N/A

From **Attachment A: Applicable TMDL Wasteload Allocations** in the County's MS4 Permit

Total Phosphorus

Wasteload Allocation (lbs / year)	Watershed(s)	TMDL Report	EPA Approval Date	SWCB Approval Date
13,337.88	Chickahominy River oligohaline estuary	Chesapeake Bay TMDL	12/29/2010	N/A
20,531.88	James River upper tidal freshwater estuary	Chesapeake Bay TMDL	12/29/2010	N/A

From **Attachment A: Applicable TMDL Wasteload Allocations** in the County's MS4 Permit

Total Suspended Solids

Wasteload Allocation (lbs / year)	Watershed(s)	TMDL Report	EPA Approval Date	SWCB Approval Date
522,195.38	Chickahominy River oligohaline estuary	Chesapeake Bay TMDL	12/29/2010	N/A
4,435,348.87	James River upper tidal freshwater estuary	Chesapeake Bay TMDL	12/29/2010	N/A

From **Attachment A: Applicable TMDL Wasteload Allocations** in the County's MS4 Permit

SECTION 4. CHESAPEAKE BAY WATERSHED TMDL PLANNING

HENRICO COUNTY CHESAPEAKE BAY TMDL ACTION PLAN

Henrico County's Phase One Chesapeake Bay TMDL Action Plan addresses the following:

SECTION 4.1

A review of the current MS4 Program Plan including existing legal authorities and the permittee's ability to ensure compliance with this special condition.

Henrico has reviewed its current MS4 Program Plan and has determined that the legal authorities as stated in the current MS4 Program Plan are sufficient for compliance with this special condition. Please refer to Part I.A.3 of the MS4 Program Plan for a listing of the legal authorities.

SECTION 4.2

Identifies any new or modified legal authorities, such as ordinances, permits, orders, contracts and inter-jurisdictional agreements, implemented or needing to be implemented to meet the requirements of this special condition.

As stated in Section 4.1 above, existing legal authorities are sufficient for compliance with this special condition. Therefore, no new or modified legal authorities beyond those listed in Part I.A.3 of the MS4 Program Plan are necessary.

SECTION 4.3

The means and methods utilized to address discharges into the MS4 from new sources.

The means and methods used to address discharges into the MS4 from new sources (pervious and impervious urban land uses served by the MS4 developed or redeveloped on or after July 1, 2009) are the stormwater management programs implemented since 1991. These programs applied to all development / redevelopment exceeding 2,500 square feet of land disturbance.

From 1991 and until July 1, 2014, an average land cover condition of 16% was used to compute pollutant removal requirement and for the design of required BMPs consistent with the CBPA Regulations and stormwater management regulations in place at that time. Beginning July 1, 2014, the County began

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requiring stormwater pollutant reductions consistent with the revised VSMP Regulations using the Virginia Runoff Reduction Method. Since implementing stormwater pollutant reductions programs in 1991, the County's application of those programs has been determined to be consistent with applicable laws and regulations by applicable State agencies.

Therefore, there are no additional increases in POCs from new sources that must be addressed by this TMDL Action Plan.

SECTION 4.4

An estimate of the annual POC loads discharged from the existing sources as of June 30, 2009 based on the 2009 progress run. The permittee shall utilize Table 1 and multiply the total existing acres served by the MS4 on June 30, 2009 and the 2009 Edge of Stream (EOS) Loading Rate.

Table 1: Calculation Sheet for Estimating Existing Source Loads for the James River Basin (Based on Chesapeake Bay Program Watershed Model Phase 5.3.2)				
<u>Subsource</u>	<u>Pollutant</u>	<u>Total Existing Acres Served by MS4 (6/30/09)¹</u>	<u>2009 EOS Loading Rate (lbs/ac/yr)</u>	<u>Estimated Total POC Load Based on 2009 Progress Run (lb/yr)</u>
Regulated Urban Impervious ²	Nitrogen	14,187.16	9.39	133,217.06
Regulated Urban Pervious ³		17,529.11	6.99	122,528.48
Regulated Urban Impervious	Phosphorus	14,187.16	1.76	24,969.33
Regulated Urban Pervious		17,529.11	0.5	8,764.56
Regulated Urban Impervious	Total Suspended Solids	14,187.16	676.94	9,603,829.01
Regulated Urban Pervious		17,529.11	101.08	1,771,842.44

¹ See Attachment 1

² See Attachment 2

³ See Attachment 2

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SECTION 4.5

A determination of the total pollutant load reductions necessary to reduce the annual POC existing loads using Table 2 by multiplying the *Total Existing Acres Served by MS4* by the *First Permit Cycle Required Reduction in Loading Rate*.

Table 2: Calculation Sheet for Determining Total POC Reductions Required During this State Permit Cycle for the James River Basin (Based on Chesapeake Bay Program Watershed Model Phase 5.3.2)				
<u>Subsource</u>	<u>Pollutant</u>	<u>Total Existing Acres Served by MS4 (6/30/09)⁴</u>	<u>First Permit Cycle Required Reduction in Loading Rate (lbs/ac/yr)</u>	<u>Total Reduction Required During First Permit Cycle (lbs/yr)</u>
Regulated Urban Impervious ⁵	Nitrogen	14,187.16	0.04	567.48
Regulated Urban Pervious ⁶		17,529.11	0.02	350.58
Regulated Urban Impervious	Phosphorus	14,187.16	0.01	141.87
Regulated Urban Pervious		17,529.11	0.002	35.06
Regulated Urban Impervious	Total Suspended Solids	14,187.16	6.67	94,628.09
Regulated Urban Pervious		17,529.11	0.44	7,712.81

⁴ See Attachment 1

⁵ See Attachment 2

⁶ See Attachment 2

SECTION 4.6

The means and methods, such as the management practices and retrofit programs that will be utilized to meet the required reductions identified in Part I.D.1.b)(1)(e) and a schedule to achieve those reductions. The schedule should include annual benchmarks to demonstrate the on-going progress in meeting the reductions.

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Mean / Method	Type	Applicable Reductions (lbs)			Anticipated / Completion Date
		N	P	TSS	
Woodman Park Energy Dissipator ⁷	Outfall Retrofit	25.63	3.60	1981.76	Completed September, 2016
Jamestown Apartments ⁸	Stream Restoration	103.73	94.04	62,069.04	Completed December, 2006
Henrico Communications ⁹	Stream Restoration	95.83	86.89	57,345.42	Completed June, 2009
BMPs Installed prior to July 1, 2009 ¹⁰	Stormwater Compliance BMPs	405.31	79.09	44688.62	Complete
Energy Dissipators installed prior to June 30, 2014 that weren't previously claimed ¹¹	Additional Outfall Treatment	1979.07	254.72	94691.94	Complete
Septic-to-Sewer Connections from 2006 to 2016 ¹²	Annual Program	2106.54	0	0	Ongoing
Skipwith Elementary ¹³	Stream Restoration	44.57	40.41	26671.43	Completed May, 2012
TOTAL		4760.68	558.75	28,7448.21	

⁷ See Attachment 3

⁸ See Attachment 4

⁹ See Attachment 5

¹⁰ See Attachment 6

¹¹ See Attachment 7

¹² See Attachment 8

¹³ See Attachment 9

As shown in the table below, pollutant reductions achieved to date exceed those required during the first permit cycle. Overages will be applied to reduction requirements in future permit cycles.

**HENRICO COUNTY
CHESAPEAKE BAY TMDL ACTION PLAN**

Pollutant	Total Reduction Required During First Permit Cycle (lbs/yr)	Total Reductions Achieved to Date (lbs/yr)
Nitrogen	918.06	4,760.68
Phosphorus	176.93	558.75
Total Suspended Solids	102,340.90	287,448.21

SECTION 4.7

The means and methods to offset the increased loads from new sources initiating construction between July 1, 2009 and June 30, 2014 that disturb one acre or greater as a result of the utilization of an average land cover condition greater than 16% impervious cover for the design of post development stormwater management facilities. The permittee shall utilize Table 3 to develop the equivalent pollutant load for nitrogen and total suspended solids. The permittee shall offset 5% of the calculated increased load from these new sources during the permit cycle.

From 1991 and until July 1, 2014, an average land cover condition of 16% was used to compute pollutant removal requirement and for the design of required BMPs consistent with the CBPA Regulations and stormwater management regulations in place at that time. Beginning July 1, 2014, the County began requiring stormwater pollutant reductions consistent with the revised VSMP Regulations using the Virginia Runoff Reduction Method. At no time has an average land cover condition greater than 16% impervious cover been used to compute the pollutant removal requirement or the design of post development stormwater management facilities.

Since implementing stormwater pollutant reductions programs in 1991, the County's application of those programs has been determined to be consistent with applicable laws and regulations by applicable State agencies.

Therefore, there are no increases in increased loads from new sources initiating construction between July 1, 2009 and June 30, 2014 that disturb one acre or greater as a result of the utilization of an average land cover condition greater than 16% impervious cover for the design of post development stormwater management facilities that must be addressed with this action plan.

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SECTION 4.8

The means and methods to offset the increased loads from grandfathered projects in accordance with 9VAC25-870-48, that disturb one acre or greater that begin construction after July 1, 2014 where the project utilized an average land cover condition greater than 16% impervious cover in the design of post development stormwater management facilities. The permittee shall utilize Table 3 to develop the equivalent pollutant load for nitrogen and total suspended solids.

From 1991 and until July 1, 2014, an average land cover condition of 16% was used to compute pollutant removal requirement and for the design of required BMPs consistent with the CBPA Regulations and stormwater management regulations in place at that time. Beginning July 1, 2014, the County began requiring stormwater pollutant reductions consistent with the revised VSMP Regulations using the Virginia Runoff Reduction Method with the exception of projects determined to be “grandfathered”. “Grandfathered” projects comply with pollutant removal reductions based on the average land cover condition of 16%. At no time has an average land cover condition greater than 16% impervious cover been used to compute the pollutant removal requirement or the design of post development stormwater management facilities.

Since implementing stormwater pollutant reductions programs in 1991, the County’s application of those programs has been determined to be consistent with applicable laws and regulations by applicable State agencies.

Therefore, there are no increases in increased loads from grandfathered projects in accordance with 9VAC25-870-48, that disturb one acre or greater that begin construction after July 1, 2014 that disturb one acre or greater as a result of the utilization of an average land cover condition greater than 16% impervious cover for the design of post development stormwater management facilities that must be addressed with this TMDL Action Plan.

SECTION 4.9

A list of future projects and associated acreage that qualify as grandfathered in accordance with 9VAC25-870-48.

Future Projects Determined to be Grandfathered	Project Acreage
New Dawn Assisted Living Center Master Plan	5.47

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Shirley Subdivision	20.5
Rocketts Landing Section 7	1.2
Rocketts Landing Phase IV Block 19	1.287
Daves Auto Spa	1.09
Club Court Subdivision	26.3
Discount Tire at Staples Mill	1.22
Settler's Ridge Section C	18.8
RIA Maintenance Storage Building	6.48
Savannah Station	9.74
Midview Farms Section C	4.37
Kings Manor Subdivision	2.19

SECTION 4.10

An estimate of the expected cost to implement the necessary reductions during the permit cycle

The total estimated cost of the means and methods listed in Section 4.6 that can be estimated is \$1,471,000.

SECTION 4.11

An opportunity for receipt and consideration of public comment on the draft Chesapeake Bay TMDL Action Plan

No comments were received.

SECTION 4.12

A list of all comments received as a result of public comment and any modifications made to the draft Chesapeake Bay TMDL Action Plan as a result of the public comments.

The following table lists the comments that were received as a result of posting the draft Chesapeake Bay TMDL Action Plan on the County's website. Revisions made to the document as a result of these comments are also listed.

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SECTION 4.13

As part of development of the Chesapeake Bay TMDL Action Plan, the permittee shall consider use of the following:

- a. Implementation of BMPs on unregulated lands provided the baseline reduction is subtracted from the total reduction prior to application of the reduction towards meeting the required reductions.
- b. Utilization of stream restoration projects provided the baseline reduction from the unregulated acreage treated by the stream restoration project is subtracted from the total reduction prior to application of the reduction towards meeting the required reductions.
- c. Establishment of a memorandum of understanding (MOU) with other MS4 permittees that discharge to the same or adjacent eight digit hydrologic unit within the same basin to implement BMPs collectively. The MOU shall include a mechanism for dividing the POC reductions created by BMP implementation between the cooperative MS4s.
- d. Utilization of any pollutant trading or offset program in accordance with §62.1-44.19:20 through 62.1-44.19:23 et seq. of the Code of Virginia governing trading and offsetting.
- e. A more stringent average land cover condition based on less than 16% impervious cover for new sources initiating construction between July 1, 2009, and June 30, 2014, and all grandfathered projects where allowed by law; and
- f. Any BMPs installed after June 30, 2009, as part of a retrofit program may be applied towards meeting the required load reductions provided any necessary baseline reductions are not included.

Noted.

SECTION 4.14

The permittee shall address any modification to the TMDL or watershed implementation plan that occurs during the term of this state permit as part of its permit reapplication as required in Part II.M of this state permit.

Noted.

SECTION 4.15

The Chesapeake Bay TMDL Action Plan shall become effective and enforceable

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upon written approval from the Department.

Noted.

SECTION 4.16 ANNUAL REPORTING REQUIREMENTS

In accordance with Part I D.1.b)1), the permittee shall submit the Chesapeake Bay TMDL Action Plan with the annual report due March 31, 2017.

Noted.

Beginning with the annual report due March 31, 2018, each annual report shall include a list of control measures implemented during the reporting period and the cumulative progress toward meeting the compliance targets for total nitrogen, phosphorus, and total suspended solids.

Noted.

Beginning with the annual report due March 31, 2018, each annual report shall include a list of control measures that were implemented during the reporting cycle and the estimated reduction achieved by the control. For stormwater management controls, the report shall include the information required in Part I.C.3.a) and shall include whether an existing stormwater management control was retrofitted, and if so, the existing stormwater management control type retrofit used.

Noted.

Beginning with the annual report due March 31, 2018, each annual report shall include a list of control measures that are expected to be implemented during the next reporting period and the expected progress toward meeting the compliance targets for total nitrogen, total phosphorus, and total suspended solids.

Noted.

SECTION 4.17 PLANS FOR THE NEXT PERMIT CYCLE

The permittee shall include the following as part of its reapplication package due in accordance with Part II.M:

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1. Documentation that sufficient control measures have been implemented (or documentation detailing that implementation will be complete by the expiration date of this state permit) to meet the compliance target identified in this Special Condition. If temporary credits or offsets have been purchased in order to meet the compliance target, the list of temporary reductions utilized to meet the 5% reduction in this state permit and a schedule of implementation to ensure a permanent 5% reduction shall be provided;
2. A draft second phase Chesapeake Bay TMDL Action Plan designed to reduce the existing POC loads by an additional seven times the required reductions in loading rates using Table 2 of Part I.D.1.b) of this state permit unless alternative calculations have been provided by the Commonwealth;
3. An additional 35% reduction in new sources developed between 2009 and 2014 and for which the land use cover condition was greater than 16%; and
4. Accounting for any modification to the applicable loading rate provided to the permittee as a result of TMDL modification.

Noted.

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ATTACHMENT 1
MS4 SERVICE AREA

SECTION 1. OVERVIEW

The MS4 Service Area is the land area that drains into and through the County's MS4 infrastructure. There are both privately-owned and publicly-owned lands within the County's MS4 Service Area. The publicly-owned land consists of local, state and federal properties and rights-of-way.

SECTION 2. DELINEATION

The limits of the County's MS4 Service Area were determined by delineating the drainage areas to each outfall the County owns and/or operates. These drainage areas were then aggregated into the MS4 Service Area. As required by the County's MS4 Permit, the current delineation of the MS4 Service Area was delivered to DEQ in September of 2016.

For purposes of calculating the pollutant load reductions required during the first MS4 Permit cycle for the Chesapeake Bay TMDL, the MS4 Service Area as of June 30, 2009 is required (see Table 2 of the MS4 Permit). In order to develop the MS4 Service Area as it existed in June of 2009, certain individual drainage areas were excluded from the current MS4 Service Area. These excluded areas included drainage areas associated with MS4 infrastructure that was approved for construction after June 30, 2009 and infrastructure that had been installed but not accepted by the County prior to June 30, 2009.

There are approximately 156,800 acres located within the boundaries of Henrico County.

As of December 2016, approximately 50,314 acres of the County were located within the MS4 Service Area.

As of June 2009, approximately 49,284 acres of the County were located within the MS4 Service Area.

ATTACHMENT 2

REGULATED URBAN IMPERVIOUS AND PERVIOUS AREAS

SECTION 1. OVERVIEW

Calculating the pollutant reduction requirements associated with the Chesapeake Bay TMDL requires the *regulated impervious* acreage and the *regulated pervious* acreage within the MS4 Service Area as of June 30, 2009 are required. In the absence of a data set depicting land cover as of June 30, 2009, several land use data sets were used to estimate the required acreages.

SECTION 2. APPLICABLE LAND COVER DATA SETS

2008 Henrico Land Cover Data Set

The 2008 land cover data set was created from the 2008 planimetric data. The following is from the 2008 planimetric metadata. "Planimetric features" are collected and updated from the digital orthophotography. They were collected in MicroStation and exported out as DGN or DWG (CAD) files. These were then converted to ESRI shapefiles and finally to ESRI coverages for editing and final attribution. The finished coverages were then used to load the ESRI geodatabase feature classes."

The land cover data consists of four feature classes;

- a. *Water* was generated from the waterbodies feature class a representation of any water feature equal to or greater than three feet wide. Meaning any stream three feet or wider is contained in the feature class.
- b. *Trees* was generated from the trees feature class which is any tree covered area equal to or greater than fifty square feet. The tree cover in the landcover data took only tree covered areas equal to or greater than ninety square meters. For the tree covered areas less than ninety square meters the data was assigned the neighboring coverage designation. If the small tree covered area was surrounded by other or impervious it took on that designation.
- c. *Impervious* was derived from the buildings, driveways, parking, and roads feature classes. The roads and parking lots that had any landscape islands or divided roads median strips were added to the other land cover feature class.

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- d. *Other* was the remainder of the above process. Any area that was not covered by water, trees, buildings, driveways, parking, and roads became other.

2011 Henrico Land Cover Data Set

The 2011 land cover data set was created from the 2011 planimetric data. The following is from the 2011 planimetric metadata.

Buildings, Driveways, Parking, Roads

Planimetric features are collected and updated from the digital orthophotography. They are collected in MicroStation and exported out as DGN or DWG (CAD) files. These are then converted to ESRI shapefiles and finally to ESRI coverages for editing and final attribution. The finished coverages are then used to load the ESRI geodatabase feature classes.

Waterbodies (Compiled from Lidar)

Using MARS software Hydrologic features (streams, rivers and lakes) are compiled in a 3d environment. These features are used in both the breaklines feature class (3d) and the waterbodies feature class (2d). ESRI shape files are created and these are imported into the geodatabase feature class.

Trees (Compiled from Lidar)

Using MARS software tree polygons larger than 50 square feet were created from the lidar dataset. ESRI shape files were created by tiles which were then merged together and dissolved to create the final geodatabase feature class.

The land cover data consists of four feature classes;

- a. *Water* was generated from the waterbodies feature class which is a representation of any water feature equal to or greater than three feet wide. Meaning any stream three feet or wider is contained in the feature class.
- b. *Trees* was generated from the trees feature class which is any tree covered area equal to or greater than fifty square feet. The tree cover in the landcover data took only tree covered areas equal to or greater than ninety square meters. For the tree covered areas less than ninety square meters the data was assigned the neighboring coverage designation. If the small tree covered area was surrounded by other or impervious it took on that designation.

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- c. *Impervious* was derived from the buildings, driveways, parking, and roads feature classes. The roads and parking lots that had any landscape islands or divided roads median strips were added to the other land cover feature class.
- d. *Other* is the remainder of the above process. Any area that was not covered by water, trees, buildings, driveways, parking, and roads became other.

2014 Virginia Statewide Land Cover Data Set

The Virginia Statewide 2014 land cover data set was created, in part, from the 2011-2014 VBMP 4-band orthophotography. Resolution is provided at 1 meter and produced in both raster and vector formats using Textron Systems Feature Analyst Software for ESRI. The following is from the 2014 Technical Plan of Operations document Version 7 dated May 6, 2016.

The four classes used to develop area measurements are below.

Water: This classification includes all areas of open water; typically 25 percent or greater pixel cover of water, and all areas characterized by perennial cover of ice/snow as defined by the EPA. Includes drainage network and basins such as rivers, streams, lakes, canals, waterways, reservoirs, ponds, bays, estuaries, and ocean as defined by the NHD. Only features greater than 1 acre in size will remain in this classification.

Impervious: This classification includes areas characterized by a high percentage of constructed materials such as asphalt and concrete, buildings and parking lots, and infrastructure such as roads and rail-roads as defined by the EPA.

Turf Grass: This classification includes vegetation (primarily grasses) planted in developed settings for erosion control or aesthetic purposes, as well as natural herbaceous vegetation and undeveloped land, including upland grasses and forbs, as defined by the EPA. Examples include but are not limited to recreational areas, lawns, and vacant lands. Any grasses or managed turf that fall into this description will be included if the land is less than 1 acre in size, or visually determined to be recreational from the imagery.

Other: Includes all remaining land cover classifications, including Forest, Scrub/Shrub, Agriculture, Wetlands, and Barren.

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Methodologies for Determining Land Cover classes:

Water: These are polygonal features representing open water features. Existing National Hydrology Dataset (NHD) data will be delivered as an overlay to the full dataset. This overlay will include flow polylines that will be buffered based on a general 15ft representation of perennial stream features. The Eliminate tool will be ran against the Feature Analyst hydrography output to reclassify incorrect and smaller features of this type to the closest competing feature classification of the greatest size. This will ensure that shadows from buildings will dissolve into the surrounding land features, while anomalies of green and brown land that may have been misclassified as water be corrected to forest or turf. The minimum area criteria will decide which extracted features stay in the dataset. VGIN DTM Data will also be analyzed for capability in filtering of potential water surfaces using a terrain deviation parameter (e.g., filtering features with a deviation from the terrain of <1 meter).

Impervious: Impervious and Building layers were originally created separately in order to utilize the Feature Analyst Building Toolkit to extract more precise footprints for localities that did not already maintain them. These two feature classifications will be combined grouping all impervious features together. The next step to developing the impervious features will be the input of existing vector data sources. Feature Analyst impervious surface features will be supplemented with available local, regional and state basemap data by erasing and appending these datasets to the extracted output. This will ensure that the land cover data represent impervious surfaces regardless of overhanging tree canopy. Where vector features provide a more accurate representation of impervious surfaces for any given feature, we will defer to this source. Where they are less accurate or not available we will defer to the spectral classification method for the impervious feature.

Turf Grass: Turf Grass will start as a set of training samples that define those non-forested and non-agricultural areas of flat land into large classifications including spectral variation between yellows, greens, and browns. Any attempt to distinguish between what is actually agricultural, turf, etc. within the image extraction process ends up as blended results, so although this class will also capture agricultural land, these areas will be removed later on as they are processed first. Areas that are extracted in this classification that are greater than

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or equal to 2 acres will, and are within parcels greater than 3 acres, will be reevaluated as possible reclassification into Pasture. For those areas where parcel data is unavailable, all features meeting the size threshold will be reviewed. There will be a stage of manual cleanup for falsely identified features.

Other: After the three previous classes (water, impervious and turf grass) have been extracted, the remaining classes are grouped into the Other category. The previously referenced document outlines specific criteria for each.

SECTION 3. REGULATED IMPERVIOUS ACREAGE SERVED BY THE MS4 SERVICE AREA AS OF JUNE 30, 2009

Using the available land cover data sets described above and the 2009 MS4 Service Area described in Attachment 1, the various acreages for impervious cover were developed:

Impervious Cover

Available Land Cover Data Sets	Acreage within the MS4 Service Area as of June 30, 2009	Notes
2008 Henrico Land Cover Data Set	14,310.85	includes 233.96 acres within VDOT rights-of-way
2011 Henrico Land Cover Data Set	14,476.65	includes acreage within VDOT rights-of-way
2014 Virginia Statewide Land Cover Data Set	17,253.64	includes acreage within VDOT rights-of-way

A linear interpolation between the 2008 and 2011 data results in a value 14,421.12 acres of impervious land cover within the MS4 Service Area as of June 30, 2009. Of this area, 14,187.16 acres (14,421.12 less 233.96 acres regulated by VDOT) are regulated by the County through its MS4 Permit.

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SECTION 4. REGULATED PERVIOUS ACREAGE SERVED BY THE MS4 SERVICE AREA AS OF JUNE 30, 2009

Pervious Cover

Available Land Cover Data Sets	Acreage within the MS4 Service Area as of June 30, 2009	Notes
2008 Henrico Land Cover Data Set		Data is not available to determine the extent of pervious (turf) land cover
2011 Henrico Land Cover Data Set		Data is not available to determine the extent of pervious (turf) land cover
2014 Virginia Statewide Land Cover Data Set	17,529.11	

Since only the 2014 Virginia Statewide Land Cover Data Set includes a turf feature class, **17,529.11 acres** is used as an estimate of the pervious area within the MS4 Service Area as of June 30, 2009 that is regulated by the County through its MS4 Permit. This results in an overestimation of the required value.

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ATTACHMENT 3
WOODMAN PARK ENERGY DISSIPATOR

SECTION 1. OVERVIEW

The Woodman Park Energy Dissipator is a retrofit of two existing MS4 outfalls located in a residential area of the County. The project routed the stormwater discharge from two drainage areas (38.99 acres total) into a newly constructed facility designed in accordance with *Virginia DEQ Stormwater Design Specification No. 2 - Sheet Flow to a Vegetated Filter Strip or Conserved Open Space* on C/D/soils.

In accordance with the Chesapeake Bay TMDL Guidance document distributed by DEQ on May 18, 2015:

If an oversized BMP is installed and the excess capacity has not been utilized to offset additional development, permittees may use that capacity to meet the POC reductions required under the TMDL.

As explained in this analysis, the Woodman Park Energy Dissipator generates excess pollutant reductions that are applicable to the TMDL.

SECTION 2. LOCATION

The Woodman Park Energy Dissipator is located at 37.6515 / -77.4867 (latitude / longitude) in the central portion of the County.

SECTION 3. STATUS

Construction of the Woodman Park Energy Dissipator was completed on September 23, 2016.

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SECTION 4. POLLUTANT LOAD REDUCTIONS

Total Nitrogen					
Subsource	Acreage ¹	2009 EOS Loading Rate ² (lbs/ac/yr)	Total Load (lbs/yr)	Removal Efficiency	Load Reduction (lbs/yr)
Regulated Urban Impervious	8.04	9.39	75.50	50% ³	37.75
Regulated Urban Pervious	7.39	6.99	51.66	50% ³	25.83
TOTAL					63.58
Total Phosphorus					
Regulated Urban Impervious	8.04	1.76	14.15	50% ³	7.08
Regulated Urban Pervious	7.39	0.5	3.70	50% ³	1.85
TOTAL					8.93
Total Suspended Solids					
Regulated Urban Impervious	8.04	676.94	2,993.43	55% ⁴	4,505.03
Regulated Urban Pervious	7.39	101.08	746.98	55% ⁴	410.84
TOTAL					4,915.87

¹ based on Virginia Statewide 2014 Land Cover Data Set

² from Table 1 in the County's MS4 Permit

³ from the Virginia Runoff Reduction Spreadsheet

⁴ from Figure 5 in the *Recommendations of the Expert panel to Define Removal Rates for urban Stormwater Retrofit Projects* assuming a Runoff Depth Treated of 0.5 inches – the runoff treatment depth associated with the removal rate specified in the VRRM for Total Phosphorus

SECTION 5. COST

The total cost (design and construction) of the Woodman Park Energy Dissipator project was \$73,886.28.

Funding for the project came from two sources:

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SLAF Grant	=	\$31,234.64
Environmental Fund	=	\$42,651.64

SECTION 6. POLLUTANT LOAD REDUCTIONS APPLICABLE TO THE TMDL

As stated above, a portion of the funding used for this project came from the Environmental Fund, a product of development projects' compliance with the Stream Assessment / Watershed Management Program administered by the County from August 2001 through June 2014. The Environmental Fund is used to fund watershed projects such as stream restoration, outfall retrofits, and educational programs as one aspect of stormwater compliance for development in the County. Therefore, a portion of the pollutant load reductions achieved by the Woodman Park Energy Dissipator is obligated for development project compliance and is not applicable to the pollutant load reductions associated with the TMDL.

Since development projects' contributions to the Environmental Fund were based on a rate of \$8,000.00 per pound of phosphorus, the phosphorus load reduction achieved by the Woodman Park Energy Dissipator project that is applicable to the pollutant load reductions associated with the TMDL must be reduced by 5.33 lbs/year (\$42,651.64 ÷ \$8,000.00 per pound). Discounting the load reductions for both nitrogen and sediment by a similar percentage results in the following pollutant load reductions that are applicable to the requirements of the TMDL:

Pollutant	Total Reduction (lbs/year)	Environmental Fund Obligation (lbs/year)	Applicable to the TMDL (lbs/year)
Total Nitrogen	63.58	37.95	25.63
Total Phosphorus	8.93	5.33	3.60
Total Suspended Solids	4,915.87	2,934.11	1,981.76

ATTACHMENT 4 JAMESTOWN APARTMENTS STREAM RESTORATION

SECTION 1. OVERVIEW

The Jamestown Apartments Stream Restoration project involved restoration of 1,383 linear feet of an urban stream located in a predominantly residential watershed in the western portion of the County. Natural channel design concepts were applied in the design of the project.

In accordance with the Chesapeake Bay TMDL Guidance document distributed by DEQ on May 18, 2015:

All permittees may receive credit for any stormwater quality BMPs installed between Jan 1, 2006 and June 30, 2009 within the MS4 service area if the permittee provides a full historical accounting, to the maximum extent practical, of BMPs in their jurisdiction.

The guidance document also states:

To receive credit for previously unreported BMPs installed on or after January 1, 2006 and prior to July 1, 2009, permittees will need to include the following in their Action Plan:

- 1. An affirmative statement that a complete list, to the maximum extent practicable, of historical BMPs was or will be submitted to the Department by September 1, 2015. Permittees may submit this data as part of the "Historical Data Clean-Up" effort that is currently ongoing.*
- 2. Appropriate calculations for the BMPs that the permittee is claiming for credit towards its required POC load reductions.*

As requested, a historical accounting of the Jamestown Apartments Stream Restoration project was submitted to DEQ in September of 2015.

SECTION 2. LOCATION

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The Jamestown Apartments Stream Restoration project is located at 37.5941 / -77.5787 (latitude / longitude) in the western portion of the County.

SECTION 3. STATUS

Construction of the Jamestown Apartments Stream Restoration project was completed in December 2006.

SECTION 4. POLLUTANT LOAD REDUCTIONS

As noted, the project was completed in December of 2006. In accordance with the Guidance document,

...urban stream restoration projects that have been installed on or after January 1, 2006 and those that cannot conform to any of the four protocols for stream restoration, permittees should use the interim approved removal rates developed by the Bay Program to calculate credits.

Therefore the pollutant load reductions achieved by the project are as follows:

Pollutant	Removal Rates (lbs/ft)	Length	% of Drainage Area that is regulated	Pollutant Removal (lbs)
N	0.075	1,383	100	103.73
P	0.068			94.04
Sediment	44.88			62,069.04

SECTION 5. COST

The total cost (design and construction) of the Jamestown Apartments Stream Restoration project was \$314,038.

ATTACHMENT 5
HENRICO COMMUNICATIONS STREAM RESTORATION

SECTION 1. OVERVIEW

The Henrico Communications Stream Restoration project involved restoration of 1,345 linear feet of an urban stream located in a predominantly commercial / municipal watershed in the western portion of the County. Natural channel design concepts were applied in the design of the project.

In accordance with the Chesapeake Bay TMDL Guidance document distributed by DEQ on May 18, 2015:

All permittees may receive credit for any stormwater quality BMPs installed between Jan 1, 2006 and June 30, 2009 within the MS4 service area if the permittee provides a full historical accounting, to the maximum extent practical, of BMPs in their jurisdiction.

The guidance document also states:

To receive credit for previously unreported BMPs installed on or after January 1, 2006 and prior to July 1, 2009, permittees will need to include the following in their Action Plan:

- 1. An affirmative statement that a complete list, to the maximum extent practicable, of historical BMPs was or will be submitted to the Department by September 1, 2015. Permittees may submit this data as part of the "Historical Data Clean-Up" effort that is currently ongoing.*
- 2. Appropriate calculations for the BMPs that the permittee is claiming for credit towards its required POC load reductions.*

As requested, a historical accounting of the Henrico Communications Stream Restoration project was submitted to DEQ in September of 2015.

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SECTION 2. LOCATION

The Henrico Communications Stream Restoration project is located at 37.6294 / -77.5259 (latitude / longitude) in the western portion of the County.

SECTION 3. STATUS

Construction of the Henrico Communications Stream Restoration project was completed in June 2009.

SECTION 4. POLLUTANT LOAD REDUCTIONS

As noted, the project was completed in June of 2009. In accordance with the Guidance document,

...urban stream restoration projects that have been installed on or after January 1, 2006 and those that cannot conform to any of the four protocols for stream restoration, permittees should use the interim approved removal rates developed by the Bay Program to calculate credits.

Therefore the pollutant load reductions achieved by the project are as follows:

Pollutant	Removal Rates (lbs/ft)	Length	% of Drainage Area that is regulated	Pollutant Removal (lbs)
N	0.075	1,345	95	95.83
P	0.068			86.89
Sediment	44.88			57,345.42

SECTION 5. COST

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The total cost (design and construction) of the Henrico Communications Stream Restoration project was \$454,544.

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ATTACHMENT 6
BMPS INSTALLED BETWEEN
JANUARY 1, 2006 AND JUNE 30, 2009

SECTION 1. OVERVIEW

In accordance with the Chesapeake Bay TMDL Guidance document distributed by DEQ on May 18, 2015:

All permittees may receive credit for any stormwater quality BMPs installed between Jan 1, 2006 and June 30, 2009 within the MS4 service area if the permittee provides a full historical accounting, to the maximum extent practical, of BMPs in their jurisdiction.

The guidance document also states:

To receive credit for previously unreported BMPs installed on or after January 1, 2006 and prior to July 1, 2009, permittees will need to include the following in their Action Plan:

- 1. An affirmative statement that a complete list, to the maximum extent practicable, of historical BMPs was or will be submitted to the Department by September 1, 2015. Permittees may submit this data as part of the "Historical Data Clean-Up" effort that is currently ongoing.*
- 2. Appropriate calculations for the BMPs that the permittee is claiming for credit towards its required POC load reductions.*

As requested, the County's full historical accounting of BMP data was submitted to DEQ in September of 2015. This submission included all the facilities in the County, both in and outside the MS4 Service Area.

The following pollutant removal evaluation includes those BMPs that are within the MS4 Service Area that were installed between January 1, 2006 and June 30, 2009.

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SECTION 2. LOCATION

As stated above, the BMPs included in this evaluation are located within the MS4 Service Area throughout the County.

SECTION 3. STATUS

Each of the BMPs included in this evaluation were brought online between January 1, 2006 and June 30, 2009 and continue to be maintained and operated as approved.

SECTION 4. POLLUTANT LOAD REDUCTIONS

Calculating the pollutant load reductions achieved by the BMPs brought online between January 1, 2006 and June 30, 2009 requires removal efficiencies for the various types of BMPs. The historical BMPs within the MS4 Service Area were grouped based on BMP types from Table V.C.1 – Chesapeake Bay Program BMPs, Established Efficiencies in the TMDL Guidance.

Chesapeake Bay Program BMP Type	County BMP Type
Dry Detention Ponds and Hydrodynamic Structures	50/10 Basin
	50/10 Underground
	Stormceptor
Bioretention C/D soils, underdrain	Bioretention Basin/Trench
Dry Extended Detention Ponds	Extended Detention Basin
Infiltration Practices w/o Sand, Veg – A/B soils, no underdrain	Infiltration Trench/Basin
Wet Ponds and Wetlands	Retention basin
	Extended Detention w/a Shallow Marsh
Filtering Practices	Filterra
	Stormwater360

The removal efficiencies for these Chesapeake Bay Program BMPs are:

Chesapeake Bay Program BMP	Removal Efficiencies
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Type	TN	TP	TSS
Dry Detention Ponds and Hydrodynamic Structures	5%	10%	10%
Bioretention C/D soils, underdrain	25%	45%	55%
Dry Extended Detention Ponds	20%	20%	60%
Infiltration Practices w/o Sand, Veg – A/B soils, no underdrain	80%	85%	95%
Wet Ponds and Wetlands	20%	45%	60%
Filtering Practices	40%	60%	80%

Based on the BMP design data, the total drainage area and impervious and pervious areas served by these BMPs are:

Chesapeake Bay Program BMP Type	Acres Served		
	Drainage Area	Impervious Area	Pervious Area
Dry Detention Ponds and Hydrodynamic Structures	118.68	19.92	98.76
Bioretention C/D soils, underdrain	4.20	2.28	1.92
Dry Extended Detention Ponds	82.53	38.71	43.82
Infiltration Practices w/o Sand, Veg – A/B soils, no underdrain	3.56	1.65	1.91
Wet Ponds and Wetlands	36.80	13.23	23.57
Filtering Practices	40.62	25.34	15.28

The pollutant loads generated by these areas are calculated using the 2009 EOS Loading Rates for the James River Basin from Table 1 in the MS4 Permit.

2009 EOS Loading Rates (lbs/acre/year)			
Source	TN	TP	TSS
Urban Impervious	9.39	1.76	676.94
Urban Pervious	6.99	0.5	101.08

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Pollutant Loading to BMPs			
Chesapeake Bay Program BMP Type	TN	TP	TSS
Dry Detention Ponds and Hydrodynamic Structures	877.38	84.44	23,467.31
Bioretention C/D soils, underdrain	34.83	4.97	1,737.50
Dry Extended Detention Ponds	669.79	90.04	30,633.67
Infiltration Practices w/o Sand, Veg – A/B soils, no underdrain	28.84	3.86	1,310.01
Wet Ponds and Wetlands	288.98	35.07	11,383.37
Filtering Practices	344.75	52.24	18,698.16

Application of the removal efficiencies identified previously from Table V.C.1 – Chesapeake Bay Program BMPs, Established Efficiencies in the TMDL Guidance yields the following load reductions for the BMPs that are within the MS4 Service Area that were installed between January 1, 2006 and June 30, 2009

Pollutant Loading Removed by BMPs			
Chesapeake Bay Program BMP Type	TN	TP	TSS
Dry Detention Ponds and Hydrodynamic Structures	43.87	8.44	2,346.73
Bioretention C/D/ soils, underdrain	8.71	2.24	955.62
Dry Extended Detention Ponds	133.96	18.01	18,380.20
Infiltration Practices w/o Sand, Veg – A/B soils, no underdrain	23.08	3.28	1,244.51
Wet Ponds and Wetlands	57.80	15.78	6,803.02
Filtering Practices	137.90	31.34	14,958.53
TOTAL	405.31	79.09	44,688.62

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SECTION 5. COST

The cost associated with these BMPs is unknown.

ATTACHMENT 7
ENERGY DISSIPATORS INSTALLED BETWEEN
JANUARY 1, 2006 AND JUNE 30, 2014

SECTION 1. OVERVIEW

Since 2001, the County has required the installation of Energy Dissipators at select stormwater outfalls as a requirement of the development process in addition to meeting the required pollutant removal requirement associated with the proposed impervious cover. The County's Energy Dissipator is also listed as an acceptable alternative to Virginia DEQ Stormwater Design Specification No. 2 – Sheet Flow to a Vegetated Filter Strip or Conserved Open Space and as of July 1, 2014 is an approved BMP for complying with the pollutant removal requirement dictated by Virginia's stormwater program.

In accordance with the Chesapeake Bay TMDL Guidance distributed by DEQ on May 18, 2015:

Permittees may receive credit for:

...BMPs that were installed to meet development requirements, but exceed those requirements and any applicable state standards...

An accounting of these Energy Dissipators was submitted to DEQ in September of 2015 in response to the historical BMP data request.

The following pollutant removal evaluation includes those Energy Dissipators that were installed between January 1, 2006 and June 30, 2014 within the MS4 Service Area and exceeded any applicable state standards in place at the time of installation.

SECTION 2. LOCATION

As stated above, the Energy Dissipators included in this evaluation are located within the MS4 Service Area throughout the County.

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SECTION 3. STATUS

Each of the Energy Dissipators included in this evaluation were installed between January 1, 2006 and June 30, 2014 and continue to be maintained and operated as approved.

SECTION 4. POLLUTANT LOAD REDUCTIONS

To calculate the pollutant load reductions achieved by these Energy Dissipators, removal efficiencies are required. Removal efficiencies for TN and TP can be found in the Virginia Runoff Reduction Method (VRRM).

Pollutant	Removal Efficiency	
	A / B Soils	C / D Soils
TN	75%	50%
TP	75%	50%

Since quantification of sediment reduction is not provided for any of the BMPs listed in the VRRM, the performance curves provided by the Bay Program were used to establish a removal efficiency for TSS. Assuming a runoff depth of 0.5 inches (the approximate runoff depth that results in a 50% efficiency for TN and TP), the performance curve for TSS yields a removal efficiency for TSS of 55%.

To calculate the pollutant load entering each of the Energy Dissipators, an analysis of the drainage areas to each Energy Dissipator was conducted to determine the impervious and pervious acreage that drains to each facility. This analysis is based on the 2014 Virginia Statewide Land Cover Data Set. The location of the Energy Dissipator was also studied to determine whether the facility is on an A / B soil or a C / D soil.

The 2009 EOS Loading Rates for the James River Basin from Table 1 in the MS4 Permit were then used to determine the pollutant load entering each facility from these acreages.

2009 EOS Loading Rates (lbs/acre/year)			
Source	TN	TP	TSS
Urban Impervious	9.39	1.76	676.94

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Urban Pervious	6.99	0.5	101.08
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Application of the removal efficiencies identified previously to the incoming loads results in the following load reductions for the Energy Dissipators that were installed prior to July 1, 2014 within the MS4 Service Area and exceeded any applicable state standards in place at the time of installation.

Pollutant Loading Removed by the Energy Dissipators		
TN	TP	TSS
1,979.07	254.72	94,691.94

SECTION 5. COST

The cost associated with these Energy Dissipators is unknown.

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	A	C	D	G	H	I	P	Q	R	Y	Z	AA
	End Treatment ID	IMPERVIOUS AC	TURF AC	P_LOAD_FROM_DA	N_LOAD_FROM_DA	S_LOAD_FROM_DA	P_EFFICIENCY	N_EFFICIENCY	S_EFFICIENCY	NET_P_REDUCTION_BY_EN	NET_N_REDUCTION_BY_EN	NET_S_REDUCTION_BY_EN
1	EN00000000196	1,907	4,025	5.4	46.0	1697.7	50.00%	50.00%	55.00%	2.68	23.02	933.72
2	EN00000000197	1,896	1,690	3.8	27.7	1319.1	75.00%	75.00%	55.00%	2.87	20.80	725.53
3	EN00000000282	3,316	5,160	8.4	67.2	2766.5	50.00%	50.00%	55.00%	4.21	33.60	1,521.56
4	EN00000000283	1,919	1,756	4.3	30.3	1476.6	50.00%	50.00%	55.00%	2.13	15.15	812.11
5	EN00000000284	4,442	6,670	11.2	88.3	3681.2	50.00%	50.00%	55.00%	5.58	44.17	2,024.65
6	EN00000000646	8,984	12,538	22.1	172.0	7349.2	50.00%	50.00%	55.00%	11.04	86.00	4,042.08
7	EN00000000652	0,546	0,697	1.3	10.0	441.1	50.00%	50.00%	55.00%	0.66	5.01	242.61
8	EN00000000653	1,157	1,630	2.9	22.3	948.1	50.00%	50.00%	55.00%	1.43	11.13	521.48
9	EN00000000655	0,461	2,243	1.9	20.0	538.1	50.00%	50.00%	55.00%	0.97	10.01	296.50
10	EN00000000659	5,543	8,228	13.9	109.6	4583.8	50.00%	50.00%	55.00%	6.93	54.78	2,521.11
11	EN00000000666	1,328	1,487	3.1	22.9	1049.2	50.00%	50.00%	55.00%	1.54	11.43	577.07
12	EN00000000909	0,921	1,349	2.3	18.1	759.9	50.00%	50.00%	55.00%	1.15	9.04	417.97
13	EN00000000913	26,061	45,732	72.3	583.2	23618.4	50.00%	50.00%	55.00%	36.13	291.58	12,990.14
14	EN00000000919	1,562	3,866	4.7	41.7	1448.3	50.00%	50.00%	55.00%	2.34	20.85	796.56
15	EN00000000920	1,691	2,968	4.5	36.6	1445.0	50.00%	50.00%	55.00%	2.23	18.31	794.73
16	EN00000000922	2,297	9,924	9.0	90.9	2557.8	50.00%	50.00%	55.00%	4.50	45.47	1,406.78
17	EN00000001350	1,932	0,880	3.8	24.3	1396.5	50.00%	50.00%	55.00%	1.92	12.14	788.08
18	EN00000001351	0,375	0,268	0.8	5.4	280.7	50.00%	50.00%	55.00%	0.40	2.70	154.39
19	EN00000001353	0,335	0,164	0.7	4.3	243.1	50.00%	50.00%	55.00%	0.34	2.14	133.73
20	EN00000001354	3,213	1,094	6.2	37.8	2285.9	75.00%	75.00%	55.00%	4.65	28.37	1,257.23
21	EN00000005162	3,574	5,002	8.8	68.5	2635.0	75.00%	75.00%	55.00%	6.59	51.39	1,808.77
22	EN00000005163	4,132	4,741	9.6	71.9	3276.1	75.00%	75.00%	55.00%	7.23	53.95	1,801.83
23	EN00000005164	1,458	1,623	3.4	25.0	1149.3	50.00%	50.00%	55.00%	1.89	12.50	632.12
24	EN00000005165	0,484	0,404	1.1	7.4	368.6	75.00%	75.00%	55.00%	0.79	5.53	202.71
25	EN00000005167	0,906	1,047	2.1	15.8	719.1	75.00%	75.00%	55.00%	1.59	11.87	395.49
26	EN00000005182	1,409	1,484	3.2	23.6	1104.1	50.00%	50.00%	55.00%	1.61	11.80	607.23
27	EN00000005808	20,249	3,603	37.4	215.3	14071.6	50.00%	50.00%	55.00%	18.72	107.66	7,739.40
28	EN00000005819	8,743	10,249	20.5	163.7	6854.6	50.00%	50.00%	55.00%	10.26	76.87	3,825.04
29	EN00000005820	8,463	14,027	21.9	177.5	7146.7	50.00%	50.00%	55.00%	10.95	88.76	3,930.70
30	EN00000005829	0,402	1,211	1.3	12.2	394.4	50.00%	50.00%	55.00%	0.66	6.12	216.89
31	EN00000005830	0,223	0,118	0.5	2.9	163.0	75.00%	75.00%	55.00%	0.34	2.19	89.66
32	EN00000005831	2,725	4,197	6.9	54.9	2269.0	50.00%	50.00%	55.00%	3.45	27.46	1,247.96
33	EN00000005834	0,278	0,044	0.5	2.9	192.6	50.00%	50.00%	55.00%	0.26	1.46	105.90
34	EN00000005838	23,154	35,595	58.5	466.2	19271.8	50.00%	50.00%	55.00%	21.30	235.11	10,599.46
35	EN00000005875	5,650	4,645	12.3	85.5	4294.5	50.00%	50.00%	55.00%	6.13	42.76	2,381.97
36	EN00000005951	11,320	15,688	27.9	217.2	9266.9	50.00%	50.00%	55.00%	13.93	106.61	5,096.81
37	EN00000005951	9,741	5,339	19.8	128.8	7134.0	50.00%	50.00%	55.00%	9.91	64.40	3,923.73
38	EN00000005948	2,878	0,429	5.3	30.0	1991.4	50.00%	50.00%	55.00%	2.64	15.01	1,095.27
39	EN00000005943	0,450	0,385	1.0	6.9	343.9	50.00%	50.00%	55.00%	0.49	3.46	189.14
40	EN00000005947	27,213	25,155	61.0	438.4	21065.2	50.00%	50.00%	55.00%	30.49	215.19	11,585.85
41	EN00000005922	6,014	5,315	13.2	93.6	4603.5	50.00%	50.00%	55.00%	6.62	46.81	2,534.67
42	EN00000001006	0,546	1,272	1.6	14.0	498.2	50.00%	50.00%	55.00%	0.80	7.01	274.03
43	EN00000001007	0,710	0,818	1.7	12.4	563.3	50.00%	50.00%	55.00%	0.83	6.19	309.82
44	EN00000001161	1,015	1,373	2.5	19.1	825.6	50.00%	50.00%	55.00%	1.24	9.56	454.10
45	EN00000001204	1,547	1,603	3.5	25.7	1269.4	50.00%	50.00%	55.00%	1.76	12.87	685.15
46	EN00000001205	0,509	1,274	1.5	13.7	473.1	50.00%	50.00%	55.00%	0.77	6.84	280.23
47										254.72	1,979.07	94,691.94
48												
49												

HENRICO COUNTY CHESAPEAKE BAY TMDL ACTION PLAN ATTACHMENT 7

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CHESAPEAKE BAY TMDL ACTION PLAN

ATTACHMENT 8
SEPTIC-TO-SEWER CONNECTIONS

SECTION 1. OVERVIEW

In 2015, DEQ received a request to review the appropriateness of allowing credit under the Chesapeake Bay TMDL for the connection of septic systems to sanitary sewer. DEQ determined this to be an acceptable practice for crediting toward the required pollutant reduction requirement for total nitrogen (TN).

SECTION 2. POLLUTANT LOAD REDUCTION

The TN load reduction is calculated as follows:

The assumed average load of total nitrogen at the edge of the septic drainfield is 9 lbs/year/person with an average attenuation factor of 60% from the edge of the drainfield to the edge of the stream resulting in a TN load of 3.6 lbs/year/person at the edge of the stream.

To calculate the TN load reduction achieved for each household that is connected to sanitary sewer that was previously served by a drainfield, the 3.6 lbs/year/person is multiplied by the average number of people per household based on the latest Census data. The total TN reduction is then calculated by multiplying this by the number of households connected.

County records of septic-to-sewer connections:

From / To	Number of Households Connected to Sanitary that were Previously Served by a Drainfield
2006 / 2007	33
2007 / 2009	92
2010 / 2011	29
2011 / 2012	12
2012 / 2013	15
2013 / 2014	13
2014 / 2015	12

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2015 / 2016	29
TOTAL	235

The latest Census data indicates an average of 2.49 persons reside in each household in Henrico County.

Therefore,

TN Reduction = 3.6 lbs/year/person × 2.49 persons/household × 235 households

TN Reduction = 2,106.54 lbs/year

ATTACHMENT 9 SKIPWITH ELEMENTARY STREAM RESTORATION

SECTION 1. OVERVIEW

The Skipwith Elementary Stream Restoration project involved restoration of 1,750 linear feet of an urban stream located in a predominantly residential watershed in the western portion of the County. Natural channel design concepts were applied in the design of the project.

In accordance with the Chesapeake Bay TMDL Guidance document distributed by DEQ on May 18, 2015:

If an oversized BMP is installed and the excess capacity has not been utilized to offset additional development, permittees may use that capacity to meet the POC reductions required under the TMDL.

As explained in this analysis, the Skipwith Elementary Stream Restoration project generates excess pollutant reductions that are applicable to the TMDL.

SECTION 2. LOCATION

The Skipwith Elementary Stream Restoration project is located at 37.6186 / -77.5350 (latitude / longitude) in the western portion of the County.

SECTION 3. STATUS

Construction of the Skipwith Elementary Stream Restoration project was completed in May of 2012.

SECTION 4. POLLUTANT LOAD REDUCTIONS

As noted, the project was completed in May of 2012. In accordance with the Guidance document,

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...urban stream restoration projects that have been installed on or after January 1, 2006 and those that cannot conform to any of the four protocols for stream restoration, permittees should use the interim approved removal rates developed by the Bay Program to calculate credits.

Therefore the pollutant load reductions achieved by the project are as follows:

Pollutant	Removal Rates (lbs/ft)	Length	% of Drainage Area that is regulated	Pollutant Removal (lbs)
N	0.075	1,750	100	131.25
P	0.068			119.00
Sediment	44.88			78,540.00

SECTION 5. COST

The total cost (design and construction) of the Skipwith Elementary Stream restoration project was \$628,710.00.

Funding for the project came from the Environmental Fund.

SECTION 6. POLLUTANT LOAD REDUCTIONS APPLICABLE TO THE TMDL

As stated above, the funding used for this project came from the Environmental Fund, a product of development projects' compliance with the Stream Assessment / Watershed Management Program administered by the County from August 2001 through June 2014. The Environmental Fund is used to fund watershed projects such as stream restoration, outfall retrofits, and educational programs as one aspect of stormwater compliance for development in the County. Therefore, a portion of the pollutant load reductions achieved by the Skipwith Elementary Stream Restoration project is obligated for development project compliance and is not applicable to the pollutant load reductions associated with the TMDL.

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Since development projects' contributions to the Environmental Fund were based on a rate of \$8,000.00 per pound of phosphorus, the phosphorus load reduction achieved by the Skipwith Elementary Stream Restoration project that is applicable to the pollutant load reductions associated with the TMDL must be reduced by 78.59 lbs/year ($\$628,710.00 \div \$8,000.00$ per pound). Discounting the load reductions for both nitrogen and sediment by a similar percentage results in the following pollutant load reductions that are applicable to the pollutant load reduction requirements of the TMDL:

Pollutant	Total Reduction (lbs/year)	Environmental Fund Obligation (lbs/year)	Applicable to the TMDL (lbs/year)
Total Nitrogen	131.25	86.68	44.57
Total Phosphorus	119.00	78.59	40.41
Total Suspended Solids	78,540.00	51,868.58	26,671.43

PART I.D.2
TMDL ACTION PLAN AND IMPLEMENTATION
TMDL ACTION PLANS OTHER THAN
THE CHESAPEAKE BAY TMDL

The permittee shall submit the required TMDL Action Plans to the Department for review and acceptance with the annual report due March 31, 2017.

Drafts of the required TMDL Action Plans are attached and can be found at:
<http://henrico.us/works/engineering-environmental-services/draft-total-maximum-daily-load-tmdl-action-plans/>

Beginning with the annual report due on March 31, 2018, the permittee shall report on the implementation of the TMDL Action Plans and associated evaluation including the results of any monitoring conducted as part of the evaluation.

Noted.

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CHICKAHOMINY RIVER BENTHIC TMDL ACTION PLAN

CHICKAHOMINY RIVER BENTHIC TMDL ACTION PLAN

SECTION 1. OVERVIEW

Henrico County's Chickahominy River Benthic TMDL Action Plan for the Chickahominy River addresses the wasteload allocation (WLA) for sediment that is associated with the approved TMDL for the County (see Section 3 of the Plan). The Plan has been developed in accordance with the requirements of the County's MS4 Permit and the applicable recommendations contained in the *TMDL Action Planning for Local Total Maximum Daily Loads as Required in the Small MS4 General Permit (VAR04) Effective July 1, 2013 and MS4 Individual Permits (Guidance)*, distributed by the Virginia Department of Environmental Quality dated November 21, 2016 .

As stated in the Guidance,

This document is provided as guidance and, as such, sets forth standard operating procedures for the agency. However, it does not mandate any particular method nor does it prohibit any particular method for the analysis of data, establishment of a wasteload allocation, or establishment of a permit limit. If alternative proposals are made, such proposals should be reviewed and accepted or denied based on their technical adequacy and compliance with appropriate laws and regulations.

The Guidance also states

Beyond illicit discharges, existing programmatic practices, ordinances, and outreach currently in place under the MS4 program may be sufficient to address anthropogenic sources of bacteria. For these TMDLs, permittees are encouraged to consider practices such as public outreach and education to influence behaviors. This may include signage and supplies to encourage the collection and removal of pet waste at areas of high concentration, such as dog parks; residential outreach through fliers or pamphlets included with utility bills; and other education programs.

As such, the Plan reflects the requirements of the County's MS4 Permit and any recommendations described in the Guidance that are appropriate.

**HENRICO COUNTY
CHICKAHOMINY RIVER BENTHIC TMDL ACTION PLAN**

SECTION 2. MS4 PERMIT LANGUAGE

PART I.D. TMDL ACTION PLAN AND IMPLEMENTATION

2. TMDL Action Plans other than the Chesapeake Bay TMDL

a) TMDL Action Plan Development

The permittee shall maintain an updated MS4 Program Plan that includes TMDL Action Plans for pollutants in which wasteloads have been allocated to the MS4 in approved TMDLs. Approved TMDLs as of the effective date of this state permit are included in Attachment A of this state permit. TMDL Action Plans may be implemented in multiple phases over more than one permit cycle using the adaptive iterative approach provided adequate progress is made to reduce pollutant discharges in a manner that is consistent with the assumptions and requirements of the applicable TMDL. Progress shall be demonstrated by representative and adequate monitoring or other methods (e.g. modeling) as described in Part I.D.2.b)5) below. These TMDL Actions Plans shall identify the best management practices and other interim milestone activities to be implemented during the remaining term of this state permit. The plan shall include an estimated end date for achieving the applicable wasteload allocations and, for planning purposes, a projection of BMPs and other implementation steps expected to address the WLA, outside of the permit term, as applicable.

- 1) No later than 24 months after the effective date of this state permit, the permittee shall submit to the Department TMDL Action Plans to address any new or modified requirements established under this Special Condition for pollutants identified in TMDL wasteload allocations approved prior to the effective date of this state permit.
- 2) The TMDL Action Plans shall become effective and enforceable upon written notification from the Department.
- 3) The TMDL Action Plans shall be incorporated by reference into this state permit.

b) TMDL Action Plan content

The permittee shall:

- 1) Develop and maintain a list of its legal authorities such as ordinances, permits, order, specific contract language, and inter-jurisdictional agreements applicable to reducing the pollutant identified in a WLA;
- 2) Identify and maintain an updated list of all additional management practices, control techniques and system design and engineering methods, beyond those identified in Part I.B of this state permit, that have been implemented as

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CHICKAHOMINY RIVER BENTHIC TMDL ACTION PLAN

part of the MS4 Program Plan that are applicable to reducing the pollutant identified in the WLA;

- 3) Enhance the public education and outreach and employee training programs to also promote methods to eliminate and reduce discharges of the pollutants identified in the WLA;
 - 4) Assess all significant sources of pollutant(s) from facilities of concern owned or operated by the MS4 operator that are not covered under a separate VPDES industrial stormwater permit and identify all municipal facilities that may be a significant source of the identified pollutant. For the purpose of this assessment, a significant source of pollutant(s) from a facility of concern means a discharge where the expected pollutant loading is greater than the average pollutant loading for the land use identified in the TMDL. (For example, a significant source of pollutant from a facility of concern for a bacterial TMDL would be expected to be greater at a dog park than at other recreational facilities where dogs are prohibited);
 - 5) Develop and implement a method to assess TMDL Action Plans for their effectiveness in reducing the pollutants identified in the WLAs. The evaluation shall use any newly available information, representative and adequate water quality monitoring results, or modeling tools to estimate pollutant reductions for the pollutant(s) of concern from implementation of the MS4 Program Plan. Monitoring may include BMP, outfall, or instream monitoring, as appropriate, to estimate pollutant reductions. The permittee may conduct monitoring, utilize existing data, establish partnerships, or collaborate with other MS4 permittees or other third parties, as appropriate. This evaluation shall include assessment of the facilities identified in Part I.D.2.b)4) above. The methodology used for assessment shall be described in the TMDL Action Plan.
 - 6) Solicit public input on the draft TMDL Action Plan and consider public comments in development of the final TMDL Action Plan that is submitted to the Department for review and approval.
- c) This state permit shall be modified or alternatively revoked and reissued if any approved wasteload allocation procedure, pursuant to Section 303(d) of the Clean Water Act, imposes wasteload allocations, limits or conditions on the treatment works that are not consistent with the permit requirements.
 - d) Analytical methods for any monitoring shall be conducted according to procedures approved under 40 CFR Part 136 or alternative methods approved by the Environmental Protection Agency (EPA). Where an approved 40 CFR Part 136 method does not exist, the permittee shall use a method consistent with the TMDL.

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CHICKAHOMINY RIVER BENTHIC TMDL ACTION PLAN**

- e) The permittee is encouraged to participate as a stakeholder in the development of any TMDL implementation plans applicable to their discharge. The permittee may incorporate applicable best management practices identified in the TMDL implementation plan in the MS4 Program Plan.
- f) Annual Reporting Requirements.
 - 1) The permittee shall submit the required TMDL Action Plans to the Department for review and acceptance with the annual report due March 31, 2017.
 - 2) Beginning with the annual report due March 31, 2018, the permittee shall report on the implementation of the TMDL Action Plans and associated evaluation including the results of any monitoring conducted as part of the evaluation.
- g) The permittee shall identify the best management practices and other steps that will be implemented during the next permit term as part of the permittee's reapplication for coverage as required under Part II.M. The permittee shall also evaluate and modify the estimated end date for achieving the applicable wasteload based on information acquired during the permit cycle.

SECTION 3. APPLICABLE SEDIMENT WASTELOAD ALLOCATION AND REDUCTION REQUIREMENTS

Wasteload Allocation (tons/year)	Watershed(s)	TMDL Report	EPA Approval Date	SWCB Approval Date
202.68	Chickahominy River and Tributaries	Benthic TMDL Development Chickahominy River, VA	11/7/2013	3/28/2014

From **Attachment A: Applicable TMDL Wasteload Allocations** in the County's MS4 Permit

Based on the best available data, the land coverage within the watershed subject to the TMDL is as follows:

Source	Existing Acres in the Current MS4 Service Area ¹ subject to the TMDL	Percentage of Regulated Areas within the Overall Watershed
Henrico Regulated Urban Impervious ²	1,562.14	92%

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CHICKAHOMINY RIVER BENTHIC TMDL ACTION PLAN**

Henrico Regulated Urban Pervious ³	1,785.49	
VDOT Regulated Urban Impervious ⁴	168.46	8%

¹ See Attachment 1

² See Attachment 2

³ See Attachment 2

⁴ See Attachment 2

Since the published wasteload allocation is an aggregate between the County's MS4 and VDOT's MS4, a similar percentage breakdown is used to determine the County's allocation – 372,931.20 lbs/year (92% of 202.68 tons/year).

Sediment reductions needed to comply with the TMDL were calculated using the loading rates specified in the MS4 Permit for regulated impervious and pervious lands and comparing these loads to the County's allocation.

Source	Existing Acres in the Current MS4 Service Area subject to the TMDL	Loading Rate (lbs/acre/year)	Total Load Generated by the Regulated Areas in the MS4 Service Area (lbs/year)
Henrico Regulated Urban Impervious	1,562.14	676.94	1,057,475
Henrico Regulated Urban Pervious	1,785.49	101.08	180,477
Total			1,237,952

Therefore, the County must achieve an overall sediment reduction of 865,021 lbs/year (1,237,952 – 372,931). This will be accomplished over the course of the next five permit cycles (by 2040).

SECTION 4 SEDIMENT TMDL PLANNING

Henrico County's sediment TMDL Action Plan addresses the following:

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SECTION 4.1 LEGAL AUTHORITY

Develop and maintain a list of its legal authorities such as ordinances, permits, order, specific contract language, and inter-jurisdictional agreements applicable to reducing the pollutant identified in a WLA.

Henrico has reviewed its current MS4 Program Plan and has determined that the legal authorities as stated in the current MS4 Program Plan are sufficient for compliance with this special condition. Please refer to Part I.A.3 of the MS4 Program Plan for a listing of the legal authorities.

SECTION 4.2 MANAGEMENT PRACTICES, CONTROL TECHNIQUES, AND METHODS

Identify and maintain an updated list of all additional management practices, control techniques and system design and engineering methods, beyond those identified in Part I.B of this state permit, that have been implemented as part of the MS4 Program Plan that are applicable to reducing the pollutant identified in the WLA

Erosion and Sediment Control (ESC) Program

In 2009, the Virginia Department of Conservation and Recreation determined the County's ESC program was consistent with the Virginia ESC Law (§ 62.1-44.15:51 et seq. of the State Code) and Regulations (9VAC25-840). This program continues to be administered and implemented in accordance with the requirements of the state law and regulations.

Stormwater Management (SWM) Program

In 2014, the Virginia Department of Environmental Quality determined the County's SWM program was consistent with the SWM Act (§ 62.1-44.15:24 et seq. of the State Code) and the Virginia Stormwater Management Regulations (9VAC25-870 et seq.). This program continues to be administered and implemented in accordance with the requirements of the state law and regulations.

Illicit Discharge Detection and Elimination (IDDE) Program

The County continues to implement an IDDE program in accordance with the requirements of its MS4 Permit to locate and eliminate illicit discharges and

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improper disposal into the MS4. This program is described in Part I.B.2.e of the MS4 Program Plan and implementation details are provided in the Part I.B.2.e Annual Report Supplements.

SWM Facility and Municipal Separate Storm Sewer System (MS4) Infrastructure Inspection and Maintenance Programs

The County continues to inspect 1) SWM facilities (both public and private) that discharge to the MS4 and 2) MS4 infrastructure (inlets, junctions, manholes, end treatments, and channels, pipes, etc.) in accordance with the requirements of its MS4 Permit. When necessary, maintenance of these facilities and infrastructure is addressed. These programs are detailed in Part I.B.2.h of the MS4 Program Plan and implementation details are provided in the Part I.B.2.h Annual Report Supplements.

The following management practices with quantifiable sediment reductions have also been implemented in the watershed:

Mean / Method	Type	Applicable Reductions (lbs)	Anticipated / Completion Date
		TSS	
BMPs Installed between January 1, 2006 and June 30, 2009 ⁵	Stormwater Compliance BMPs	6,436.30	Complete
Energy Dissipators installed prior to June 30, 2014 that weren't previously claimed ⁶	Additional Outfall Treatment	21,694.38	Complete
TOTAL		28,130.68	

⁵ See Attachment 3

⁶ See Attachment 4

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SECTION 4.3 PUBLIC EDUCATION, PUBLIC OUTREACH, AND EMPLOYEE TRAINING

Enhance the public education and outreach and employee training programs to also promote methods to eliminate and reduce discharges of the pollutants identified in the WLA.

Henrico County conducts various public education and outreach and employee training programs that promote a reduction of sediments discharges throughout the County. These efforts include programs such as:

ESC Preconstruction Meeting DVDs

The County distributes an informational DVD to Responsible Land Disturbers (RLD) and contractors at preconstruction meetings. The DVD explains proper installation and maintenance of Erosion and Sediment Control practices during construction of regulated land disturbing activities.

Public Outreach addressing drainage and erosion concerns / back yard stream erosion

Henrico County responds to citizen complaints related to drainage and erosion concerns, and backyard stream erosion. During site visits, citizens are provided with information on vegetative and structural controls. Any issues within the county drainage easement are addressed by County staff.

Staff training for IDDE

To address training requirements of Part I.B.2.k of the MS4 Permit, the County provides training sessions twice a year for appropriate County personnel for:

- 1) the recognition and reporting of illicit discharges, and
- 2) good housekeeping on and around municipal facilities.

Municipal Site Inspection Team

A Stormwater Inspection Team was established in 2013 to educate County staff regarding good municipal site housekeeping. The team is comprised of representatives from Recreation and Parks, General Services, Public Utilities, Fire, Public Works and Public Schools. The Stormwater Inspection Team meets monthly and inspects one municipal facility each month. The inspections will also serve as a

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learning experience so team members become familiar with what is expected on all municipal facilities. Team members then conduct the needed inspections of the required facilities for which their Department or Division is responsible.

Pamphlets for Proper Disposal of Yard Waste

Residential Leaf Collection Services pamphlets are distributed annually to all Henrico Utility customers. The pamphlets include a leaf collection schedule, alternative methods for proper disposal of yard debris, and cautions to prevent yard debris from obstructing roads and stormwater drainage.

Individual letters are also sent to citizens in the event that yard debris is found to be dumped in the County's ROW and/or storm sewer system. The letters inform citizens that the dumping of yard debris in the storm sewer is a violation of County Code and state that it is unlawful to "cause or allow illicit discharges to the County's storm sewer system" or "discharge materials other than stormwater to the storm sewer system by spills, dumpings or disposal." Citizens are informed of the impacts caused by dumping yard debris and given information on proper disposal.

SECTION 4.4 ASSESS SIGNIFICANT SOURCES OF POLLUTANTS

Assess all significant sources of pollutant(s) from facilities of concern owned or operated by the MS4 operator that are not covered under a separate VPDES industrial stormwater permit and identify all municipal facilities that may be a significant source of the identified pollutant. For the purpose of this assessment, a significant source of pollutant(s) from a facility of concern means a discharge where the expected pollutant loading is greater than the average pollutant loading for the land use identified in the TMDL. (For example, a significant source of pollutant from a facility of concern for a bacterial TMDL would be expected to be greater at a dog park than at other recreational facilities where dogs are prohibited)

All Henrico County properties were assessed in the MS4 Municipal Management Area (MMA) System described in Part I.B.2.i of the MS4 Program Plan. These assessments did not reveal any significant sources of sediment from facilities of concern owned or operated by the County of Henrico that are not covered under a separate VPDES permit.

SECTION 4.5 MEANS AND METHODS TO ASSESS TMDL ACTION PLAN

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Develop and implement a method to assess TMDL Action Plans for their effectiveness in reducing the pollutants identified in the WLAs. The evaluation shall use any newly available information, representative and adequate water quality monitoring results, or modeling tools to estimate pollutant reductions for the pollutant(s) of concern from implementation of the MS4 Program Plan. Monitoring may include BMP, outfall, or in-stream monitoring, as appropriate, to estimate pollutant reductions. The permittee may conduct monitoring, utilize existing data, establish partnerships, or collaborate with other MS4 permittees or other third parties, as appropriate. This evaluation shall include assessment of the facilities identified in Part I.D.2.b)4) above. The methodology used for assessment shall be described in the TMDL Action Plan.

An evaluation of the activities conducted during the permit year will be included in the annual report and will consider the implementation details of the programs. Appropriate results of the In Stream Monitoring program required by Part I.C.2 of the MS4 Permit will be considered in developing the evaluations. In addition, the status of proposed watershed projects that are expected to result in quantifiable sediment reductions will be provided. Evaluations of County owned/operated facilities are conducted in accordance with MMMA System described in Part I.B.2.i of the MS4 Program Plan.

SECTION 4.6 SOLICIT PUBLIC COMMENTS

Solicit public input on the draft TMDL Action Plan and consider public comments in development of the final TMDL Action Plan that is submitted to the Department for review and approval.

A draft of this Chickahominy River Benthic TMDL Action Plan was posted on the County's website for two weeks and an opportunity for public comment was provided.

No comments were received.

SECTION 4.7 ANNUAL REPORTING REQUIREMENTS

Annual Reporting Requirements

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- 1) The permittee shall submit the required TMDL Action Plans to the Department for review and acceptance with the annual report due March 31, 2017.

Noted.

- 2) Beginning with the annual report due on March 31, 2018, the permittee shall report on the implementation of the TMDL Action Plans and associated evaluation including the results of any monitoring conducted as part of the evaluation.

In addition to the individual program evaluations mentioned in Section 4.5, implementation details will be included in the MS4 Annual Reports beginning with the annual report due March 31, 2018. The details will be provided in the following format:

BMPs, Programs, and/or Projects Implemented during the MS4 Permit Year	Implementation Details (information such as number, location, status, estimated sediment reduction, etc.)

SECTION 4.8 PLANS FOR THE NEXT PERMIT CYCLE

The permittee shall identify the best management practices and other steps that will be implemented during the next permit term as part of the permittee's reapplication for coverage as required under Part II.M. The permittee shall also evaluate and modify the estimated end date for achieving the applicable wasteload based on information acquired during the permit cycle.

Noted.

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**ATTACHMENT 1
MS4 SERVICE AREA**

SECTION 1. OVERVIEW

The MS4 Service Area is the land area that drains into and through the County's MS4 infrastructure. There are both privately-owned and publicly-owned lands within the County's MS4 Service Area. The publicly-owned land consists of local, state and federal properties and rights-of-way.

SECTION 2. DELINEATION

The limits of the County's MS4 Service Area were determined by delineating the drainages areas to each outfall the County owns and/or operates. These drainage areas were then aggregated into the MS4 Service Area. As required by the County's MS4 Permit, the current delineation of the MS4 Service Area was delivered to DEQ in September of 2016.

For purposes of calculating the pollutant load reductions required during the first MS4 Permit cycle for the Chesapeake Bay TMDL, the MS4 Service Area as of June 30, 2009 is required (see Table 2 of the MS4 Permit). In order to develop the MS4 Service Area as it existed in June of 2009, certain individual drainage areas were excluded from the current MS4 Service Area. These excluded areas included drainage areas associated with MS4 infrastructure that was approved for construction after June 30, 2009 and infrastructure that had been installed but not accepted by the County prior to June 30, 2009.

There are approximately 156,800 acres located within the boundaries of Henrico County.

As of December 2016, approximately 50,314 acres of the County were located within the MS4 Service Area.

As of June 2009, approximately 49,284 acres of the County were located within the MS4 Service Area. Of these 49,284 acres, approximately 3,348 acres are within the watershed subject to the Chickahominy River Benthic TMDL. There are also

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approximately 168 acres of impervious cover within the VDOT ROW in the watershed.

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ATTACHMENT 2
REGULATED URBAN IMPERVIOUS AND PERVIOUS AREAS

SECTION 1. OVERVIEW

Calculating the pollutant reduction requirements associated with the Chickahominy River Benthic TMDL requires the *regulated impervious* acreage and the *regulated pervious* acreage within the MS4 Service Area as of June 30, 2009. In the absence of a data set depicting land cover as of June 30, 2009, several land use data sets were used to estimate the required acreages.

SECTION 2. APPLICABLE LAND COVER DATA SETS

2008 Henrico Land Cover Data Set

The 2008 land cover data set was created from the 2008 planimetric data. The following is from the 2008 planimetric metadata. "Planimetric features" are collected and updated from the digital orthophotography. They were collected in MicroStation and exported out as DGN or DWG (CAD) files. These were then converted to ESRI shapefiles and finally to ESRI coverages for editing and final attribution. The finished coverages were then used to load the ESRI geodatabase feature classes."

The land cover data consists of four feature classes;

- a. *Water* was generated from the waterbodies feature class a representation of any water feature equal to or greater than three feet wide. Meaning any stream three feet or wider is contained in the feature class.
- b. *Trees* was generated from the trees feature class which is any tree covered area equal to or greater than fifty square feet. The tree cover in the landcover data took only tree covered areas equal to or greater than ninety square meters. For the tree covered areas less than ninety square meters the data was assigned the neighboring coverage designation. If the small tree covered area was surrounded by other or impervious it took on that designation.
- c. *Impervious* was derived from the buildings, driveways, parking, and roads feature classes. The roads and parking lots that had any landscape islands or divided roads median strips were added to the other land cover feature class.

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- d. *Other* was the remainder of the above process. Any area that was not covered by water, trees, buildings, driveways, parking, and roads became other.

2011 Henrico Land Cover Data Set

The 2011 land cover data set was created from the 2011 planimetric data. The following is from the 2011 planimetric metadata.

Buildings, Driveways, Parking, Roads

Planimetric features are collected and updated from the digital orthophotography. They are collected in MicroStation and exported out as DGN or DWG (CAD) files. These are then converted to ESRI shapefiles and finally to ESRI coverages for editing and final attribution. The finished coverages are then used to load the ESRI geodatabase feature classes.

Waterbodies (Compiled from Lidar)

Using MARS software Hydrologic features (streams, rivers and lakes) are compiled in a 3d environment. These features are used in both the breaklines feature class (3d) and the waterbodies feature class (2d). ESRI shape files are created and these are imported into the geodatabase feature class.

Trees (Compiled from Lidar)

Using MARS software tree polygons larger than 50 square feet were created from the lidar dataset. ESRI shape files were created by tiles which were then merged together and dissolved to create the final geodatabase feature class.

The land cover data consists of four feature classes;

- a. *Water* was generated from the waterbodies feature class which is a representation of any water feature equal to or greater than three feet wide. Meaning any stream three feet or wider is contained in the feature class.
- b. *Trees* was generated from the trees feature class which is any tree covered area equal to or greater than fifty square feet. The tree cover in the landcover data took only tree covered areas equal to or greater than ninety square meters. For the tree covered areas less than ninety square meters the data was assigned the neighboring coverage designation. If the small tree covered area was surrounded by other or impervious it took on that designation.

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- c. *Impervious* was derived from the buildings, driveways, parking, and roads feature classes. The roads and parking lots that had any landscape islands or divided roads median strips were added to the other land cover feature class.
- d. *Other* is the remainder of the above process. Any area that was not covered by water, trees, buildings, driveways, parking, and roads became other.

2014 Virginia Statewide Land Cover Data Set

The Virginia Statewide 2014 land cover data set was created, in part, from the 2011-2014 VBMP 4-band orthophotography. Resolution is provided at 1 meter and produced in both raster and vector formats using Textron Systems Feature Analyst Software for ESRI. The following is from the 2014 Technical Plan of Operations document Version 7 dated May 6, 2016.

The four classes used to develop area measurements are below.

Water: This classification includes all areas of open water; typically 25 percent or greater pixel cover of water, and all areas characterized by perennial cover of ice/snow as defined by the EPA. Includes drainage network and basins such as rivers, streams, lakes, canals, waterways, reservoirs, ponds, bays, estuaries, and ocean as defined by the NHD. Only features greater than 1 acre in size will remain in this classification.

Impervious: This classification includes areas characterized by a high percentage of constructed materials such as asphalt and concrete, buildings and parking lots, and infrastructure such as roads and rail-roads as defined by the EPA.

Turf Grass: This classification includes vegetation (primarily grasses) planted in developed settings for erosion control or aesthetic purposes, as well as natural herbaceous vegetation and undeveloped land, including upland grasses and forbs, as defined by the EPA. Examples include but are not limited to recreational areas, lawns, and vacant lands. Any grasses or managed turf that fall into this description will be included if the land is less than 1 acre in size, or visually determined to be recreational from the imagery.

Other: Includes all remaining land cover classifications, including Forest, Scrub/Shrub, Agriculture, Wetlands, and Barren.

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Methodologies for Determining Land Cover classes:

Water: These are polygonal features representing open water features. Existing National Hydrology Dataset (NHD) data will be delivered as an overlay to the full dataset. This overlay will include flow polylines that will be buffered based on a general 15ft representation of perennial stream features. The Eliminate tool will be ran against the Feature Analyst hydrography output to reclassify incorrect and smaller features of this type to the closest competing feature classification of the greatest size. This will ensure that shadows from buildings will dissolve into the surrounding land features, while anomalies of green and brown land that may have been misclassified as water be corrected to forest or turf. The minimum area criteria will decide which extracted features stay in the dataset. VGIN DTM Data will also be analyzed for capability in filtering of potential water surfaces using a terrain deviation parameter (e.g., filtering features with a deviation from the terrain of <1 meter).

Impervious: Impervious and Building layers were originally created separately in order to utilize the Feature Analyst Building Toolkit to extract more precise footprints for localities that did not already maintain them. These two feature classifications will be combined grouping all impervious features together. The next step to developing the impervious features will be the input of existing vector data sources. Feature Analyst impervious surface features will be supplemented with available local, regional and state basemap data by erasing and appending these datasets to the extracted output. This will ensure that the land cover data represent impervious surfaces regardless of overhanging tree canopy. Where vector features provide a more accurate representation of impervious surfaces for any given feature, we will defer to this source. Where they are less accurate or not available we will defer to the spectral classification method for the impervious feature.

Turf Grass: Turf Grass will start as a set of training samples that define those non-forested and non-agricultural areas of flat land into large classifications including spectral variation between yellows, greens, and browns. Any attempt to distinguish between what is actually agricultural, turf, etc. within the image extraction process ends up as blended results, so although this class will also capture agricultural land, these areas will be removed later on as they are processed first. Areas that are extracted in this classification that are greater than

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or equal to 2 acres will, and are within parcels greater than 3 acres, will be reevaluated as possible reclassification into Pasture. For those areas where parcel data is unavailable, all features meeting the size threshold will be reviewed. There will be a stage of manual cleanup for falsely identified features.

Other: After the three previous classes (water, impervious and turf grass) have been extracted, the remaining classes are grouped into the Other category. The previously referenced document outlines specific criteria for each.

SECTION 3. REGULATED IMPERVIOUS ACREAGE SERVED BY THE MS4 SERVICE AREA AS OF JUNE 30, 2009

Using the available land cover data sets described above and the 2009 MS4 Service Area described in Attachment 1, the various acreages for impervious cover were developed:

Impervious Cover

Available Land Cover Data Sets	Acreage within the MS4 Service Area as of June 30, 2009	Notes
2008 Henrico Land Cover Data Set	14,310.85	includes 233.96 acres within VDOT rights-of-way
2011 Henrico Land Cover Data Set	14,476.65	includes acreage within VDOT rights-of-way
2014 Virginia Statewide Land Cover Data Set	17,253.64	includes acreage within VDOT rights-of-way

A linear interpolation between the 2008 and 2011 data results in a value 14,421.12 acres of impervious land cover within the MS4 Service Area as of June 30, 2009. Of this area, 14,187.16 acres (14,421.12 less 233.96 acres regulated by VDOT) are regulated by the County through its MS4 Permit. Of these 14,187.16 acres, approximately 1,562 acres are within the watershed subject to the Chickahominy River Benthic TMDL.

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**SECTION 4. REGULATED PVIOUS ACREAGE SERVED BY THE MS4
SERVICE AREA AS OF JUNE 30, 2009**

Pervious Cover

Available Land Cover Data Sets	Acreage within the MS4 Service Area as of June 30, 2009	Notes
2008 Henrico Land Cover Data Set		Data is not available to determine the extent of pervious (turf) land cover
2011 Henrico Land Cover Data Set		Data is not available to determine the extent of pervious (turf) land cover
2014 Virginia Statewide Land Cover Data Set	17,529.11	

Since only the 2014 Virginia Statewide Land Cover Data Set includes a turf feature class, **17,529.11 acres** is used as an estimate of the pervious area within the MS4 Service Area as of June 30, 2009 that is regulated by the County through its MS4 Permit. This results in an overestimation of the required value. Of these 17,529.11 acres, approximately 1,785 acres are within the watershed subject to the Chickahominy River Benthic TMDL.

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ATTACHMENT 3
BMPS INSTALLED BETWEEN
JANUARY 1, 2006 AND JUNE 30, 2009

SECTION 1. OVERVIEW

In accordance with the Chesapeake Bay TMDL Guidance document distributed by DEQ on May 18, 2015:

All permittees may receive credit for any stormwater quality BMPs installed between Jan 1, 2006 and June 30, 2009 within the MS4 service area if the permittee provides a full historical accounting, to the maximum extent practical, of BMPs in their jurisdiction.

The guidance document also states:

To receive credit for previously unreported BMPs installed on or after January 1, 2006 and prior to July 1, 2009, permittees will need to include the following in their Action Plan:

- 1. An affirmative statement that a complete list, to the maximum extent practicable, of historical BMPs was or will be submitted to the Department by September 1, 2015. Permittees may submit this data as part of the "Historical Data Clean-Up" effort that is currently ongoing.*
- 2. Appropriate calculations for the BMPs that the permittee is claiming for credit towards its required POC load reductions.*

As requested, the County's full historical accounting of BMP data was submitted to DEQ in September of 2015. This submission included all the facilities in the County, both in and outside the MS4 Service Area.

The following pollutant removal evaluation includes those BMPs that are within the MS4 Service Area that were installed between January 1, 2006 and June 30, 2009 in the watershed subject to the Chickahominy River Benthic TMDL.

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SECTION 2. LOCATION

As stated above, the BMPs included in this evaluation are located within the MS4 Service Area in the watershed subject to the Chickahominy River Benthic TMDL.

SECTION 3. STATUS

Each of the BMPs included in this evaluation were brought online between January 1, 2006 and June 30, 2009 and continue to be maintained and operated as approved.

SECTION 4. POLLUTANT LOAD REDUCTIONS

Calculating the pollutant load reductions achieved by the BMPs brought online between January 1, 2006 and June 30, 2009, requires removal efficiencies for the various types of BMPs. The historical BMPs within the MS4 Service Area were grouped based on BMP types from Table V.C.1 – Chesapeake Bay Program BMPs, Established Efficiencies in the TMDL Guidance.

Chesapeake Bay Program BMP Type	County BMP Type
Wet Ponds and Wetlands	Retention basin
Filtering Practices	Filtterra
	Stormwater360

The removal efficiencies for these Chesapeake Bay Program BMPs are:

Chesapeake Bay Program BMP Type	Removal Efficiencies
	TSS
Wet Ponds and Wetlands	60%
Filtering Practices	80%

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Based on the BMP design data, the total drainage area and impervious and pervious areas served by these BMPs are:

Chesapeake Bay Program BMP Type	Acres Served		
	Drainage Area	Impervious Area	Pervious Area
Wet Ponds and Wetlands	17.60	10.1	7.50
Filtering Practices	5.35	3.14	2.21

The pollutant loads generated by these areas are calculated using the 2009 EOS Loading Rates for the James River Basin from Table 1 in the MS4 Permit.

2009 EOS Loading Rates (lbs/acre/year)	
Source	TSS
Urban Impervious	676.94
Urban Pervious	101.08

Pollutant Loading to BMPs	
Chesapeake Bay Program BMP Type	TSS
Wet Ponds and Wetlands	7,595.19
Filtering Practices	2,348.98

Application of the removal efficiencies identified previously from Table V.C.1 – Chesapeake Bay Program BMPs, Established Efficiencies in the TMDL Guidance yields the following load reductions for the BMPs that are within the MS4 Service Area that were installed between January 1, 2006 and June 30, 2009

Pollutant Loading Removed by BMPs	
Chesapeake Bay Program BMP Type	TSS
Wet Ponds and Wetlands	4,557.12
Filtering Practices	1,879.18

<p style="text-align: center;">HENRICO COUNTY CHICKAHOMINY RIVER BENTHIC TMDL ACTION PLAN</p>

TOTAL	6,436.30
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SECTION 5. COST

The cost associated with these BMPs is unknown.

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ATTACHMENT 4
ENERGY DISSIPATORS INSTALLED BETWEEN
JANUARY 1, 2006 AND JUNE 30, 2014

SECTION 1. OVERVIEW

Since 2001, the County has required the installation of Energy Dissipators at select stormwater outfalls as a requirement of the development process in addition to meeting the required pollutant removal requirement associated with the proposed impervious cover. The County's Energy Dissipator is also listed as an acceptable alternative to Virginia DEQ Stormwater Design Specification No. 2 – Sheet Flow to a Vegetated Filter Strip or Conserved Open Space and as of July 1, 2014 is an approved BMP for complying with the pollutant removal requirement dictated by Virginia's stormwater program.

In accordance with the Chesapeake Bay TMDL Guidance distributed by DEQ on May 18, 2015:

Permittees may receive credit for:

...BMPs that were installed to meet development requirements, but exceed those requirements and any applicable state standards...

An accounting of these Energy Dissipators was submitted to DEQ in September of 2015 in response to the historical BMP data request.

The following pollutant removal evaluation includes those Energy Dissipators that are within the MS4 Service Area that were installed between January 1, 2006 and June 30, 2014 in the watershed subject to the Chickahominy River Benthic TMDL and exceeded any applicable state standards in place at the time of installation.

SECTION 2. LOCATION

As stated above, the Energy Dissipators included in this evaluation are located within the MS4 Service Area in the watershed subject to the Chickahominy River Benthic TMDL.

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SECTION 3. STATUS

Each of the Energy Dissipators included in this evaluation were installed between January 1, 2006 and June 30, 2014 and continue to be maintained and operated as approved.

SECTION 4. POLLUTANT LOAD REDUCTIONS

To calculate the pollutant load reductions achieved by these Energy Dissipators, removal efficiencies are required. Removal efficiencies for TN and TP can be found in the Virginia Runoff Reduction Method (VRRM).

Pollutant	Removal Efficiency	
	A / B Soils	C / D Soils
TN	75%	50%
TP	75%	50%

Since quantification of sediment reduction is not provided for any of the BMPs listed in the VRRM, the performance curves provided by the Bay Program were used to establish a removal efficiency for TSS. Assuming a runoff depth of 0.5 inches (the approximate runoff depth that results in a 50% efficiency for TN and TP), the performance curve for TSS yields a removal efficiency for TSS of 55%.

To calculate the pollutant load entering each of the Energy Dissipators, an analysis of the drainage areas to each Energy Dissipator was conducted to determine the impervious and pervious acreage that drains to each facility. This analysis is based on the 2014 Virginia Statewide Land Cover Data Set. The location of the Energy Dissipator was also studied to determine whether the facility is on an A / B soil or a C / D soil.

The 2009 EOS Loading Rates for the James River Basin from Table 1 in the MS4 Permit were then used to determine the pollutant load entering each facility from these acreages.

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2009 EOS Loading Rates (lbs/acre/year)	
Source	TSS
Urban Impervious	676.94
Urban Pervious	101.08

Application of the removal efficiencies identified previously to the incoming loads results in the following load reductions for the Energy Dissipators that were installed prior to July 1, 2014 within the MS4 Service Area and exceeded any applicable state standards in place at the time of installation.

TSS Removed by the Energy Dissipators
21,694.38

SECTION 5. COST

The cost associated with these Energy Dissipators is unknown.

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	A	C	D	G	H	I	P	Q	R	Y	Z	AA	AB
	End Treatment ID	IMPERVIOUS AC	TURF AC	P_LOAD_FROM_DA	IL_LOAD_FROM_DA	S_LOAD_FROM_DA	P_EFFICIENCY	II_EFFICIENCY	S_EFFICIENCY	NET P_REDUCTION BY EN	NET II_REDUCTION BY EN	NET S_REDUCTION BY EN	
1													
2	EN000000000282	3,316	5,160	8.4	67.2	2766.5	50.00%	50.00%	55.00%	4.21	33.60	1,521.56	
3	EN000000000283	1,919	1,756	4.3	30.3	1476.6	50.00%	50.00%	55.00%	2.13	15.15	812.11	
4	EN000000000284	4,442	6,670	11.2	88.3	3681.2	50.00%	50.00%	55.00%	5.58	44.17	2,024.65	
5	EN000000000646	8,984	12,538	22.1	172.0	7349.2	50.00%	50.00%	55.00%	11.04	86.00	4,042.08	
6	EN000000000652	0,548	0,697	1.3	10.0	441.1	50.00%	50.00%	55.00%	0.66	5.01	242.61	
7	EN000000000653	1,157	1,630	2.9	22.3	948.1	50.00%	50.00%	55.00%	1.43	11.13	521.48	
8	EN000000000655	0,461	2,243	1.9	20.0	539.1	50.00%	50.00%	55.00%	0.97	10.01	296.50	
9	EN000000000659	5,543	8,228	13.9	109.6	4533.8	50.00%	50.00%	55.00%	6.93	54.78	2,521.11	
10	EN000000000666	1,328	1,487	3.1	22.9	1049.2	50.00%	50.00%	55.00%	1.54	11.43	577.07	
11	EN000000000819	8,743	10,249	20.5	153.7	6654.6	50.00%	50.00%	55.00%	10.26	76.87	3,025.04	
12	EN000000000820	8,463	14,027	21.9	177.5	7146.7	50.00%	50.00%	55.00%	10.95	88.76	3,630.70	
13	EN00000001615	1,015	1,373	2.5	19.1	825.6	50.00%	50.00%	55.00%	1.24	9.56	454.10	
14	EN000000012204	1,547	1,603	3.5	25.7	1209.4	50.00%	50.00%	55.00%	1.76	12.87	685.15	
15	EN000000012205	0,509	1,274	1.5	13.7	473.1	50.00%	50.00%	55.00%	0.77	6.84	280.23	
16										59.45	466.17	21,594.38	
17													

HENRICO COUNTY CHICKAHOMINY RIVER BENTHIC TMDL ACTION PLAN ATTACHMENT 4

HENRICO COUNTY
ESCHERICHIA COLI TMDL ACTION PLAN

ESCHERICHIA COLI TMDL ACTION PLAN

SECTION 1. OVERVIEW

Henrico County's Escherichia coli TMDL Action Plan addresses the wasteload allocations (WLAs) for Escherichia coli that are associated with approved TMDLs for applicable watersheds in the County (see Section 3). The Plan has been developed in accordance with the requirements of the County's MS4 Permit and applicable recommendations contained in the *Local TMDL MS4 Guidance* (Guidance), distributed by the Virginia Department of Environmental Quality in April 2015.

As stated in the Guidance,

This document is provided as guidance and, as such, sets forth standard operating procedures for the agency. However, it does not mandate any particular method nor does it prohibit any particular method for the analysis of data, establishment of a wasteload allocation, or establishment of a permit limit. If alternative proposals are made, such proposals should be reviewed and accepted or denied based on their technical adequacy and compliance with appropriate laws and regulations.

The Guidance also states

Beyond illicit discharges, existing programmatic practices, ordinances, and outreach currently in place under the MS4 program may be sufficient to address anthropogenic sources of bacteria. For these TMDLs, permittees are encouraged to consider practices such as public outreach and education to influence behaviors. This may include signage and supplies to encourage the collection and removal of pet waste at areas of high concentration, such as dog parks; residential outreach through fliers or pamphlets included with utility bills; and other education programs.

As such, the Plan reflects the requirements of the County's MS4 Permit and any recommendations described in the Guidance that are appropriate.

**HENRICO COUNTY
ESCHERICHIA COLI TMDL ACTION PLAN**

SECTION 2. MS4 PERMIT LANGUAGE

PART I.D. TMDL ACTION PLAN AND IMPLEMENTATION

2. TMDL Action Plans other than the Chesapeake Bay TMDL

a) TMDL Action Plan Development

The permittee shall maintain an updated MS4 Program Plan that includes TMDL Action Plans for pollutants in which wasteloads have been allocated to the MS4 in approved TMDLs. Approved TMDLs as of the effective date of this state permit are included in Attachment A of this state permit. TMDL Action Plans may be implemented in multiple phases over more than one permit cycle using the adaptive iterative approach provided adequate progress is made to reduce pollutant discharges in a manner that is consistent with the assumptions and requirements of the applicable TMDL. Progress shall be demonstrated by representative and adequate monitoring or other methods (e.g. modeling) as described in Part I.D.2.b)5) below. These TMDL Actions Plans shall identify the best management practices and other interim milestone activities to be implemented during the remaining term of this state permit. The plan shall include an estimated end date for achieving the applicable wasteload allocations and, for planning purposes, a projection of BMPs and other implementation steps expected to address the WLA, outside of the permit term, as applicable.

- 1) No later than 24 months after the effective date of this state permit, the permittee shall submit to the Department TMDL Action Plans to address any new or modified requirements established under this Special Condition for pollutants identified in TMDL wasteload allocations approved prior to the effective date of this state permit.
- 2) The TMDL Action Plans shall become effective and enforceable upon written notification from the Department.
- 3) The TMDL Action Plans shall be incorporated by reference into this state permit.

b) TMDL Action Plan content

The permittee shall:

- 1) Develop and maintain a list of its legal authorities such as ordinances, permits, order, specific contract language, and inter-jurisdictional agreements applicable to reducing the pollutant identified in a WLA;
- 2) Identify and maintain an updated list of all additional management practices, control techniques and system design and engineering methods, beyond those identified in Part I.B of this state permit, that have been implemented as

**HENRICO COUNTY
ESCHERICHIA COLI TMDL ACTION PLAN**

- part of the MS4 Program Plan that are applicable to reducing the pollutant identified in the WLA;
- 3) Enhance the public education and outreach and employee training programs to also promote methods to eliminate and reduce discharges of the pollutants identified in the WLA;
 - 4) Assess all significant sources of pollutant(s) from facilities of concern owned or operated by the MS4 operator that are not covered under a separate VPDES industrial stormwater permit and identify all municipal facilities that may be a significant source of the identified pollutant. For the purpose of this assessment, a significant source of pollutant(s) from a facility of concern means a discharge where the expected pollutant loading is greater than the average pollutant loading for the land use identified in the TMDL. (For example, a significant source of pollutant from a facility of concern for a bacterial TMDL would be expected to be greater at a dog park than at other recreational facilities where dogs are prohibited);
 - 5) Develop and implement a method to assess TMDL Action Plans for their effectiveness in reducing the pollutants identified in the WLAs. The evaluation shall use any newly available information, representative and adequate water quality monitoring results, or modeling tools to estimate pollutant reductions for the pollutant(s) of concern from implementation of the MS4 Program Plan. Monitoring may include BMP, outfall, or instream monitoring, as appropriate, to estimate pollutant reductions. The permittee may conduct monitoring, utilize existing data, establish partnerships, or collaborate with other MS4 permittees or other third parties, as appropriate. This evaluation shall include assessment of the facilities identified in Part I.D.2.b)4) above. The methodology used for assessment shall be described in the TMDL Action Plan.
 - 6) Solicit public input on the draft TMDL Action Plan and consider public comments in development of the final TMDL Action Plan that is submitted to the Department for review and approval.
- c) This state permit shall be modified or alternatively revoked and reissued if any approved wasteload allocation procedure, pursuant to Section 303(d) of the Clean Water Act, imposes wasteload allocations, limits or conditions on the treatment works that are not consistent with the permit requirements.
 - d) Analytical methods for any monitoring shall be conducted according to procedures approved under 40 CFR Part 136 or alternative methods approved by the Environmental Protection Agency (EPA). Where an approved 40 CFR Part 136 method does not exist, the permittee shall use a method consistent with the TMDL.

HENRICO COUNTY ESCHERICHIA COLI TMDL ACTION PLAN

- e) The permittee is encouraged to participate as a stakeholder in the development of any TMDL implementation plans applicable to their discharge. The permittee may incorporate applicable best management practices identified in the TMDL implementation plan in the MS4 Program Plan.
- f) Annual Reporting Requirements.
 - 1) The permittee shall submit the required TMDL Action Plans to the Department for review and acceptance with the annual report due March 31, 2017.
 - 2) Beginning with the annual report due March 31, 2018, the permittee shall report on the implementation of the TMDL Action Plans and associated evaluation including the results of any monitoring conducted as part of the evaluation.
- g) The permittee shall identify the best management practices and other steps that will be implemented during the next permit term as part of the permittee's reapplication for coverage as required under Part II.M. The permittee shall also evaluate and modify the estimated end date for achieving the applicable wasteload based on information acquired during the permit cycle.

SECTION 3. APPLICABLE ESCHERICHIA COLI WASTELOAD ALLOCATIONS

Wasteload Allocation (cfu / year)	Watershed(s)	TMDL Report	EPA Approval Date	SWCB Approval Date
1.04E+11	Chickahominy River and Tributaries	E. coli TMDL Development for Chickahominy River and Tributaries, VA (A Nested TMDL Approach)	9/19/2012	3/25/2013
3.99E+10	Bailey Creek portion of Fourmile Creek Watershed	Bacteria TMDL for Fourmile Creek, Henrico County, Virginia	9/20/2004	7/31/2008
1.05E+13	Tuckahoe Creek and Tributaries	Bacteria TMDL for Tuckahoe Creek, Little Tuckahoe Creek, Anderson, Broad, Georges and Readers Branches, and Deep Run, Henrico, Goochland and Hanover Counties, Virginia	9/20/2004	7/31/2008
1.58E+12	White Oak Swamp	Bacteria TMDL for White Oak Swamp, Henrico County, Virginia	9/20/2004	7/31/2008
1.18E+12	Almond Creek	Bacterial Total Maximum Daily Load Development for the James River and Tributaries - City of Richmond	11/4/2010	6/29/2012
5.78E+11	Gillies Creek			
3.50E+13	James River (lower) Impaired			

HENRICO COUNTY ESCHERICHIA COLI TMDL ACTION PLAN

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1.36E+12	James River (tidal)			
5.69E+12	James River (upper) delisted			
4.74E+13	James River (lower) delisted			

From **Attachment A: Applicable TMDL Wasteload Allocations** in the County's MS4 Permit

SECTION 4. ESCHERICHIA COLI TMDL PLANNING

Henrico County's Escherichia coli TMDL Action Plan addresses the following:

SECTION 4.1 LEGAL AUTHORITY

Develop and maintain a list of its legal authorities such as ordinances, permits, order, specific contract language, and inter-jurisdictional agreements applicable to reducing the pollutant identified in a WLA.

Henrico has reviewed its current MS4 Program Plan and has determined that the legal authorities as stated in the current MS4 Program Plan are sufficient for compliance with this special condition. Please refer to Part I.A.3 of the MS4 Program Plan for a listing of the legal authorities.

SECTION 4.2 MANAGEMENT PRACTICES, CONTROL TECHNIQUES, AND METHODS

Identify and maintain an updated list of all additional management practices, control techniques and system design and engineering methods, beyond those identified in Part I.B of this state permit, that have been implemented as part of the MS4 Program Plan that are applicable to reducing the pollutant identified in the WLA.

The additional management practices, control techniques and system design and engineering methods, beyond those identified in Part I.B of this state permit, that have been implemented as part of the MS4 Program Plan that are applicable to reducing the pollutant identified in the WLA are listed in the following sections of this TMDL Action Plan.

The County's illicit discharge detection and elimination program is described in Part I.B.2.e of the MS4 Program Plan and annual implementation details are provided in the Part I.B.2.e Annual Report Supplement.

HENRICO COUNTY
ESCHERICHIA COLI TMDL ACTION PLAN

SECTION 4.3 PUBLIC EDUCATION, PUBLIC OUTREACH, AND EMPLOYEE TRAINING

Enhance the public education and outreach and employee training programs to also promote methods to eliminate and reduce discharges of the pollutants identified in the WLA.

Henrico County conducts various public education and outreach and employee training programs that promote elimination and/or reduction of Escherichia coli. These efforts include programs such as:

Septic Pumpout Program

As part of the Chesapeake Bay Program, Henrico County is required to implement a program that ensures septic systems within CBPAs are pumped out at least once every 5 years. The Department of Public Works administers this program.

Sewer Connection

Generally, all proposed residential structures must be connected to public sewer if public sewer is within 300 feet of the development and unless otherwise approved by the Planning Commission, all other development must provide public sewer connections, including any necessary extensions.

Septic System Installation, Repair, and Replacement

The Environmental Health section of the Henrico County Health Department currently coordinates the septic system program in the County. Responses to a septic system malfunction include:

- a. A property owner with a malfunctioning septic system with the potential for health and environmental contamination is required to apply for an application to contract repairs through the Health Department. Citizen complaints are investigated by the Health Department who then advises property owners of actions which need to be taken:
 - i. The applicant may be required to pump the system if it is imposing an immediate threat; or
 - ii. The applicant may be required to hook up to the sanitary sewer system, or,

HENRICO COUNTY ESCHERICHIA COLI TMDL ACTION PLAN

- iii. The applicant may be required to repair the septic system through contracting with a private company after obtaining a permit from the County Health Department.
- b. In situations where a property owner refuses to warrant the request for action for repair, the Health Department may initiate legal proceedings that may lead to requiring the property owner to vacate until requested repairs have been completed.

All proposed development that relies on septic systems must also provide reserve drain fields. The Health Department strongly recommends that septic systems (existing and proposed) be pumped out every five years. A brochure is available to residents that educate them on how to maintain a septic system (see attachments).

Pet Waste Pick-Up Program

The pet waste pick-up program includes distributing pet bag dispensers and installation of pet waste stations installed on certain Henrico County properties.

Fats, Oil, and Grease (FOG) Program

The Department of Building Construction and Inspections performs routine maintenance inspections of food preparation businesses to minimize FOG discharges into building and sanitary sewers overflows as a result of FOG buildup. A FOG brochure for businesses is distributed in response to complaints. The Department of Public Utilities assesses a strong waste surcharge on the monthly water and sewer utility bills of food preparation businesses that discharge FOG into the sanitary sewer system. DPU annually distributes educational information on FOG in their "The Water Source" newsletter.

Residential Education Program

The residential education program includes items such as FOG Information in DPU's "The Water Source", mailings concerning the Septic Pumpout Program, the Curb Your Dog Brochure – Pet Waste Disposal Education, the Pick up the Poop Pet Waste Game administered by Henricopolis SWCD, and the KHB Round Up video. Signage concerning proper pet waste disposal are also placed at various public properties throughout the County.

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SECTION 4.4 ASSESS SIGNIFICANT SOURCES OF POLLUTANTS

Assess all significant sources of pollutant(s) from facilities of concern owned or operated by the MS4 operator that are not covered under a separate VPDES industrial stormwater permit and identify all municipal facilities that may be a significant source of the identified pollutant. For the purpose of this assessment, a significant source of pollutant(s) from a facility of concern means a discharge where the expected pollutant loading is greater than the average pollutant loading for the land use identified in the TMDL. (For example, a significant source of pollutant from a facility of concern for a bacterial TMDL would be expected to be greater at a dog park than at other recreational facilities where dogs are prohibited)

All Henrico County properties were assessed in the MS4 Municipal Management Area (MMA) System described in Part I.B.2.i of the MS4 Program Plan. These assessments did not reveal any significant sources of E. coli from facilities of concern owned or operated by the County of Henrico that are not covered under a separate VPDES permit.

SECTION 4.5 MEANS AND METHODS TO ASSESS TMDL ACTION PLAN

Develop and implement a method to assess TMDL Action Plans for their effectiveness in reducing the pollutants identified in the WLAs. The evaluation shall use any newly available information, representative and adequate water quality monitoring results, or modeling tools to estimate pollutant reductions for the pollutant(s) of concern from implementation of the MS4 Program Plan. Monitoring may include BMP, outfall, or in-stream monitoring, as appropriate, to estimate pollutant reductions. The permittee may conduct monitoring, utilize existing data, establish partnerships, or collaborate with other MS4 permittees or other third parties, as appropriate. This evaluation shall include assessment of the facilities identified in Part I.D.2.b)4) above. The methodology used for assessment shall be described in the TMDL Action Plan.

An evaluation of the activities conducted during the permit year will be included in the annual report and will consider the estimated number of individuals reached through the activities and other implementation details. The results of the In Stream Monitoring program required by Part I.C.2 of the MS4 Permit will be considered in developing the evaluations.

HENRICO COUNTY
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SECTION 4.6 SOLICIT PUBLIC COMMENTS

Solicit public input on the draft TMDL Action Plan and consider public comments in development of the final TMDL Action Plan that is submitted to the Department for review and approval.

A draft of this TMDL Action Plan was posted on the County's website for two weeks and an opportunity for public comment was provided.

No comments were received.

SECTION 4.7 ANNUAL REPORTING REQUIREMENTS

Annual Reporting Requirements

- 1) The permittee shall submit the required TMDL Action Plans to the Department for review and acceptance with the annual report due March 31, 2017.**

Noted.

- 2) Beginning with the annual report due on March 31, 2018, the permittee shall report on the implementation of the TMDL Action Plans and associated evaluation including the results of any monitoring conducted as part of the evaluation.**

In addition to the individual program evaluations mentioned in Section 4.5, implementation details will be included in the MS4 Annual Reports beginning with the annual report due March 31, 2018. The details will be provided in the following format.

BMPs and/or Programs Implemented during the MS4 Permit Year	Implementation Details (number, location, etc.)

HENRICO COUNTY
ESCHERICHIA COLI TMDL ACTION PLAN

SECTION 4.8 PLANS FOR THE NEXT PERMIT CYCLE

The permittee shall identify the best management practices and other steps that will be implemented during the next permit term as part of the permittee's reapplication for coverage as required under Part II.M. The permittee shall also evaluate and modify the estimated end date for achieving the applicable wasteload based on information acquired during the permit cycle.

Noted.